



ISCO NEWSLETTER

The Newsletter of the International Spill Response Community
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YOU TOO CAN JOIN ISCO AT BOOTH 142

Clean Gulf attendees who are not yet members of ISCO will be able to join the organization at the ISCO booth. There are lots of positive advantages for individuals and companies in joining our worldwide membership in 46 countries –

- Be part of a worldwide community of professionals who share a common interest.
- Receive ISCO's weekly newsletter keeping you up-to-date on events, developing technologies, new legislation and other matters of mutual interest.
- Opportunities for providing new products and services needed in domestic and overseas markets.
- Access Practical help in building incident response capacity and competence enhancement.
- Through ISCO, having a voice in the drafting of new legislation that will affect your area of interest.
- Networking with other members, sharing experiences, discussing problems and helping find good solutions.
- Listing in ISCO's International Directory with your entry hyperlinked to your own website.
- Opportunities to develop alliances and technical partnerships with other members as a means of fast-tracking response capacity building.
- The right to display the ISCO logo on your headed notepaper, brochures, etc. to denote that you are part of an international organisation dedicated to improving worldwide co-operation and preparedness.

ISCO & THE ISCO NEWSLETTER

The ISCO Newsletter is published weekly by the International Spill Control Organisation, a not-for-profit organisation supported by members in 46 countries. ISCO has Consultative Status at IMO, Observer Status at IOPC Funds and is dedicated to raising worldwide preparedness and co-operation in response to oil and chemical spills, promoting technical development and professional competency, and to providing a focus for making the knowledge and experience of spill control professionals available to IMO, UNEP, EC and other organisation.

ISCO COMMITTEE & COUNCIL

ISCO is managed by an elected executive committee members of which are **Mr David Usher** (President, USA), **Mr John McMurtrie** (Secretary, UK), **Mr Marc Shaye** (USA), **Mr Dan Sheehan** (USA), **M. Jean Claude Sainlos** (France), **Mr Kerem Kemerli** (Turkey), **Mr Simon Rickaby** (UK), **Mr Li Guobin** (China), **Captain Bill Boyle** (UK) and **Mr Dennis van der Veem** (The Netherlands).

The Register of ISCO Members is maintained by **Ms Mary Ann Dagleish** (Membership Director) and the list of members is on the website at <http://www.spillcontrol.org>

The Executive Committee is assisted by the non-executive ISCO Council composed of the following national representatives – **Mr John Wardrop** (Australia), **Mr Namig Gandilov** (Azerbaijan), **Mr John Cantlie** (Brazil), **Dr Merv Fingas** (Canada), **Captain Davy T. S. Lau** (China, Hong Kong), **Mr Li Guobin** (China, Mainland), **Mr Darko Domovic** (Croatia), **Eng. Ashraf Sabet** (Egypt), **Mr Torbjorn Hedrenius** (Estonia), **Mr Pauli Einarsson** (Faroe Islands), **Prof. Harilaous Psarافتis** (Greece), **Captain D. C. Sekhar** (India), **Mr Dan Arbel** (Israel), **Mr Sanjay Gandhi** (Kenya), **Mr Joe Braun** (Luxembourg), **Chief Kola Agboke** (Nigeria), **Mr Jan Allers** (Norway), **Capt. Chris Richards** (Singapore), **Mr Anton Moldan** (South Africa), **Dr Ali Saeed Al Ameri** (UAE), **Mr Kevin Miller** (UK) and **Dr Manik Sardessai** (USA).

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International news

UPDATE ON THE IPIECA-IOGP OIL SPILL RESPONSE JOINT INDUSTRY PROJECT



The IPIECA-IOGP Oil Spill Response Joint Industry Project (OSR-JIP) has completed seven of the 24 Good Practice Guides that are being rewritten or newly created as part of the update of the *IPIECA oil spill preparedness and response report series*, and are now available for download on the OSR-JIP website

Titles in the completed Guides include:

- Oil Spill Training
- Sensitivity Mapping
- Health & Safety
- Oil spill waste minimization and management
- A guide to shoreline assessment (SCAT) surveys
- Incident Management System
- Exercise Planning

It is intended that the revised series, including the addition of entirely new documents, will conclude in March 2015. New publications will be added to the [IPIECA website](#) when available

INTERNATIONAL FORUM TO TACKLE CHALLENGES FACING WORLDS FRESHWATER RESOURCES

Governments from around the world, along with heads of national and international basin organizations and freshwater experts met this week in Nairobi to look at ways to strengthen the governance of freshwater basins and resources, which account for approximately 60 per cent of the global freshwater flow.

Global freshwater resources are being depleted and polluted to an extent never before witnessed, posing a major threat to aquatic ecosystems, water security and habitats. Freshwater is a fundamental environmental resource and essential for the sustainability of humanity and the world's ecosystems. *UNEP News Centre* [Read more](#)

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International news (continued)

EUROPE: BOOST FOR CO-OPERATION ON MARITIME EMERGENCIES

Maritime incidents such as oil spills can have huge environmental and economic impact. To reinforce co-operation on maritime emergencies, the European Commission's Directorate General for Humanitarian Aid and Civil Protection (ECHO) and the European Maritime Safety Agency (EMSA) have concluded a new working arrangement. The agreement further enhances the coordination on marine pollution preparedness, monitoring and response.

The EU Civil Protection Mechanism enables a coordinated and coherent EU response by pooling resources that can be deployed when a disaster strikes. The Mechanism can also be activated during marine pollution emergencies, where it operates in close coordination with EMSA. The Agency contributes with emergency response services such as oil spill response vessels, maritime experts and satellite-based detection of oil pollution and vessels.

The new working arrangement paves the way for a more robust and effective European mechanism to respond to and better prepare for maritime disasters. Joining efforts in terms of technical and scientific cooperation and real-time information exchange will optimize the work of both in this area, and most importantly: contribute to better protecting people and environment in case of a maritime incident, accident or pollution.

The new working arrangement updates an existing agreement from 2004. It reflects recent changes such as the reorganisation of the European Commission, including the establishment of the Emergency Response Coordination Centre (ERCC), and the development of new EU pollution monitoring tools. [EMSA Read more](#)

International news (continued)

REVITALIZING BALTIC SEA PROCEDURES FOR MARINE SPILL RESPONSE

November 25 - Major revisions of the internationally agreed procedures for marine pollution response in the Baltic Sea region, the HELCOM Response Manual, will be considered at the HELCOM Response Working Group meeting in Tallinn, beginning today.

The 3-day Meeting collects ministries and authorities with operational responsibilities on marine pollution preparedness and response in the coastal countries of the Baltic Sea and the EU. It will be chaired by Bernt Stedt, Swedish Coastguard.

The original [Manual](#) on marine pollution incidents was adopted in 1983, based on a series of HELCOM Recommendations dealing with international warning, reporting, communication and command systems for the Baltic Sea region developed since the 1970s. These agreed operational procedures and best practices for the Baltic Sea are followed, exercised and revised on a regular basis by the coastal countries and the EU. [HELCOM Read more](#) [Editor – Will hope to report more in a future issue]

Incident reports from around the world

NIGERIA: DEVASTATING CRUDE OIL SPILL HITS BONNY, RIVERS STATE

November 24 - Crude oil spill is said to have hit the Bonny/Bomu TNP trunk line around Shell wellhead 2 T24 in Okololunch community Bonny Local Government area of Rivers state.

The spill is said to have been caused by a swamp boogie belonging to a Shell subcontractor handling pipeline clamping job in the area. Barr. Victor Pepple, Publicity Secretary of Organization of Fishermen, Seafood Dealers in Niger Delta (OFSFD-ND) who confirmed the incident said the development is "worrisome as the entire sea in the area is massively polluted and constituting serious threat to aquatic lives." [Daily Post Read more](#)

USA: CHEMICAL SPILL APPARENTLY CAUSED HOPEWELL VA FISH KILL

November 26 - A chemical spill at Honeywell International Inc.'s plant in Hopewell apparently caused the deaths of hundreds of fish, a spokesman for the state's environmental agency said Wednesday. "We can't say conclusively, but there does appear to be a connection," said Bill Hayden of the Department of Environmental Quality.

About 5,500 pounds of a chemical called ammonium carbonate, which was dissolved in water, spilled at the plant, Hayden said. Honeywell officials said the spill occurred Monday night. [Richmond Times-Dispatch Read more](#)

Incident reports from around the world

Note from Editor - Either it's been a very quiet week for significant marine / freshwater spills or I just haven't found many reports or received any from readers. As usual there have been dozens of spills involving road tanker incidents, static fuel oil tank leaks, etc. but, as you know, the ISCO Newsletter does not usually report on incidents of these kinds because there are just far too many. In any case it would be superfluous to duplicate the excellent work being done by Don Johnston. His "Newsy Stuff" is circulated free of charge every few days to members of the DG & Hazmat Group and each issue contains around 20 pages of incident reports and other mainly downstream related news. To find out more about joining DG & Hazmat Group and subscribing to "Newsy Stuff", visit - <http://groups.yahoo.com/neo/groups/DangerousGoods/info>

Other news reports from around the world

NEWS REPORTS FROM CANADA

November 24 – Canadian Pipelines development

While the [protests and arrests](#) continued at the site of Kinder Morgan's planned pipeline expansion east of Vancouver this weekend, Alberta Premier Jim Prentice is getting ready to take another pipeline pitch the other way, traveling to [Quebec and Ontario](#) with a handful of federal ministers to make the case for the \$12-billion TransCanada Energy East line. The 4,500-kilometer project would convert capacity on an existing natural-gas pipeline between Alberta and Quebec and see the construction of a new line between Quebec and New Brunswick. *Alberta Oil* [Read more](#)

NEWS REPORTS FROM INDIA

November 24 - Bhopal gas tragedy: 'Financial compensation will never be sufficient without clean-up' says UN rights expert

The United Nations Special Rapporteur on human rights and toxic waste, Baskut Tuncak, welcomed the announcement of the Indian Government to reconsider the official figures of people affected by the catastrophic leak of toxic gas in Bhopal in 1984, and provide additional compensation.

"However, financial compensation alone will not stop the ongoing human rights violations of Bhopal's toxic legacy," the human rights expert stressed. "New victims of the Bhopal disaster are born every day, and suffer life-long from adverse health impacts."

Almost 30 years after one of the worst industrial accident in history, the soil and groundwater at the site of the old Union Carbide chemical factory in Bhopal remain contaminated despite the fact people live in and around the affected area. *DNAIndia.com* [Read more](#)

NEWS REPORTS FROM NEW ZEALAND

November 17 - New Zealand Marine Oil Spill Response Strategy 2015-2019

The New Zealand Marine Oil Spill Response Strategy sets the overarching framework for how Maritime New Zealand and our partners will respond to a marine oil spill incident.

Under the Maritime Transport Act 1994, MNZ is required to regularly update the Strategy, last revised in 2006. This document, the New Zealand Marine Oil Spill Response Strategy 2015-2019, is the fourth revision since it was first established in 1992.

The goals and objectives will shape the future capability requirements for New Zealand and MNZ and the resources needed to give effect to this capability. [New Zealand Marine Oil Spill Response Strategy 2015-2019](#) [PDF: 1.93Mb, 66 pages] *Maritime New Zealand* [Read more](#)

NEWS REPORTS FROM TRINIDAD & TOBAGO

November 26 - In wake of threats over Petrotrin oil spill- Security increased

Security at Petrotrin installations was beefed last night as the state-owned oil company raised its threat alert after a cryptic warning was issued in a video posted on Youtube from the group Anonymous T&T. Yesterday, the group, which has described itself as a "loosely associated international network of human/civil/animal activist," issued the threat as it called on the company to come "clean" on the Marabella oil spill and its impact on residents.

The video was highlighted on the CNC3 7 pm newscast last night. It was filmed as a news bulletin and featured an individual dressed in black and wearing a Guy Fawkes mask. In the video, the individual alleged Petrotrin was not being open with the nation on the impact the July oil spill, which saw 8,000 barrels of oil leaking into the Guaracara River, is having on Marabella residents. *Trinidad & Tobago Guardian* [Read more](#)

NEWS REPORTS FROM USA

November 20 - Obama's claim that Keystone XL crude would go 'everywhere else' but the United States



Twice during his recent overseas trip, President Obama asserted that the proposed Keystone XL pipeline was designed to take Canadian crude oil to the world markets. The implication of the president's words is that the United States would be simply a conveyor belt for the oil.

The pipeline would allow the Canadians "to pump their oil, send it through our land, down to the Gulf, where it will be sold everywhere else," the president said in Burma. The question he faced, he said in Australia, is whether "we should approve a pipeline shipping Canadian oil to world markets, not to the United States."

Is this really the case? - First of all, the president leaves out a very important step. The crude oil would travel to the Gulf Coast, where it would be refined into products such as motor gasoline and diesel fuel (known as a distillate fuel in the trade). As our colleague Steven Mufson reported more than two years ago, the refineries on the Gulf Coast are "eagerly waiting" for the Canadian crude,

since there isn't enough oil in the area anymore to feed the refineries. *The Washington Post* [Read more](#) [Thanks to Marc K. Shaye Hon.FISCO, Member of ISCO Executive Committee]

November 25 - Gov't Data Sharpens Focus on Crude-Oil Train Routes

The oil boom underway in North Dakota has delivered jobs to local economies and helped bring the United States to the brink of being a net energy exporter for the first time in generations.

But moving that oil to the few refineries with the capacity to process it is presenting a new danger to towns and cities nationwide — a danger many appear only dimly aware of and are ill-equipped to handle.

Much of North Dakota's oil is being transported by rail, rather than through pipelines, which are the safest way to move crude. Tank carloads of crude are up 50 percent this year from last. Using rail networks has saved the oil and gas industry the time and capital it takes to build new pipelines, but the trade-off is greater risk: Researchers estimates that trains are three and a half times as likely as pipelines to suffer safety lapses. *Pro Publica* [Read more](#)

November 26 - Cook Inlet tanker traffic needs escort tugs



Photo: OPINION: What's good for Prince William Sound is good for Cook Inlet - powerful tugs needed to keep tanker traffic safe. The Exxon Valdez, which spilled 11 million gallons of crude oil into the Sound 25 years ago. NOAA

When the Exxon Valdez "fetched up hard aground" on Bligh Reef in 1989 it was in the dark of night. A mighty storm was raging in Joe Hazelwood's alcohol-fogged brain. There are many versions of a dark and foggy night, and they all involve risk, and risk prevention.

A crude oil tanker could be transiting Cook Inlet bound for Nikiski on a dark and stormy night. The tanker could lose power. The tanker could, with combined forces of wind and tide, be driven ashore and spring a serious leak.

The shorelines of Cook Inlet are presently at high risk because there is no requirement for tug escorts. There is no way to prevent a laden tanker from being driven ashore on a dark and stormy night if power is lost. An attempt could be made to deploy the anchor but studies prove this to be an unlikely solution. Tugs are available in Prince William Sound, but they are 24 hours away. *Alaska Dispatch News* [Read more](#) Note: The author of this article, Frank Mullen, is a commercial fisherman. He lives in Homer. The views expressed here are the writer's own and are not necessarily endorsed by Alaska Dispatch.

People in the news

ROB SELF IS NOW MANAGING DIRECTOR AT SPILLCONSULT



It has just been announced that Rob Self has stepped up to the position of Managing Director at the Southampton UK based consultancy, Spillconsult. Rob has over 20 years experience working within the oil industry, having worked for ExxonMobil, Oil Spill Response Limited and, most recently, Swire Emergency Response Services in the Middle East. Spillconsult fields a very strong team that includes Dave Salt, Stuart Gair, Dr Sharon Burton, Peter Crook, Dave Neilson, Dr Ian Borthwick and several other well-known figures in the response industry. <http://www.spillconsult.com/about-us/>

BITUMENS AND DILUTED BITUMENS FROM WESTERN CANADIAN OIL SANDS: CHAPTER 4



A short series of articles on Bitumens and Diluted Bitumens from Western Canadian Oil Sands 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, he conducted and managed research and development projects. He is currently working independently in Alberta. Dr Fingas is the Member of ISCO Council for Canada.

Bitumens and Diluted Bitumens from Western Canadian Oil Sands

This serial covers the topic of bitumen products such as from the Canadian Oil Sands and diluted bitumen products (Dilbit and others). This is the fourth of nine issues by Dr. Merv Fingas, Member of ISCO Council for Canada.

1.3.5 Behavior of Diluted Bitumens

Oil spilled on water undergoes a series of changes in physical and chemical properties which in combination are termed 'weathering' (Fingas, 2012). Weathering processes occur at very different rates, but begin immediately after oil is spilled into the environment. Weathering rates are not consistent throughout the duration of an oil spill and are usually highest immediately after the spill.

Both weathering processes and the rates at which they occur often depend on the type of oil and then on environmental conditions. Most weathering processes are highly temperature-dependent, however, and will often slow to insignificant rates as temperatures approach freezing temperatures. The weathering processes include: evaporation, emulsification, natural dispersion, dissolution, photooxidation, sedimentation, adhesion to materials, interaction with mineral fines, biodegradation, and the formation of tar balls. These processes are listed in order of importance in terms of their effect on the percentage of total mass balance, i.e., the greatest loss from the slick in terms of percentage.

Evaporation is usually the most important weathering process. It has the greatest effect on the amount of oil remaining on water or land after a spill. Over a period of several days, a light fuel such as gasoline evaporates completely at temperatures above freezing, whereas only a small percentage of bitumen evaporates. The rate at which oil evaporates depends primarily on the oil's composition. The more volatile components an oil or fuel contains, the greater the extent and rate of its evaporation.

Oil and petroleum products evaporate in a slightly different manner than water and the process is much less dependent on wind speed and surface area. Oil evaporation can be considerably slowed down, however, by the formation of a 'crust' or 'skin' on top of the oil. This happens primarily on land where the oil layer is not agitated by water movement. The skin or crust is formed when the smaller compounds in the oil are removed, leaving the larger compounds, such as waxes and resins, at the surface. These components seal off the remainder of the oil and prevent evaporation. Stranded oil from old spills has been re-examined over many years and it has been found that there is no significant evaporation in the oil underneath the crust. When this crust has not formed, the same oil could be weathered to the hardness of wood.



Figure 3 This shows the high viscosity of Dilbit after about 9 days of weathering. The product has largely reverted to the original bitumen by the evaporation of the diluent, condensate in this case.

The rate of evaporation is very rapid immediately after a spill and then slows considerably. About 80% of evaporation occurs in the first few days after a spill. The evaporation of most oils follows a logarithmic curve with time. Oil properties can change significantly with the extent of evaporation. If about 40% (by weight) of oil evaporates, its viscosity could increase by as much as a thousand-fold. Its density could rise by as much as 10% and its flash point by as much as 400%. In the case of Dilbits, the material will revert to largely the properties of the starting bitumen after weathering. The extent of evaporation can be the most important factor in determining properties of Dilbit at a given time after the spill, and in changing the behavior of the product.

Emulsification is the process by which one liquid is dispersed into another one in the form of small droplets. Water droplets can remain in an oil layer in a stable form and the resulting material is completely different. These water-in-oil emulsions are sometimes called 'mousse' or 'chocolate mousse' as they resemble this dessert. In fact, both the tastier version of chocolate mousse and butter are common examples of water-in-oil emulsions.

The mechanism of emulsion formation is not yet fully understood, but it probably starts with waves forcing the entry of small water droplets, about 10 to 25 μm (or 0.010 to 0.025 mm) in size, into the oil. If the oil is only slightly viscous, these small droplets will not leave the oil quickly. On the other hand, if the oil is too viscous, droplets will not enter the oil to any significant extent. Once in the

Special feature (continued)

oil, the droplets slowly gravitate to the bottom of the oil layer. Any asphaltenes and resins in the oil will interact with the water droplets to stabilize them. Depending on the quantity of asphaltenes and resins, as well as aromatic compounds that stabilize asphaltenes and resins in solution, an emulsion may be formed. The conditions required for emulsions of any stability to form may only be reached after a period of evaporation. Evaporation increased the amount of asphaltenes and resins in an oil compared to the other components, and increases the viscosity to the critical value.

Water can be present in oil in four ways. First, some oils contain about 1% water as soluble water. This water does not significantly change the physical or chemical properties of the oil. The second way is called 'entrainment', whereby water droplets are simply held in the oil by its viscosity to form an unstable emulsion. These are formed when water droplets are incorporated into oil by the sea's wave action and there are not enough asphaltenes and resins in the oil or if there is a high amount of aromatics in the oil which stabilizes the asphaltenes and resins, preventing them from acting on the water droplets. Unstable emulsions break down into water and oil within minutes or a few hours at most, once the sea energy diminishes. The properties and appearance of the unstable emulsion are almost the same as those of the starting oil, although the water droplets may be large enough to be seen with the naked eye. Dilbits can form entrained types if spilled onto turbulent water.

Meso-stable emulsions represent the third way water can be present in oil. These are formed when the small droplets of water are stabilized to a certain extent by a combination of the viscosity of the oil and the interfacial action of asphaltenes and resins. The viscosity of meso-stable emulsions is 20 to 80 times higher than that of the starting oil. These emulsions generally break down into oil and water or sometimes into water, oil, and residual emulsion within a few days. Semi- or meso-stable emulsions are viscous liquids that are reddish-brown or black in colour.

The fourth way that water exists in oil is in the form of stable emulsions. The viscosity of stable emulsions is 500 to 800 times higher than that of the starting oil and the emulsion will remain stable for weeks and even months after formation. Stable emulsions are reddish-brown in colour and appear to be nearly solid. Because of their high viscosity and near solidity, these emulsions do not spread and tend to remain in lumps or mats on the sea or shore.

The formation of emulsions is an important event in an oil spill. First, and most importantly, it substantially increases the actual volume of the spill. Emulsions of all types contain as much as 70% water and thus when emulsions are formed, the volume of the oil spill more than triples. Even more significantly, the viscosity of the oil increases by as much as 1000 times, depending on the type of emulsion formed.

These increases in volume and viscosity make cleanup operations more difficult. Emulsified oil is difficult or impossible to disperse, to recover with skimmers, or to burn. Emulsions can be broken down with special chemicals in order to recover the oil with skimmers or to burn it. It is thought that emulsions can break down into oil and water by further weathering, oxidation, and freeze-thaw action. Meso- or semi-stable emulsions are relatively easy to break down, whereas stable emulsions may take months or years to break down naturally.

Emulsion formation also changes the fate of the oil (Fingas and Fieldhouse, 2009). It has been noted that when oil forms stable or meso-stable emulsions, evaporation slows considerably. Biodegradation also appears to slow down. The dissolution of soluble components from oil may also cease once emulsification has occurred. The process of emulsion formation is discussed further in another issue.

Natural dispersion occurs when fine droplets of oil are transferred into the water column by wave action or turbulence. Small oil droplets (less than 20 μm or 0.020 mm) are relatively stable in water and will remain so for long periods of time. Large droplets tend to rise and larger droplets (more than 100 μm) will not stay in the water column for more than a few seconds. Depending on oil conditions and the amount of sea energy available, natural dispersion can be insignificant or it can remove some of the oil. It is felt that natural dispersion is not important to Dilbit fate.

Through the process of dissolution, some of the most soluble components of the oil are lost to the water under the slick. These include some of the lower molecular weight aromatics and some of the polar compounds, broadly categorized as resins. As only a small amount actually enters the water column, usually much less than a fraction of a percent of the oil, dissolution does not measurably change the mass balance of the oil. The significance of dissolution is that the soluble aromatic compounds are particularly toxic to fish and other aquatic life. If a spill of oil containing a large amount of soluble aromatic components occurs in shallow water and creates a high localized concentration of compounds, then significant numbers of aquatic organisms can be killed. Gasoline, diesel fuel, and light crude oils are the most likely to cause aquatic toxicity. A highly weathered oil is unlikely to dissolve into the water. Dissolution occurs immediately after the spill occurs and the rate of dissolution decreases rapidly after the spill as soluble substances are quickly depleted. Many of the soluble compounds also evaporate rapidly.

Photooxidation can change the oil composition. It occurs when the sun's action on an oil slick causes oxygen and carbons to combine and form new products that may be resins. The resins may be somewhat soluble and dissolve into the water or they may cause water-in-oil emulsions to form. It is not well understood how photooxidation specifically affects oils, although certain oils are susceptible to the process, while others are not. For most oils, photooxidation is not an important process in terms of changing their fate or mass balance after a spill.

Sedimentation is the process by which oil is deposited on the bottom of the water body. While the process itself is not well understood, certain facts about it are. Most sedimentation noted in the past has occurred when oil droplets reached a higher density than water after interacting with mineral matter in the water column. This interaction sometimes occurs on the shoreline or very close to the shore. Once oil is on the bottom, it is usually covered by other sediment and degrades very slowly. In a few well-studied spills, a significant amount (about 10%) of the oil was sedimented on the sea floor. Such amounts can be harmful to biota that inevitably come in contact with the oil on the sea bottom.

Special feature (continued)

Oil is very adhesive, especially when it is moderately weathered, and binds to shoreline materials or other mineral material with which it comes in contact. A significant amount of oil can be left in the environment after a spill in the form of residual amounts adhering to shorelines and man-made structures such as piers and artificial shorelines. As this oil usually contains a high percentage of aromatics and asphaltenes with high molecular weight, it does not degrade significantly and can remain in the environment for decades.

Oil slicks and oil on shorelines sometimes interact with mineral fines suspended in the water column and the oil is thereby transferred to the water column. Particles of mineral with oil attached may be heavier than water and sink to the bottom as sediment or the oil may detach and refloat.

A large number of microorganisms are capable of degrading petroleum hydrocarbons. Many species of bacteria, fungi, and yeasts metabolize petroleum hydrocarbons as a food energy source. Bacteria and other degrading organisms are most abundant on land in areas where there have been petroleum seeps, although these microorganisms are found everywhere in the environment. As each species can utilize only a few related compounds at most, however, broad-spectrum degradation does not occur. Hydrocarbons metabolized by microorganisms are generally converted to an oxidized compound, which may be further degraded, may be soluble, or may accumulate in the remaining oil. The aquatic toxicity of the biodegradation products is sometimes greater than that of the parent compounds.

The rate of biodegradation is greatest on saturates, particularly those containing approximately 12 to 20 carbons (Haus et al., 2004). Aromatics and asphaltenes that have a high molecular weight, biodegrade very slowly, if at all. This explains the durability of roof shingles containing tar and roads made of asphalt, as both tar and asphalt consist primarily of aromatics and asphaltenes. Bitumen contain little material that is readily biodegradable.

Tar balls are agglomerations of thick oil less than about 10 cm in diameter. Larger accumulations of the same material ranging from about 10 cm to 1 m in diameter are called tar mats. Tar mats are pancake-shaped, rather than round. Their formation is still not completely understood, but it is known that they are formed from the residuals of heavy crudes. After these oils weather and slicks are broken up, the residuals remain in tar balls or tar mats. The reformation of droplets into tar balls and tar mats has also been observed, with the binding force being simply adhesion. The formation of tar balls is the ultimate fate of many oils. These tar balls are then deposited on shorelines.

References:

Fingas, M.F., *The Basics of Oil Spill Cleanup: Third Edition*, CRC Press, Boca Raton, FL, 256 p, 2012.

Haus, F., O. Boissel, and G.-A. Junter, "Primary and Ultimate Biodegradabilities of Mineral-based Oils and their Relationships with Oil Viscosity", *International Biodeterioration and Biodegradation*, Vol. 54, pp 189-192, 2004.

Science and Technology

ACE APP MITIGATES ENVIRONMENTAL RISK

A mobile and Web-based platform that connects and supports policyholders facing environmental emergencies

When addressing natural hazards such as oil or chemical spills, every second counts. A disaster response plan activated within 30 seconds to five minutes of an emergency can minimize the impact of environmental damage and save thousands of dollars.

ACE Group created the ACE Alert app to accelerate the process of environmental disaster response. The platform originated as a Web-based tool but was recently developed as a mobile app to accommodate customers in the field.

"We went down the path of a mobile app to quickly and efficiently report situations with hazardous materials," says Bob Winterburn, assistant VP of ACE Environmental Risk. "We insure risks such as pipelines. If one of our insureds has someone along the pipeline and sees there's a release occurring, they can use the app to report the spill."

Most situations that require ACE Alert are emergencies and occur during periods of transportation. The tool is designed to help customers identify contractors, assist with regulatory reporting requirements, and coordinate a response plan. When a policyholder connects with ACE through ACE Alert, the insurer can identify nearby resources that will help address the problem. [Read more](#)

ONE OF THE LARGEST SKIMMING VESSELS TESTED AT OHMSET

In August, Ecoceane of France brought their 40-foot Workglop 128 skimming vessel to Ohmsett to test its recovery rate and corresponding recovery efficiencies. The response vessel took a long and complicated journey from France to the Ohmsett facility. It arrived in the New York Harbor on August 14 and traveled to the Atlantic Highlands Harbor in New Jersey where it moored for the night. The next day, the journey continued to Naval Weapons Station Earle Waterfront pier where a crane was waiting to lift it out of the water and onto a flatbed truck. It was then brought to the Ohmsett facility where it was positioned in the basin for testing which began on August 18.

"We have worked for seven years on the research and development using advanced software simulations and prototypes to achieve the technology represented by the Workglop 128," stated Benjamin Lerondeau, technical manager for Ecoceane.



“The main goal of testing at Ohmsett was to prove our technological leadership in the development of an oil spill recovery vessel.”

With integrated boom arms and skimmer, the Workglop 128 acts as a vacuum cleaner as it approaches the oil slick on the water’s surface. The slick is guided by the boom arms into the front of the vessel where it is fed into an internal separation chamber. These separated fluid is then discharged through the offload pump at the back of the vessel.

“The main benefits of this system is that it can collect oil in wave conditions, creates less emulsion when collecting fluid, and the boat can move through the oil spill and follow its movement,” explained Lerondeau.

With the vessel rigged between the main and auxiliary bridges, it was tested at speeds ranging from 1 to 3 knots in calm and wave conditions, while encountering two different test oils (medium and heavy viscosity).

As the vessel encountered an oil slick created on the water’s surface, its sweeping arms directed the oil through the bow opening and into the internal separation chamber. A speed-controlled turbine, located at the rear of the separation chamber, provided an induction flow through the hull, enabling the skimmer to collect surface oil located within the sweeping arms while stationary. The surface layer of fluid entered a chamber where separation took place and free water was released.

“These tests also allowed us to confirm our efficiency to countries that want to use proved efficient solutions to ensure protection and safety of aquatic environments,” commented Lerondeau. “We now want to work on two main concepts; design the Ecoceane technology to be fitted on bigger vessels (longer than 25 m) that are not dedicated to oil spills, and work on R&D to develop a new system to recover oil in icy water” *OHMSETT Gazette* [Read more](#)

Events

INDIA: OSRL/ITOPF MUMBAI SEMINAR, THURSDAY 29 JANUARY 2015

Received from ITOFF - We are pleased to invite you to a forum to consider the latest significant changes to India's draft National Oil Spill Disaster Contingency Plan (NOSDCP) co-hosted by Oil Spill Response Limited & The International Tanker Owners Pollution Federation Limited (ITOPF).

This seminar builds on the successful seminars in New Delhi and Mumbai in November 2013 and March 2014 on the theme of Government and Industry collaboration which is central to a successful future response based on the new NOSDCP. In terms of technical topics we will have a particular emphasis on Global Good Practice in effective integration of Tier I/II/III response resources and tackling HNS spills (Hazardous and Noxious Substances - ie chemicals) given its inclusion in the new draft NOSDCP. For both oil and HNS, having a response capability that can be mobilised on the timescales required is an essential feature of a successful plan.

Joining up "at-sea" and "shoreline" response is a critical element of a tiered response, hence, we would particularly welcome the additional participation of members of Coastal Administrations at this seminar including a key note speech on the perspective of Local Government on the new draft NOSDCP.

Distinguished speakers have been invited to present from a variety of perspectives from both Government and Industry including Deputy Inspector General AA Hebbar, TM Director (Environment), Indian Coast Guard who will lead the discussion relating to the latest draft of India's NOSDCP

To register your interest, please complete the attached [booking form](#) and return it to [Yvette Lim](#), OSRL.

Publications

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) CODE, 2014 EDITION

The printed version of the International Maritime Dangerous Goods (IMDG) Code, 2014 Edition (incorporating Amendment 37-14) 2 volumes will be published and available for sale in mid December 2014, whilst the e-reader file version is now available to purchase. The English edition will be followed by the French and Spanish versions early 2015. The price of this updated title will be GBP125.

Please note that the IMDG Code, 2014 Edition will come into force on 1 January 2016 for 2 years and may be applied voluntarily as from 1 January 2015 *IMO Publishing* [Read more](#)

Links for recent issues of other publications

ASME EED EHS Newsletter	News and commentary on HSE issues from George Holliday	Most recent issue
Bow Wave	Sam Ignarski's Ezine on Marine & Transport Matters	Current issue
Cedre Newsletter	News from Cedre in Brittany, France	October 2014
The Essential Hazmat News	Alliance of Hazardous Materials Professionals	November 10 issue
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	November 1 issue
USA EPA Tech News & Trends	Contaminated site clean-up information	Fall 2014 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	October 1-15 2014
Intertanko Weekly News	International news for the oil tanker community	No 48 2014
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	October 2014 issue
IMO Publishing News	New and forthcoming IMO publications	November 2014
IMO News Magazine	News from the International Maritime Organization	No 2, 2014
Pollution Online Newsletter	News for prevention & control professionals	November 26 issue
EMSA Newsletter	News from the European Maritime Safety Agency	November 2014 issue
JOIFF "The Catalyst"	Int'l Organisation for Industrial Hazard Management	October 2014 issue
Environmental Technology Online	Environmental Monitoring, Testing & Analysis	November 2014 issue
OCIMF Newsletter	News from the Oil Companies International Marine Forum	October 2014 issue
IPIECA eNews	Int'l Petroleum Industry Environmental Conservation Assoc'n	November 2014 issue
WMU Newsletter	From the World Maritime University in Malmo, Sweden	May 2014 issue
AMSA Aboard	News from the Australian Maritime Safety Authority	May 2014 issue
Sea Alarm Foundation Newsletter	News from the Sea Alarm Wildlife Protection Organisation	Summer 2014 issue
Regenesis Remediation News	Case studies, articles and upcoming events in Europe	Summer 2014 issue

Training

TRAINING CALENDAR FROM ISCO CORPORATE MEMBER, BRIGGS MARINE ENVIRONMENTAL SERVICES - Training Calendar for the first half of 2015.

JANUARY 2015			<p>We do need a minimum of 7 delegates for the courses to run, so these dates may change depending on the circumstances. However, we will do our very best to help accommodate your needs.</p> <p>These courses can be run on Client Premises or at our Training Facility here in Aberdeen.</p> <p>With regards to DECC Level courses, there has been no dates set aside as these run only as Client Assigned.</p> <p>Please contact us if you wish to discuss booking any other courses that are not mentioned in the calendar.</p> <p>Please do not hesitate to contact us, should you have any questions</p>
5-9	Courses available upon request		
13-16	Open MCA 4 Oil Spill Response Manager Course	3 ½ Days	
21	Open MCA 4/5 Refresher Course	1 Day	
FEBRUARY 2015			
3-4	Open MCA 2 First Response – Sorbents & Equipment	1 ½ Days	
9–13	Courses available upon request		
23–27	Courses available upon request		
MARCH 2015			
3–6	Open MCA 4 Oil Spill Response Manager Course	3 ½ Days	
9–13	Courses available upon request		
17–19	Open MCA 3 Oil Spill Supervisor Course	3 Days	
APRIL 2015			
30 Mar-3 Apr	Courses available upon request		
8	Open MCA 4/5 Refresher Course	1 Day	
13–17	Courses available upon request		
21–24	Open MCA 4 Oil Spill Response Manager Course	3 ½ Days	
MAY 2015			
6	Open MCA Level 1 – Sorbents Course	1 Day	
11-22	Courses available upon request		
JUNE 2015			
1–5	Courses available upon request		
9–12	MCA 4 Oil Spill Response Manager	3 ½ Days	
15–19	Courses available upon request		
24	Open MCA 4/5 Refresher Course	1 Day	

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DATES FOR 2015 OILED WILDLIFE RESPONSE PLANNING COURSE DATES ANNOUNCED

Received from ISCO Industry Partner, The Sea Alarm Foundation – Oil Spill Response (OSRL) is offering its Oiled Wildlife Response Planning course, developed in collaboration with Sea Alarm and other international oiled wildlife professionals, twice in 2015. The course will be given in Singapore in February and again in November in Belgium.

Training (continued)

This course covers many aspects of developing an oiled wildlife response plan, helping participants to understand how oil affects wildlife, what equipment and facilities will be needed to mount a response, and introducing some of the challenges such a response entails. The course is geared to industry response teams, personnel involved in natural resource management, and emergency planners.

There will be a tabletop exercise for attendees to try their hand at developing a response plan and each course includes an excursion. Singapore participants will visit the Sungei Buloh Wetland Reserve, an ASEAN Heritage Park and designated site of international importance for migratory birds. In Belgium, the course is being held in Ostend, the home of the Wildlife Rescue Centre Ostend (WRC Ostend). A trip to the facility will introduce attendees to a state of the art wildlife hospital designed to quickly convert to a specialist oiled wildlife care facility.

Course dates are: Singapore 10-12 February 2015 Ostend, Belgium 17-18 November 2015 For more information or to book, please visit the [OSRL training website](http://www.osrl.org). More info about Sea Alarm: <http://www.sea-alarm.org/>

Safety briefing

USA: WORKERS CLEANING CHEMICAL SPILL AT WI PLASTICS PLANT LACKED TRAINING, PERSONAL PROTECTIVE EQUIPMENT

Workers cleaning a chemical spill at Penda Corp. in Portage had not been trained in proper cleanup procedures or provided proper personal protective equipment, according to an investigation by the U.S. Department of Labor's Occupational Safety and Health Administration. OSHA found that workers experienced symptoms of overexposure to an isocyanates chemical used in plastics manufacturing that can cause occupational asthma and other lung problems, as well as irritation of the eyes, nose, throat and skin. Seven serious violations, carrying proposed penalties of \$49,000, were cited.

OSHA initiated the inspection on Sept. 5, 2014, under the National Emphasis Program for Occupational Exposure to Isocyanates, after it received a complaint that alleged improper cleanup of a spill of approximately 100 gallons of the chemical diphenylmethane diisocyanate, a type of isocyanate.

"An employer, who works with hazardous chemicals, has a responsibility to train workers in proper chemical handling and how to respond to spills and other emergencies," said Kim Stille, OSHA's area director in Madison. "Common safety precautions, including protective clothing and respirators, prevent injuries and illnesses and must be part of the daily routine of workers in such manufacturing environments." *WorkersCompensation.com* [Read more](#)

Company news

ISCO MEMBER PROFILES TO BE AVAILABLE ON THE ISCO WEBSITE

As part of a continuing programme of support for its members, ISCO will soon be publishing Member Profiles on its website.

In the first phase, profiles of Corporate Members will be uploaded. This will be followed by provision of the profiles of other classes of members – Professional Members, Industry Partners and Individual Members. More information on this initiative will be given in coming issues of this Newsletter.

ISCO CORPORATE MEMBER, KOSEQ TO PRESENT ON NEW SKIMMER SYSTEM AT CLEAN GULF

Koseq welcomes you in booth 562 at the Henry B Gonzalez Convention Centre in San Antonio, Texas.



Koseq invites you to be informed about the Compact 502, our new innovation in combating oil pollution. The Compact 502 is a containerized all-in-one oil recovery solution and was recently introduced in the Netherlands for a first demonstration in cooperation with the Dutch Coast Guard *Rijkswaterstaat* on 14 October 2014 with over 40 national and international highly interested guests.

The Scoop Compact 502 Trailer was filmed for you during the Compact 502 demo day. You can be the first to see the trailer at the Clean Gulf '14 Exhibition. Tom Achterberg, head of Koseq engineering will inform you about the workings, possibilities and advantages of the patented Compact 502. <http://www.koseq.com/>

ISCO CORPORATE MEMBER, AQUA-GUARD TO HOST JANUARY DEMO IN VANCOUVER

Aqua-Guard will be hosting another Demo week for our Large URO 300 Off-Shore Oil Skimming System in January. We would like to invite you to visit Vancouver to see one of our large machines in action. These skimming systems are specifically designed for use onboard Offshore Support Vessels and are equipped with Aqua-Guard's patented RBS TRITON™ oil skimming technology.

The Demo will be held in Vancouver from January 19, 2015 – January 23, 2015. Facility tours may also be provided by request.

Please RSVP to demos@aquaguard.com or call Steven Mo at our office +1-604-980-4899 (ext. 2006) The following link contains demo equipment information, http://aquaguard.com/content/pdfs/URO_300_Demo_2015.pdf

SCATMAN ANNOUNCES CO-OPERATION WITH ISCO CORPORATE MEMBER, LAMOR CORPORATION – AND WILL BE AT CLEAN GULF

SCATMAN Ltd. and Lamor Corporation have signed a cooperation agreement for the development of an exclusive mobile application to support the service actions of Lamor's oil spill response equipment. Moreover, as a part of the agreement Lamor will promote and sell SCATMAN's electronic tools for oil spill preparedness and response worldwide.

"We are very glad to announce this agreement with Lamor," says Kenneth Kumenius, Development Director and Co-Founder of SCATMAN Ltd. "The cooperation will strengthen considerably SCATMAN's presence on oil spill response markets through Lamor's worldwide sales network and operations. From Lamor's perspective we are sure that the coming mobile application for Lamor's equipment service will improve their customer service and satisfaction further." For more information on the cooperation see news release at [Lamor web pages](#)

SCATMAN will co-exhibit at CLEAN GULF 2014 with Lamor Corporation (booth #141) and Oceaneering Inc. (booth #533). Come and see our latest tools for mobile SCAT and response equipment management. Kenneth Kumenius from SCATMAN Team is in San Antonio from Sunday 30th of November to Friday 5th of December. To set-up a meeting with Kenneth contact him directly by email kenneth@scatman.fi or by phone: (+358 40 579 9996).

DAMEN TO BUILD FIVE BRAZIL-BOUND OIL SPILL RESPONSE VESSELS



Damen Shipyards says it has inked a contract with Monaco-based Compagnie Maritime Monégasque SAM for the construction of five Fast Oil Spill Response Vessels for work offshore Brazil.

The newbuild OSRV's will featuring Damen's proprietary Sea Axe bow design, which is advertised to combine high-speed and fuel-efficient operations, with enhanced seakeeping characteristics especially in heavy seas.

CMM has already secured contracts with Petrobras for the charter of the newbuilds offshore Brazil. Three vessels are expected to begin operating by end December 2015 and two by end of June 2016. The four-year firm contract with Petrobras has a value of \$130 million and includes options for four additional years.

All five of the vessels are being built by Damen, and will feature state-of-the-art guidance and propulsion systems with built-in redundancies. [gCaptain](#) [Read more](#)

End Note

A murderer is condemned to death. He has to choose between three rooms. The first is full of raging fires. The second is full of assassins with loaded guns. The third is full of lions that haven't eaten in 3 years. Which room is safest for him?

The third room.
Lions that haven't
eaten for three
years are dead

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