



# ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

Issue 367, 14 January 2013

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## International news

### OSRL AND CCA TEAM UP TO PROVIDE OIL SPILL PREPAREDNESS AND RESPONSE

January 10 - With effect from 3 January 2013 Oil Spill Response Limited (OSRL) and Clean Caribbean & Americas (CCA) have joined together as a single organisation to meet the expanding needs for oil spill preparedness and response around the world.

OSRL will acquire CCA's assets and personnel, with CCA's Fort Lauderdale base in Florida becoming a regional response base supporting OSRL's global response capability. Members of CCA will become Members of OSRL and thus receive membership services from OSRL going forward.

This transaction, coupled with the establishment later this year of OSRL's new base in Brazil to deliver its new subsea well intervention service, sets up a third OSRL region, the Americas. OSRL's regional headquarters will remain in Houston, Texas.

OSRL and CCA have worked together for almost 20 years on matters relating to training, response logistics, contingency planning and exercises, and also under the auspices of the Global Response Network.

*OSRL Chief Executive Mr Archie Smith said, "OSRL and CCA have worked together for many years and this transaction marks the next step in providing the world class preparedness and response capabilities our Members require today."*

*Mr Paul Schuler CCA President added, "CCA's relationships and experience in the Caribbean and Latin America region combined with OSRL's resources and personnel depth will increase the diversity of services and capability to the region." Subsea World News [Read more](#)*

### NEW TASKS FOR EMSA IN THE MEDITERRANEAN

January 9 - EMSA has officially become the implementing body of the Commission's technical assistance project for the Mediterranean Sea in the area of maritime safety, security and pollution prevention. The beneficiary countries of the SAFEMED 3 project are: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestinian Authority, Syria and Tunisia. This project will run between mid-2013 and mid-2016.

The SAFEMED 3 project which builds on the results of the previous two projects, has the overall objective of improving the protection of the Mediterranean Sea

## International news (continued)

marine environment against the risk of accidents at sea and marine pollution.

It will do this by supporting the ratification and implementation of international maritime safety and security conventions, as well as by improving the relevant capacities and level of quality of maritime administrations in the Mediterranean partner countries. *EMSA Newsletter* [Read more](#)

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## FRIEDLAND CALLS FOR BETTER SPILL NOTIFICATION SYSTEM BETWEEN U.S., CANADA

January 7 - If a spill of toxic chemicals occurred on the Canadian side of the St. Clair River, would the U.S. be notified in a timely fashion?

Would Canadian authorities be quickly notified if the spill occurred on the U.S. side of the river?

In most cases, the answer is – “maybe, and slowly. There are too many components to the notification process, too many conflicting definitions of what constitutes a spill, as well as varying public and private systems on both sides of river. We need one system that everyone can comply with,” Friedland said.



*The Voice* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

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## EUROPEAN COMMISSION OPENS CONSULTATION ON HYDRAULIC FRACTURING IN EUROPEAN UNION

January 2 - The European Commission opened a [public consultation](#) Dec. 20 on the use in the European Union of hydraulic fracturing for unconventional fossil fuel deposits, such as shale gas.

The Commission said the consultation was aimed at individuals, organizations such as companies and non-profit groups, and public authorities. It was part of a “broader process designed to involve civil society” that would assess the appropriateness of EU legislation to manage the environmental and health risks of fracking. The consultation is open through March 23. *Bloomberg* [Read more](#)

## Incident reports

### USA: CONTINUING THE SAGA OF THE KULLUK OIL RIG GROUNDING IN THE GULF OF ALASKA

#### Officials close to towing grounded drilling rig

January 5 - Salvagers are preparing to try pulling Shell’s grounded Arctic drilling rig from a rocky Alaskan island’s coast as soon as critical equipment arrives on the scene and weather permits. *Fuel Fix* [Read more](#)

#### Kulluk towing plans and video

January 5 - Salvage teams are currently aboard the vessel and preparing for the recovery operations. The current plan calls for the KuGrounded Kulluk Ready for Towlruk to be towed to Kiliuda Bay for safe harbor – a tow of approximately 30 miles. *gCaptain* [Read more](#)

#### Grounded Kulluk Ready for Tow

January 6 - An update Sunday night from the Kulluk incident Unified Command said that salvage teams successfully attached the main tow line to the Kulluk drilling unit today at approximately 4 p.m. Alaska Time and all elements are in place for towing operations to proceed. *gCaptain* [Read more](#)

#### Drilling barge pulled from rocks off Alaska island

January 7 - The [Royal Dutch Shell PLC](#) vessel was lifted off rocks late Sunday and towed away from the southeast side of Sitkalidak Island, where it sat exposed to the full-on fury of Gulf of Alaska winter storms. *Seattlepi.com* [Read more](#)

#### Kulluk Drops Anchor in Kiliuda Bay – Photos and Video

January 7 - The Kulluk incident’s Unified Command on Monday confirmed that the Kulluk has arrived in its final safe harbor location in Kiliuda Bay where it will undergo assessment.

At approximately 12:15 p.m. Alaska Time the Kulluk’s anchor was lowered to the bottom of the Bay, the Unified Command said in a statement. The statement also confirmed that the support vessels Alert, Lauren Foss and Corbin Foss remain connected to the

## Incident reports (continued)

Kulluk, while the Aiviq has disconnected but is standing by. Other support vessels, including the Warrior, Ocean Wave, Perseverance, Nanuq and Alex Haley are also standing by. *gCaptain* [Read more](#)



*Kulluk's entourage in Kiliuda Bay, led of course by Aiviq. Image: Kulluk Response*

### Kulluk Tow Incident Website

This website has been established to provide information about the Dec. 28, 2012, Kulluk Tow Incident. [Access the website](#)

### Interior Dept. Expedites Review of Arctic Drilling After Accidents

January 9 - The [Interior Department](#) on Tuesday opened [an urgent review](#) of Arctic [offshore drilling](#) operations after a series of blunders and accidents involving Shell Oil's drill ships and support equipment, culminating in the [grounding of one of its drilling vessels](#) last week off the coast of Alaska. *New York Times* [Read more](#)

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## BANGLADESH: OIL SPILL IN KARNAPHULI

*This oil tanker, MT Nasihat, spilled some 500 litres of diesel and kerosene into the Karnaphuli river early yesterday after an impact with a jetty of Chittagong Boat Club near the estuary left a hole in the tanker. Photo: STARStaff Correspondent, Ctg*

December 31 - At least 500 litres of oil spilled into Karnaphuli river after an oil tanker collided with a jetty near the estuary yesterday. *The Daily Star* [Read more](#)  
[Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]



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## USA: ACETIC ACID SPILL IN WEST CHARLOTTE



December 25 - It could be several days before local and federal officials can finish cleaning up a chemical spill in West Charlotte and figure out what caused it.

A private industrial cleanup company, Carolina Environmental Response Team, joined the fire department's hazardous-materials team on site. *Wsoctv.com* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

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## KUWAIT: OIL SPILL THREATENS DESALINATION PLANTS

January 11 - A local environmental group issued a warning yesterday about discovery of an oil spill recently along the country's southern shores which was moving towards water desalination plants and could raise serious concerns about the state's water security strategies. *Kuwait Times* [Read more](#)

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## PHILIPPINES: ROLLING CARGO VESSEL CAPSIZES AT LEYTE PORT; OIL SPILL CONTAINED

December 30 - A rolling cargo vessel on Saturday caused an oil spill after it capsized at Leyte port while unloading some containers it was carrying, the National Disaster Risk Reduction and Management Council said Sunday. In its report, the NDRRMC said the incident began at 7:30 a.m. at Ormoc City Port, involving the vessel MV Ocean Legacy. *GMA News* [Read more](#)

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## CHINA: CHEMICAL LEAK CONTAMINATES RIVER IN CHINA

January 6 - Nearly nine tonnes of a chemical leakage from a plant in China's Shanxi province has ended up in the Zhuozhang river, affecting a downstream city in neighbouring Hebei province, authorities said Sunday. The toxic chemical called aniline is widely used to manufacture pigments, pharmaceuticals and other chemicals, and can cause serious damage to internal human organs such as the kidneys and liver, China Daily reported. *Beijing News Net* [Read more](#)

## Incident reports (continued)

### AUSTRALIA: SYDNEY - TOXIC WATER LEAKS INTO UNDERGROUND

January 6 - Toxic chemicals that escaped from a massive tyre fire on New Year's Day have leaked into an underground water system in south-west Sydney, posing a potentially serious environmental threat. The run-off, which contains poisonous and carcinogenic substances from the burning rubber tyres, seeped into stormwater drains. *Sydney Morning Herald* [Read more](#)

### USA: OIL TANKER STRIKES S.F. BAY BRIDGE TOWER BUT NO OIL SPILLAGE

January 7 - The 752-foot Marshall Island's-registered tanker Overseas Reymar reported to the Coast Guard at approximately 11:20 a.m. that it had allided with tower six of the Bay Bridge in the San Francisco Bay. The vessel was immediately directed to an anchorage area just west of Alcatraz Island by the Coast Guard Captain of the Port. The vessel was in ballast at the time of the incident.

There were no reports of injuries and no reports of pollution. As a precautionary measure, the Coast Guard Captain of the Port of San Francisco ordered pollution-control boom to be staged. *The Maritime Executive* [Read more](#)

## Other news

### HONG KONG, CHINA: INTERNATIONAL PROTOCOL ON MARINE POLLUTION INCIDENTS BY HAZARDOUS AND NOXIOUS SUBSTANCES BECOMES APPLICABLE TO HKSAR

January 10 - The Protocol on Preparedness, Response and Co-Operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) has been extended to cover the Hong Kong Special Administrative Region (HKSAR).

A Government spokesman said today (January 10) that the HKSAR is joining the global endeavour against pollution incidents by hazardous and noxious substances at sea to further fulfill our responsibility to protect the marine environment. "We were glad to receive confirmation from the International Maritime Organization last month through the Central Government that the extension took effect on December 6, 2012", he said. *HKSAR Government* [Read more](#)

### UK: AFTER 20 YEARS, SCOTLAND 'STILL RISKS ANOTHER BRAER DISASTER'

January 5 - Environmentalists will today mark the 20th anniversary of Scotland's worst-ever oil spill with a warning that another marine disaster is "never far away" due to the combined risk of safety cutbacks and record levels of North Sea drilling.

Some 85,000 tonnes of crude oil leaked into the sea when the Liberian-registered tanker MV Braer ran aground off Shetland on 5 January, 1993.

Specialist emergency towing vessels were introduced the following year to help prevent similar disasters on the advice of Lord Donaldson, who led an inquiry into the incident. But two decades on, only one of the two tugs stationed in Scottish waters remains in service after UK ministers cut funding for the service, which is a reserved matter. *Scotsman Newspaper* [Read more](#)

### USA: REPORT FAULTS EXXON'S RESPONSE TO SPILL

January 2 - Delays in Exxon Mobil Corp.'s response to a major pipeline break beneath Montana's Yellowstone River made an oil spill far worse than it otherwise would have been, federal regulators said in a new report.

The July 2011 rupture fouled 70 miles of riverbank along the scenic Yellowstone, killing fish and wildlife and prompting a massive, months-long cleanup.

The damage could have been significantly reduced if pipeline controllers had acted more quickly, according to [Department of Transportation](#) investigators. *S F Gate* [Read more](#)

### NORWAY TO VOTE ON OPENING TWO FRONTIER ARCTIC AREAS TO OIL: MINISTER

January 9 - Norway's Parliament is expected to vote this year on opening two major frontier Arctic areas to oil and gas exploration, the country's energy minister said on Wednesday.

The world's eighth-largest oil exporter is opening large swathes of its northern offshore areas to oil exploration in order to mitigate falling production in the North Sea. *Scientific American* [Read more](#)



## Other news (continued)

### USA: TRANSOCEAN TO PAY RECORD \$1 BILLION IN CIVIL PENALTIES AND \$400 MILLION IN CRIMINAL FINES

January 3 - Transocean Deepwater Inc. has agreed to plead guilty to violating the Clean Water Act (CWA) and to pay a total of \$1.4 billion in civil and criminal fines and penalties, for its conduct in relation to the *Deepwater Horizon* disaster, the Department of Justice announced today. The criminal information, and a proposed partial civil consent decree to resolve the U.S. government's civil penalty claims against Transocean Deepwater Inc. and related entities were filed today in U.S. District Court in the Eastern District of Louisiana.

Transocean Deepwater Inc. has signed a cooperation and guilty plea agreement with the government, also filed today, admitting its criminal conduct. As part of the plea agreement, Transocean Deepwater Inc. has agreed, subject to the court's approval, to pay \$400 million in criminal fines and penalties and to continue its on-going cooperation in the government's criminal investigation.

In addition, pursuant to the terms of a proposed partial civil consent decree also lodged with the court today, Transocean Ocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc. and Triton Asset Leasing GMBH have agreed to pay an additional \$1 billion to resolve federal Clean Water Act civil penalty claims for the massive, three-month-long oil spill at the Macondo Well and the Transocean drilling rig *Deepwater Horizon*. Under the civil settlement, the Transocean defendants also must implement court-enforceable measures to improve the operational safety and emergency response capabilities at all their drilling rigs working in waters of the United States. *The Maritime Executive* [Read more](#)

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### USA: FLOODS BLAMED FOR 2.4M GALLONS OF SPILLED CRUDE, FEDS SAY

January 3 - Pipeline spills caused by flooding and riverbed erosion dumped 2.4 million gallons of crude oil and other hazardous liquids into U.S. waterways over the past two decades, according to a new report from federal regulators.

The Department of Transportation report to Congress was crafted in response to a 2011 spill into Montana's Yellowstone River. The spill highlighted gaps in federal pipeline rules that require lines to be buried just 4 feet below riverbeds — scant cover that can quickly be scoured away by floodwaters. *Fuel Fix* [Read more](#)

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### OMAN: OIL SPILL POLLUTION, LIMITED FRESH WATER SUPPLY ISSUES FOR CONCERN IN OMAN

January 9 - Oman has some major environmental issues to deal with including the rise of soil salinity, pollution due to oil spills and availability of limited natural freshwater resources.

This was revealed during a presentation hosted by PDO's Ecology Oman Centre (EcOman Centre) on Tuesday to mark Oman Environment Day. An exhibition that will run till January 30 was also inaugurated. *Muscat Daily* [Read more](#)

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### JAPAN: "U.S. NUKE CRISIS TEAM'S FUKUSHIMA FINDINGS WASTED"

January 1 - The United States sent a special nuclear response team to Japan right after the Fukushima meltdown disaster started in March 2011, but Japan was slow to make use of radiation data from the unit, according to U.S. and Japanese government sources.

*This dispatch of the Consequence Management Response Team* was the first approved for an emergency outside the United States. The CMRT, affiliated with the National Nuclear Security Administration, a semiautonomous agency of the Energy Department, is tasked with dealing with nuclear accidents and terrorism in the U.S. by detecting and analyzing radiation contamination.

The Japanese government, however, did not acknowledge the significance of the team's mission and failed to immediately utilize the initial data it provided for evacuating residents living around Fukushima No. 1. *The Japan Times* [Read more](#)

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## People in the news

### USA: EXXONMOBIL RESEARCHER TIM NEDWED RECOGNIZED FOR OIL SPILL RESPONSE TECHNOLOGY DEVELOPMENT

Exxon Mobil Corporation (NYSE:XOM) announced today that Timothy J. Nedwed, Ph.D., has received the prestigious Edith and Peter O'Donnell Award for Technology Innovation for his work in the development of offshore oil spill response technologies.

Dr. Nedwed leads the oil spill response research program for ExxonMobil Upstream Research Company in Houston. His innovative research has been instrumental in furthering industry's capabilities for responding to potential offshore oil spills. *Exxon Mobil* [Read more](#)

## People in the news (continued)

### UK: SULLOM VOE TERMINAL EMERGENCY RESPONSE TEAM LEADERS AWARDED JOIFF DIPLOMAS

SVT Emergency Response Team Leaders James Johnson, David McDonald, John Nisbet and Steve Owers have been awarded the JOIFF Diploma and now join the exclusive ranks of those who can use the letters Dip.JOIFF after their names. *The Catalyst* [Read more](#)

## ISCO news

### REAR ADMIRAL M. L. STACEY, CB.

Your Secretary has just received updated news of our esteemed Executive Committee Member from his sons, Hugo and Mark. "Just to let you all know that after 5 months in hospital Michael finally escaped and is now staying at the Pax Hill Nursing Home, Bentley, Farnham GU10 5NG.

Michael is in good spirits and adjusting to his new environment. He has a room on the third floor with excellent views and all mod cons. His wife Penelope is in the next door building and there is a regular shuttle between the two for visiting which is great".

### AWARDS OF PROFESSIONAL RECOGNITION AND ANNOUNCEMENT OF NEW MEMBERS

In case you missed this in last week's Newsletter, the announcement has now been posted on the "ISCO What's New" page on the website at <http://www.spillcontrol.org>

### ISCO AT THE OIL SPILL RESPONSE WORKSHOP IN BEIJING, CHINA.

Your Editor is indebted to Mr Robin Kuang of Sunic-Ocean Marine Technology & Service Co. Ltd. who has prepared this report.

ISCO Member of Council for China, Mr Li Guobin is the General Manager of Sunic-Ocean and strongly believes in ISCO's aims and objectives. He is continuing to give his dedicated support to developing ISCO in China. As a sponsor of the Oil Spill Response Workshop that took place last month, he provided ISCO with exhibition space and ensured that the organisation was properly introduced to delegates attending the event.

### Report on the 2nd Oil Spill Response Workshop (OSRW 2012)



Picture: Opening remarks from Chairman Dr. Michael O' Brien Technical Team Manager ITOPF

The 12 December, 2012 Oil Spill Response Workshop was held at the Marco Polo Parkside Hotel, Beijing. Nearly two hundred domestic and foreign experts, scholars and officials from China State Oceanic Administration, China MSA, CNPC, CNOOC, Sinopec, Chevron, Extreme Spill Technology (Canada), Oil Spill Response Ltd. (Singapore), COES Limited, Safety & Environment Emergency Technology Research Institute of CNPC, Sunic-Ocean Marine Technical & Service Co., Ltd, Shanghai Dong'an Water Pollution Prevention Center Co., Ltd, Vikoma International Ltd, and many other attended the event.

The seminar brought together government departments, industry research institutions, technological solutions and equipment providers, and oil spill response organizations (ORSOs) to have an in-depth discussion on finding a better solution to the common issues faced by all the oil spill relevant parties. The conference covered the latest oil spill technology, emergency management methods, solutions and typical cases. Interspersed with panel discussions, quizzes and other interactive activities. Participants had opportunities to debate with speakers and panelists in discussing the root causes of oil spills and addressing subjects ranging from emergency response technologies and management to a complete comprehensive solution for the clean-up of spills. Along with the meeting a technology exhibition held outside the conference hall showcased the latest technologies and equipment for oil spill monitoring, detection, and recovery.



As one of the sponsors of the workshop Sunic-Ocean set up a booth which displayed Sunic's technologies from oil spill surveillance detection to spill recovery as well as the introduction information of ISCO just at the entrance of exhibition area. During the coffee breaks and other free times of the workshop ISCO Deputy Representative Mr. Robin Kuang actively introduced the detailed information to every participant who was interested in ISCO while his colleagues vice general manager Mr. Xupeng, manager of the System Integration Department, Mr. Liurun and sales engineer Mr. Wangjun presented Sunic's information materials and explained Sunic's oil spill response solutions to participants.

Picture: Mr. Zhang Guangming, left and Robin Kuang posed beside ISCO banner

Mr. Zhang Guangming, President of Eastern China Branch of Quan Jinchang Academy of Sciences had brought his patented amphibian marshland vehicle to the meeting with a view to identifying oil spill emergency applications for the new development. After our explanation about the business of Sunic-Ocean and introduction to ISCO he decided to join ISCO as an Industry Partner.



Picture: Sunic's team together with some of main speakers of the workshop

We think the meeting was fruitful for both Sunic and ISCO. Not only did we present our new oil spill response thinking but also introduced ISCO to the workshop participants. We learned a lot from the workshop discussions and other exhibitors, and benefited from developing new relationships with Mr. Zhang Guangming, and many other delegates. *Robin Kuang*

## CORRESPONDENCE

### June 2013 International Oil spill Conference in Accra, Ghana.

Happy New Year to all the Members of ISCO.

This is to remind you of our Conference which is fast approaching in Accra, Ghana and to invite members to attend this important oil industry event. The theme of the Conference is OIL SPILL PREVENTION, CLEAN UP AND COMPENSATION IN THE NIGER DELTA. The Nigerian Oil industry has witnessed an unprecedented level of oil spill incidents - officially over 600 spill incidents annually. Nigeria needs the aid of International community to find a solution to the myriads of spill problems with its concomitant degradation in the Niger Delta. This is the goal of the Conference which will attract international oil workers and industry stakeholders. We have already 5 confirmed eminent speakers who will speak at the Conference.

Please visit our website at [www.oilspillconferenceng.com](http://www.oilspillconferenceng.com) for details. Thanks from Sylvester Egwu [segwu2002@yahoo.com](mailto:segwu2002@yahoo.com)





In this issue of the ISCO Newsletter we are printing No. 109 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](http://www.ispaa.org)

**CHAPTER 109: KNOWLEDGE OF THE SEA EMPRESS INCIDENT**

Having allocated incident-specific values to the fate-controlling parameters of oils released at sea in articles 103 and 104, I now consider the results which could have been expected from the application of dispersants and the deployment of mechanical recovery equipment. Forties crude, with its viscosity in the Group II range and with its allocation to Group III being in respect of its density and asphaltene content, could have been seen to be amenable to dispersant treatment and to be in need of such given the proximity of its release to adjacent shores. However, the environmentalist belief-based reluctance to apply such treatment is shown by the following information provided by MPCU contractors NETCEN to an Institute of Petroleum seminar.

Date (February)	Time (hours)	Oil Release (tonnes)	Dispersant used (tonnes)
15	20.00-22.00	2,000	2
16			2
17	20.00-23.00	5,000	4 (+2 demulsifier)
18	21.00-24.00	5,000	31 (+6 demulsifier)
19	10.00-13.00	8,000	42
19	22.00-01.00	20,000	
20	10.00-13.00	15,000	123
21	00.00-02.00	10,000	180
21	11.00-14.00	7,000	
22			65
<b>Totals</b>		<b>72,000</b>	<b>445 (+8 demulsifier)</b>

This table gives more information on oil releases than did the first official report (article 107). However, there are significant differences. Thus, while the Master estimated the initial release at 2,000 tonnes, the above Table gives it as 5,000. However, while the first report refers releases to the times of high and low water, this second report refers releases to time intervals into which fall the less frequently quoted tidal times of the first report, while an MPCU report of December 1996 makes internally compensating changes in releases identified by precise times to result in the same total of 72,000 tonnes released, though with 446 rather 445 tonnes of dispersant used and with no tally of demulsifier use and with a footnote indicating the Master's estimate of the initial release to have been 5,000 tonnes later raised by the SEEEC to 6,000 tonnes in December 1996. None of the above differences are of significance other than to suggest that more care should be expended on response planning and execution than in discussing how response reports are to be written after reality has revealed the lack of planning, of which more anon.

In the meantime, we may note that with an official estimate of ~ 5000 tonnes having been released on the evening of the 15<sup>th</sup>, only a tentative trial spraying of 2 tonnes of dispersant was authorised and repeated on the 16<sup>th</sup> and despite there being no need for a trial given the known viscosity of the oil, it was the 18<sup>th</sup> before we see 29 tonnes recorded and the 19<sup>th</sup> before 110 tonnes were recorded and while we see a drop to 57 tonnes on the 20<sup>th</sup>, it reached its height at 179 tonnes only on the 21<sup>st</sup> before dropping back to 67 tonnes and to cessation thereafter, despite 72,000 tonnes of oil having been released in this period, an accounting which reveals absence of knowledge and/or submission to environmentalist belief.

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

**Special feature - Inland spills**

**RESPONSE TO INLAND OIL SPILLS – PART 4**



**A short series of articles contributed by Mark Francis of Oil Spill Solutions** Mark Francis has been involved with the oil industry since 1975. He attended his first oil spill in 1976, the Tanker Elaine V incident. He became head of response for inland spills within the UK for British Petroleum E & P in 1980 for 10 years responding to well, storage tank and pipeline spills throughout the UK. Over the next 20 years he continued to build his international operations experience and has also specialised in spill response training, delivering IMO and other courses in more than 20 countries. Mark's website is at <http://oilspillsolutions.org>



## Special feature - Inland spills (continued)

### Spills on Permeable Surfaces (continued) - Penetration

The amount of oil retained in the soil at saturation is shown (approx. litres per cubic meter) and is dependent on its structure (see table below right).

Concentrations exceeding 50 l/m<sup>3</sup> are rare but can occur in dry soils beneath buildings and covered areas or where porous rocks are involved.

Oil will penetrate quickly at the side of concrete constructions as the soil will have been disturbed when the hole was dug for the concrete to be poured. The back fill of soil is never compacted to the same state as undisturbed soil as can be seen from this photo (below left).



Soil Type	Cap (l/m <sup>3</sup> )
Pebbles	5
Pebbles / rough grain sand	8
Grit sand / medium grain sand	15
medium grain sand / fine sand	25
Fine sand / fine sediments	40

Pipeline tracks work the same as the pipe is usually placed on a layer of sand and when back-filled the trench becomes the passage of least resistance. Pipelines in hollows will end up with the trench filled whereas pipeline tracks further uphill will allow the oil to flow by gravity to the lowest point. This then leave you with the problem of digging test holes up the hill to find the point of the leak.

In homogenous soil, maximum penetration occurs where pools of oil are formed on the surface. These provide a pressure head and encourage penetration.

Ground water movement is very slow; often between 0.5 m and 1.5 m per day. Thus, if oil reaches the groundwater table, there is usually plenty of time available to study the geology of the underlying strata and decide upon the best location for recovery of the oil.

### Groundwater or aquifer

Aquifers are complicated systems, they are filled by rainfall, some rivers add to them, other rivers take from them.

What needs to be uppermost in our minds is not to allow the oil to get into this kind of area as it is a very complicated problem to resolve.

An aquifer is one of man's greatest treasures and a source that may be needed for long into the future. Allowing oil to contaminate an aquifer will render it useless for drinking water for many years or for ever, e.g. in the south of England during the 90's a town's water supply was contaminated by oil. This town had always been an agricultural area, never industrial. When the investigation came to its conclusion the pollution it was found that the oil had come from a stockpile of fuel and oil for the "D Day" invasion of France during World War 2. It had taken 50 years for the oil to penetrate to the depth of the aquifer now lost forever.

One hundred and forty six groundwater sources in the UK have been closed since 1975 because of groundwater quality problems. At least 425,000 m<sup>3</sup> per day have been lost in licensed output from the closures, about seven per cent of current abstraction levels.

The capital investment required to maintain drinking water quality is expected to be at least £15 to £36 million every year. Problems with groundwater quality cost the UK water industry £754 million between 1975 and 2004.

Source: <http://cdn.environment-agency.gov.uk/geho0906bldb-e-e.pdf>

**To be continued**

## IN SITU BURNING: CHAPTER 1



A short series of articles on In Situ Burning contributed by Dr Merv Fingas of Spill Science, Edmonton, Alberta, Canada T6W 1J6 [fingasmerv@shaw.ca](mailto: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.

This is the first of a series of articles on in-situ burning of oil spills. This series will cover in-situ burning step-by-step and will present the latest in knowledge on the topic.

### Introduction and Overview

In-situ burning is now recognized as a viable alternative for cleaning up oil spills on land and water. When performed under the right conditions, in-situ burning can rapidly reduce the volume of spilled oil and eliminate the need to collect, store, transport, and dispose of recovered oil. In-situ burning can shorten the response time to an oil spill, thus reducing the chances that the oil will spread on the water surface and thereby aiding in environmental protection. Such rapid removal of oil can also prevent the oil from reaching shorelines, which are difficult to clean. What remains after an in-situ burn are burn by-products such as carbon dioxide, water, some smoke particulate, and unburned oil (residue). Sufficient information is now available to predict levels of these emissions and calculate safe distances downwind of the fire. This serial presentation contains a compilation of information about in-situ burning of oil spills and includes the scientific aspects of the burning process and its effects, examples from the extensive research into in-situ burns, and practical information about the procedures to be followed and equipment required for carrying out an in-situ burn.

Ignition may be a concern as heavier oils may require a primer such as kerosene or diesel fuel for ignition. Heavy oils require longer heating times and a hotter flame to ignite than lighter oils. If not enough vapors are produced, the fire will either not start or will be quickly extinguished. The amount of vapors produced is dependent on the amount of heat radiated back to the oil. If the oil slick is too thin, some of this heat is conducted to the water layer below it. It is uncertain whether oil that is completely emulsified with water can be ignited, although oil containing some emulsion can be ignited and burned. Containment of the oil on water may be necessary to carry out in-situ burning as the oil must be thick enough to quantitatively burn. Recent studies have shown thickness is not critical as once thought. The oil burn rate is a largely a function of oil type. Once burning, the heat radiated back to the slick and the insulation are usually sufficient to allow combustion down to about ½ to 1 mm of oil. If greater amounts of fuel are vaporized than can be burned, more soot is produced as a result of incomplete combustion, fuel droplets are released downwind.

The residue from burning oil is largely unburned oil with some lighter or more volatile products removed. When the fire ceases, unburned oil is left that is simply too thin to sustain combustion. In addition to unburned oil, oil is also present that has been subjected to high heat and is thus weathered. Finally, heavier particles are re-precipitated from the smoke plume into the fire and thus become part of the residue. Highly efficient burns of some types of heavy crude oil may result in oil residue that sinks in sea water after cooling.

The emissions of burning are of concern and concerns over emissions are probably the greatest obstacle to in-situ burning and are covered in this series. These emissions include the smoke plume, particulate matter precipitating from the smoke plume, combustion gases, unburned hydrocarbons, organic compounds produced during the burning process, and the residue left at the burning pool site. Soot particles, although consisting largely of carbon particles, contain a variety of absorbed and adsorbed chemicals. The following is a brief summary of each type of emission.

**Particulate Matter/Soot** - All burns, especially those of diesel fuel, produce an abundance of particulate matter. Particulate matter at ground level is a health concern close to the fire and under the plume. Particulate matter is distributed exponentially downwind from the fire.

**Polyaromatic Hydrocarbons (PAHs)** - Oils contain significant quantities of polyaromatic hydrocarbons which are largely destroyed in combustion. The PAH concentrations in the smoke, both in the plume and the particulate precipitation at ground level, are much less than in the starting oil. This includes the concentration of multi-ringed PAHs. There is a slight increase in the concentration of multi-ringed PAHs in the burn residue. When considering the mass balance of the burn, however, most of the five- and six-ringed PAHs are destroyed by the fire.

**VOCs** - Many volatile organic compounds are emitted by fires, but in lesser quantity than when the oil is not burning. VOCs are not typically a concern, but can rise almost to health levels of concern very close to the fire.

**Organic Compounds** - No exotic or highly toxic compounds are generated as a result of the combustion process. Organic macromolecules are in lesser concentration in the smoke and downwind than they are in the oil itself. Dioxins and dibenzofurans have not been measured as emissions of oil fires to date.

**Carbonyls** - Carbonyls such as aldehydes and ketones are created by oil fires, but do not exceed health concern levels even very close to fires.

## Special feature – In situ burning (continued)

**Gases** - Combustion gases such as carbon dioxide, carbon monoxide, and sulphur dioxide are produced by oil fires but are significantly below any health concern level.

Table 1 provides generalizations about the burning of various fuels:

**Table 1 Burning Properties of Various Fuels**

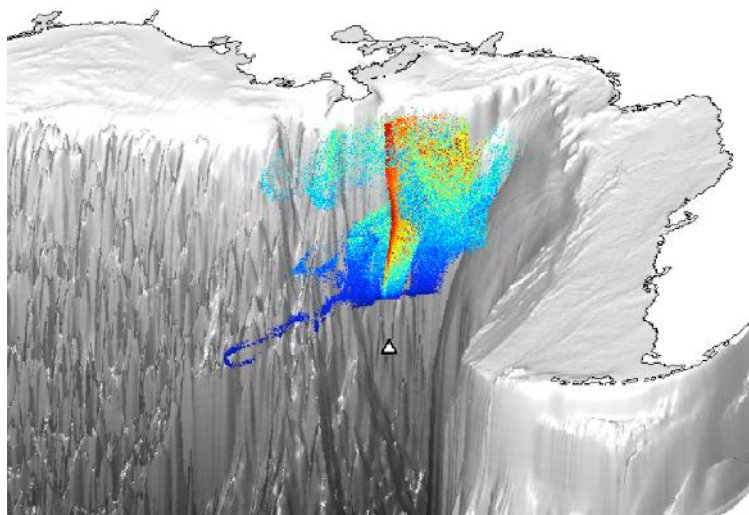
Fuel	Burnability	Ease of Ignition	Flame Spread	Burning Rate* (mm/min)	Sootiness of Flame	Efficiency Range (%)
Gasoline	very high	very easy	very rapid - through vapours	4	medium	95-99
Diesel Fuel	high	easy	moderate	3.5	very high	90-98
Light Crude	high	easy	moderate	3.5	high	85-98
Medium Crude	moderate	easy	moderate	3.5	medium	80-95
Heavy Crude	moderate	medium	moderate	3	medium	75-90
Weathered Crude	low	difficult, add primer	slow	2.8	low	50-90
Crude oil with ice	low	difficult, add primer	slow	2	medium	50-90
Heavy Fuel Oil	very low	difficult, add primer	slow	2.2	low	40-70
Waste Oil	low	difficult, add primer	slow	2	medium	30-60

\* typical rates only --- to get the rate in Litre/m<sup>2</sup>/hour multiply by 60

**To be continued**

## Science and technology

### MODELING STUDY SUGGESTS DISPERSANTS USED AT WELLHEAD HAD MARGINAL EFFECT ON OIL REACHING SURFACE WATERS



Picture: Simulated 3D spatial distribution of oil products below the surface based on current advection and oil buoyancy in the region. The formation of the prominent deep hydrocarbon intrusion (blue plume) and the layering of shallower plumes (cyan and green) indicate that chemical dispersants injected at the wellhead were likely not effective in changing the amount of oil reaching the surface. The oil in the top 20 m of the sea surface is not shown.

Scientists studying the use of sub-sea chemical dispersants during the Deepwater Horizon spill published their recent findings in the November 2012 issue of Environmental Science and Technology: Evolution of the Macondo well blowout: Simulating the effects of the circulation and synthetic dispersants on the subsea oil transport.

While oil was flowing into the Gulf of Mexico, responders injected chemical dispersants at the Macondo wellhead to reduce the amount of oil from surfacing and impacting coastal and marsh areas. The authors used a novel oil-mass tracking model (the Connectivity Modeling System)

to simulate in three dimensions the oil discharge in deep waters and examine the effect that a deep water release of oil, with and without dispersants, may have had on the oil droplet size and transport through the water column. By studying a wide range of contributing factors, researchers found that the amount of oil reaching the sea surface may have been the same independent of dispersant application. Based on fundamental oil droplet size models, the authors estimate that the turbulent discharge of oil resulted in naturally small droplets contributing to the observed deep intrusion. The numerical experiments also suggested that the large fraction of gas may have caused the initial rapid surfacing of oil, due to an increase in overall buoyancy. This study revealed previously undocumented temporal aspects of the oil in the water column moved by local topographic and hydrodynamic processes. The authors' numerical approach provides new insights on oil transport from deep blowouts and on future subsea use of dispersant in efforts to mitigate coastal damage. *Gulf of Mexico Research Initiative* [Download and read this article](#)

## Publications

### FOR YOUR INTEREST – LINKS FOR RECENT ISSUES OF PERIODICALS

<a href="#">Amsa Aboard</a>	Newsletter of the Australian Maritime Safety Authority	December 2012 issue
<a href="#">The Catalyst</a>	Newsletter of JOIFF (Hazard Management & Firefighting)	January 2013 issue
<a href="#">Cedre Newsletter</a>	Newsletter of CEDRE (France)	December 2012 issue
<a href="#">USA EPA</a>	Technology Innovation News Survey	Nov 1-30 2012 issue
<a href="#">CROIERG News</a>	Canberra & Regions Emergency Response Group	January 2013 issue

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### UK: MMO MARINE POLLUTION CONTINGENCY PLAN

The plan specifies the Marine Management Organisation's (MMO) support to response to major marine pollution incidents and the MMO's statutory role regarding the use of oil treatment products in responding to oil spills.

This plan aims to provide a mechanism to coordinate MMO's response in major marine pollution incidents. It will also be suitable for use during smaller incidents led by a harbour master or offshore operator. *MMO* [Download and read](#)

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### EUROPE: EMSA REPORT ON FACILITIES FOR RECEPTION OF OIL COLLECTED FOLLOWING A MAJOR OIL SPILL IN THE SEA

January 7 - This report is the main deliverable of the project "Study on discharge facilities for oil recovered at sea – Geographical distribution, technical challenges, solutions and alternatives related to the discharge of oil recovered at sea by specialised vessels, following a large oil spill in Europe" (EMSA OP/07/2011), commissioned by EMSA. *MarineLink.com* [Read more](#)

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### CANADA: STUDY ON OIL SANDS DEVELOPMENT POLLUTING ALBERTA LAKES

Oil-sands development is polluting nearby remote Alberta lakes with rising levels of a toxic carcinogen, refuting long-standing claims that waterway pollution in the region is largely naturally occurring, a study has found. *Globe & Mail* [Read more](#)

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## Company news

### USA: ECORPSTIM STIMULATES THE EAGLE FORD SHALE WITH LIQUID PROPANE

January 9 - eCORP Stimulation Technologies, LLC ('ecorpStim'), a wholly owned subsidiary of eCORP International, LLC ('eCORP'), announced today the successful field demonstration during which it safely stimulated the Eagle Ford Shale at 5950 feet with a fluid other than water. This field demonstration is part of ecorpStim's ongoing efforts to advance the development of shale gas in a sustainable manner and with minimal environmental impact. *Environmental Expert* [Read more](#)

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### USA: AMG LOWERS ENVIRONMENTAL IMPACT OF HYDRAULIC FRACTURING

January 3 - Apex Management Group, LLC (AMG), an oil field services management company, announced today its game-changing solution that dramatically reduces the cost and environmental impact of hydraulic fracturing. Working with ALCOR Energy Solutions, LLC (Alcor/AES), AMG has the exclusive technology to 'treat' and recycle frac water flow back in an environmentally friendly way, thus eliminating the need to dispose of or dump contaminated water. *Environmental Expert* [Read more](#)

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## Events

### UK: SOCIETY OF MARITIME INDUSTRIES ANNUAL CONFERENCE 2013

Southampton, 10-13 April 2013 - A national conference that looks at the application of advanced technology across the spectrum of the UK's maritime engineering enterprise and the business opportunities that are emerging. Speakers from the highest echelons of the industry will promote debate on these topics and discuss the critical issues.

Preceded by an industrial visit to the National Oceanography Centre at Southampton and with the opportunity to visit Ocean Business, the showcase exhibition for advanced technology in the maritime environment, that runs in parallel with the conference, the event also includes a structured programme of one-on-one meetings and a conference reception and dinner. [More info](#)

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