



ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

Issue 379, 8 April 2013

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Cairns Convention Centre
Queensland, Australia
8 - 12 April 2013

www.spillcon.com



International news

ISCO AGM THIS WEDNESDAY AT SPILLCON

ISCO's 2013 Annual General Meeting will be held this Wednesday 10th April during the Spillcon Conference and Exhibition at Cairns, Queensland.

The meeting will be in **Meeting Room 1 on the Mezzanine Level** of the Cairns Conference Centre. Refreshments from 5.00 pm and the meeting is expected to start about 5.20 pm or as soon as members and guests are assembled.

SPILLCON STARTS TODAY !



Left: Toby Stone, General Manager, Marine Environment Division, Maritime Emergency Response Commander (MERCOCOM) and right: John Tilley, Executive Director, Australian Institute of Petroleum.

The opening of Spillcon 2013 is the culmination of many months of work by Toby Stone, Chairman of the Organising Committee, John Tilley, Chairman of the Conference, and a great many others

Spillcon 2013 speakers include representatives from the Australian Shipowner's Association, National Offshore Petroleum Safety and Environmental Management Authority, and Australian and New Zealand maritime authorities. Speakers will share their knowledge on topics such as Australia's current maritime initiatives, response to the oil spill from the merchant vessel Rena on New Zealand's Astrolabe Reef in 2011, progress on the implementation of

International news (continued)

recommendations from the Montara Wellhead Commission of Inquiry, emerging technologies to monitor oil spill effects, and the salvage of the Costa Concordia off the coast of Italy.

The conference also features exhibits from more than 30 companies and organisations involved in the environmental, shipping or oil spill response industry, and trainers from Maritime Safety Queensland, Sydney Ports and the Australian Marine Oil Spill Centre will also run sessions on the use of new oil spill response equipment throughout the week.

You can view profiles of the speakers at <https://www.spillcon.com/speakers.asp>

Incident reports

USA: UPDATES ON THE MAYFLOWER OIL SPILL

Exxon confirms ruptured pipeline in Arkansas carried Canadian dilbit

March 30 – The pipeline that ruptured and leaked at least 80,000 gallons of oil into central Arkansas on Friday was transporting a heavy form of crude from the Canadian tar sands region, ExxonMobil told InsideClimate News.

Local police said the line gushed oil for 45 minutes before being stopped, [according to media](#). *Inside Climate News* [Read more](#)

Exxon crew cleans up oil spill at ruptured Arkansas pipeline

March 31 - A hundred Exxon Mobil emergency crew recovered Saturday 4,500 barrels of an estimated 10,000 barrels of crude oil that spilled at its ruptured pipeline in Mayflower, Arkansas.

The company also said that residents of 22 homes in a subdivision affected by the major oil spill were evacuated, 2,000 feet of boom was deployed to keep oil away from Lake Conway, and the Pegasus pipeline carrying crude oil from Pakota, Illinois, to the Gulf Coast was shut down.

Fifteen vacuum trucks are involved in the cleanup that started within 30 minutes from the time the oil spill was discovered on Friday. The cause of the spill is still under investigation *Gantdaily.com* [Read more](#)

Arkansas oil spill: Exxon reacts to tax 'loophole,' pledges 'to cover all costs'

April 5 - The central Arkansas spill caused by Exxon's aging Pegasus pipeline has reportedly unleashed 10,000 barrels of Canadian heavy crude - but a technicality says it's not oil, letting the energy giant off the hook from paying into a national cleanup fund.

Legally speaking, diluted bitumen like the heavy crude that's overrun Mayflower, Arkansas, is not classified as 'oil'. And it's that very distinction that exempts Exxon from contributing to the government's oil spillage cleanup fund.

ExxonMobil has already confirmed that the compromised pipeline was transporting "low-quality Wabasca Heavy crude" from Canada's Alberta region. That particular form of crude contains large quantities of bitumen - a "thick, sticky, black semi-solid form of petroleum which is transported in a diluted form (dilbit) as it makes its way from Canada to US refineries," explains [Oil Change International](#), which has brought attention on the strange legal exemption.

Companies that transport oil are required to pay \$.08 per barrel into the Oil Spill Liability Trust Fund (OSLTF). The cash is used by the US government to respond to oil spills. But there's a catch - Exxon is exempt from paying into the fund for its Pegasus pipeline, because it carries tar sands oil, not "conventional oil."

"The IRS has classified tar sands as different from conventional oil, and thus the tax levied to fill the liability trust fund is not levied on tar sands crude. It's a loophole that should be closed, as it doesn't line up with the actual intent of the tax or the fund," campaigns director for Oil Change International, David Turnbull, told RT.

Answering RT's detailed questions, ExxonMobil stated they are paying for all costs related to the spill. *Rt.com* [Read more](#)
[Thanks to Marc K. Shaye Hon.FISCO, Member of ISCO Executive Committee]

CANADA: CANADIAN PACIFIC OIL SPILL IN NORTHERN ONTARIO LARGER THAN FIRST REPORTED

April 5 - A northern Ontario spill of oil from a derailed train is 100 times larger than Canadian Pacific Railway Ltd. initially reported.

The company said Wednesday that only four barrels spilled. On Thursday, it said some oil had flowed beneath the snow and gone undetected. CP now estimates 400 barrels spilled, or 63,500 litres – a slightly greater amount than the company's spill last week in Minnesota.

At about 7:50 Wednesday morning, 22 rail cars derailed about 10 kilometres west of White River, a small northern Ontario town. Two of those cars leaked light oil. *The Globe & Mail* [Read more](#)

Incident reports (continued)

USA: MINNESOTA LINE REOPENED AFTER CP RAIL OIL SPILL

March 27 - Rail lines have been reopened, and crews are cleaning up, a day after a Canadian Pacific train carrying tens of thousands of litres of crude oil from Alberta derailed in western Minnesota. CP Rail spokesperson Ed Greenberg told CBC News that full track repairs had been made and the cleanup is "progressing well."

According to CP Rail, 14 cars on a southbound train derailed near Parkers Prairie, Minn., before 7 a.m. local time Wednesday morning. The 94-car train was headed to the Chicago area. Minnesota Pollution Control Agency spokesman Dan Olson said an estimated 75,600 to 113,400 litres of oil spilled or leaked. *CBC News* [Read more](#)

NIGERIA: AGIP SHUTS DOWN PIPELINE IN NIGERIA OVER OIL THEFT

April 2 - Eni, the Italian oil major which operates in Nigeria as Nigeria Agip Oil Company (NAOC), has suspended activities at its swampy oil fields located in oil-rich Bayelsa state over oil theft.

Eni said it was losing about 7,000 barrels of crude production daily to oil thieves in Bayelsa from the facility which produces about 40,000 barrels of crude oil daily .

According to the firm, frequent spills to oil theft by vandals have caused it to shut down operations to prevent further damages to the environment. It described the recent development as unsustainable; thereby necessitating the shutdown.

Oil spill began on February 20 at NAOC's pipeline network in Kalaba community in Yenagoa. On March 3, the Ikarama community, a neighboring community in Yenagoa Local Government Area of Bayelsa State reported another oil spill at the Taylor creek oil well. *Ventures Africa* [Read more](#)

USA: OIL SPILL LEAVES SHEEN ON GRAND RIVER IN LANSING



April 2 - Cleanup crews were working Tuesday to contain about 300 to 500 gallons of hydraulic fluid that spilled from a Lansing power plant and left a sheen on the Grand River.

The Board of Water and Light installed booms — inflated buoys with pads to absorb the fluid — across the river, said [Brad Wurfel](#), a spokesman for the Michigan Department of Environmental Quality.

San Fransisco Chronicle [Read more](#)

LIBYA INVESTIGATING ZUEITINA OIL PIPELINE IN EAST

April 3 - Libya is investigating the cause of an explosion late on Tuesday on oil and condensate pipelines to the eastern port of Zueitina, the National Oil Corporation (NOC) said. The blast occurred at 10 p.m. local time on a section of the pipeline linking Field 103, which is operated by Zueitina Oil company, to the export terminal, the state energy firm said in a statement on its website.

It quoted acting NOC Chairman Abdulkasir Shengir as saying there were no casualties and that a crisis committee had been formed to carry out an investigation. "Yesterday evening, some people from Ajdabiyah saw a big fire. They came here and the first thing they saw was a large pool of oil and they realised the pipeline was damaged," said an engineer working for Zueitina, who declined to be named. *The Maritime Executive* [Read more](#)

USA: THIRD MAJOR OIL SPILL IN A WEEK: SHELL PIPELINE BREAKS IN TEXAS

April 5 - Thousands of gallons of oil have spilled from a pipeline in Texas, the third accident of its kind in only a week. Shell Pipeline, a unit of Royal Dutch Shell Plc, shut down their West Columbia, Texas, pipeline last Friday after electronic calculations conducted by the US National Response Center showed that upwards of 700 barrels had been lost, amounting to almost 30,000 gallons of crude oil.

Coast Guard Petty Officer Steven Lehman said that Shell had dispatched clean-up crews that were working hard to correct any damage to Vince Bayou, a small waterway that runs for less than 20 miles from the Houston area into a shipping channel that opens into the Gulf. *RT.com* [Read more](#)



USA AND CANADA: PIPELINE SPILLS STIR NEW CRITICISM OF KEYSTONE PLAN

April 2 - Two recent oil pipeline spills have prompted new criticism from opponents of the proposed Keystone XL project, while raising more questions about whether the federal government is adequately monitoring the nation's vast labyrinth of pipelines.

Opponents of the Keystone XL pipeline, which would also move heavy Canadian crude, leapt on the Exxon spill, reiterating their contention that crude drawn from Canada's tar sands region is too risky to transport and especially vexing to clean up.

"What we've got here is a small example of the type of risks associated with a tar sands pipeline," said Anthony Swift, a lawyer with the Natural Resources Defense Council, one of many environmental groups fighting the pipeline proposal, which is awaiting State Department approval. "It also demonstrates the large gaps in pipeline safety." *The New York Times* [Read more](#)
[Thanks to Mark K. Shaye Hon.FISCO, Member of ISCO Executive Committee]

USA: PWSRCAC RESOLUTION WOULD BOOST OIL SPILL PREVENTION, RESPONSE FUNDS

April 2 - A resolution supporting amendments to the federal Oil Spill Liability Trust Fund and Oil Pollution Act of 1990 that would vastly strength funds for spill prevention and response was approved March 26 by a Prince William Sound advisory organization.

The measure would boost the amount that oil shippers and others are required to contribute to the fund, force cargo ships now covered by the fund to pay into it, make the fund more accessible for preventive measures and increase liability of those who pollute.

The vote of the Prince William Sound Regional Citizens' Advisory Council, in a special meeting held via teleconference, was unanimous. *The Cordova Times* [Read more](#)

CANADA: B.C.'S MARINE OIL SPILL CLEAN-UP CREWS ON GUARD AND READY TO GO



Western Canada Marine Response Corporation (WCMRC) Area Manager for South Coast, Trevor Davis explains how a boom is used in oil spill response at the WCMRC warehouse in Burnaby, Tuesday April 2, 2013. THE CANADIAN PRESS/Eric Dregler

April 4 - It looks like any other warehouse from the outside. But beyond a security gate at the foot of Burnaby's Kensington Avenue on the Burrard Inlet is the nerve centre of the province's marine oil spill response.

Outside, semi-truck containers stand loaded with self-contained kits for off-and on-shore clean-ups. Aluminum boats on wheeled trailers are lined up in a central aisle, ready to be hitched to the back of a truck. Giant containers with all the clothing, tools and gear required for an entire crew are stacked up like Legos, waiting for a forklift to fetch them for transport. There's even an Incident Command Post tucked away in the office with fill-in-the-blank

operation flowcharts hung along the wall. Everything about the Western Canada Marine Response Corporation (WCMRC)'s operations scream "ready to go." *Metro* [Read more](#)

USA: A GLOBAL OIL SPILL RESPONSE SYSTEM

SWRP was launched in May 2011 to enhance international capabilities to respond to a subsea well incident.

April 2 - The project manager for the much-anticipated Subsea Well Response Project (SWRP), Keith Lewis sits down with Oil & Gas Technology to discuss the importance and scope of the initiative as well as the development of its deepwater well capping systems

The Subsea Well Response Project (SWRP) was launched in May 2011 on the recommendations of the International Association of Oil & Gas Producers (OGP) to enhance international capabilities to respond to a subsea well incident. SWRP is a non-profit joint initiative between affiliates of nine major oil and gas companies: BG Group, BP, Chevron, ConocoPhillips, ExxonMobil, Petrobras, Shell, Statoil and Total.



The current project team consists of technical experts and senior management from each member company. It is operated by Shell, on behalf of the nine members, with headquarters in Stavanger, Norway. The specific focus of the team based at this location is to examine ways of improving the industry's response to deepwater subsea well incidents. *Oil & Gas Technology* [Read more](#)

Other news (continued)

CARIBBEAN NATIONS SEARCH FOR OIL AMID SPILL FEARS

March 31 - The turquoise waters that have long brought treasure seekers to the Caribbean now are drawing a new kind of explorer as countries across the region increasingly open their seas to oil exploration.

From the Bahamas and Cuba down to Aruba and Suriname, international oil companies are lining up to locate potentially rich offshore deposits in the Caribbean. The countries hope drilling could lead to a black-gold bonanza, easing demand for imported oil and diversifying their economies.

It's a longstanding dream for many. As the Dominican songwriter Juan Luis Guerra once sang, "If petroleum sprang from here, oh but there would be light and hope." *Bloomberg Businessweek* [Read more](#)

People in the news

NEW REGIONAL MANAGER JOINS ISCO CORPORATE MEMBER AQUA-GUARD SUPPORTING MIDDLE EAST/AFRICA/EUROPE AND ALBERTA, CANADA



Chris Doudican has joined Aqua-Guard Spill Response as Regional Manager for the Middle East, Africa, Europe and Alberta

Chris is originally from Calgary, Alberta and has been involved in many aspects of the Oil and Gas industry since 2004. Chris began his experience as a heavy-duty mechanic working with engines and oil rigs around the world including a stint in Syria in the Middle East for seven months.

Chris moved to British Columbia where he became the Regional Sales Manager for Simson Maxwell, a large engine distributor representing Deutz, Perkins and Volvo. Chris was able to utilize his strong technical background to help support his customers and facilitate sales. While working at Simson Maxwell, Chris became Aqua-Guard's technical sales representative where he was directly involved in the supply of engines and product development of Aqua-Guard's oil skimming systems. <http://www.aquaguard.com/>

ISCO news

REMINDER – ISCO AGM

If you're attending Spillcon, don't forget to come along to the ISCO AGM on Wednesday 10th April. It is in Conference Room 1 on the mezzanine level of the conference centre. Refreshments from 5.00 pm and the meeting expected to start about 5.20 pm or as soon as members and guests are assembled.

Our guest speaker is John Wardrop, Member of ISCO Council for Australia. During the past year he has been involved in establishing ASCA – The Australian Spill Control Association. During 2012, Australia also saw the formation of AA – The AusSpill Association, which has a focus on equipment and materials for spill response. You will have the opportunity to meet key members of both associations.

ISCO's President, David Usher and Membership Director, Mary Ann Dalglish will both be present.

It promises to be an interesting and enjoyable meeting where you will meet friends and others who share your interests.

ISCO WELCOMES NEW MEMBERS

During the last three months ISCO has welcomed the following new members....

Kaku Professional Engineers Ltd.
Nick Bailey MISCO
Stephen Guy MISCO
Tony Harmer MISCO
Nelson A. Sunday AMISCO
ERE Response International Ltd.

Aqua-Guard Spill Response Inc.
NorLense, Norway
Rutter Inc.
CEDRE, France
SEER Associates Pty. Ltd.
Simon Valentine FISCO

ISCO now has members in 45 countries

RESPONSE TO THE GROUNDING OF THE CARGO VESSEL MV DANIO WHICH RAN AGROUND DURING THE EARLY HOURS OF SATURDAY 16TH MARCH 2013

A report from Captain Bill Boyle MNI, FISCO, General Manager of ISCO Corporate Member, Briggs Environmental Services Ltd.



On 16 March 2013 it was reported that the 1,499 GT Antigua & Barbuda flag cargo ship 'DANIO' had grounded on the Farne Islands, off Northumberland, NE England. The vessel was on passage between Perth, Scotland and Antwerp, Belgium. The 'DANIO' had 27 tonnes of gas oil and 2 tonnes of lubricating oil/slops. She was carrying a cargo of 1,500 tonnes of timber.

The Farne Islands are declared as a marine environmental high-risk area (MEHRAs) and are national nature reserves, European special protection areas and are part of the North Northumberland European Marine Site. They are both crucial because of their variety and abundance of their bird life and the Farne Islands is also home to a major grey seal colony.

BES were mobilised by the salvage company TITAN on Sunday 17th March 2013 to provide Manpower, Salvage Pumps and Oil Spill Response Equipment as a precaution in-case of any oil leakage.

The weather over the following 10 days was poor with Easterly Gales however the weather abated during Wednesday 27th March and on the Thursday 28 March the MV DANIO was successfully re-floated at 03:00 hrs

Following the re-float the casualty was towed to the Port of Blyth and was safely berthed alongside at 20:00 hrs on 28 March 2013. Throughout the operation no oil escaped from the stricken vessel. <http://www.briggsmarine.com/>





In this issue of the ISCO Newsletter we are printing No. 121 in a series of articles contributed by Dr Douglas Cormack.

Dr Douglas Cormack is an Honorary Fellow 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](#)

CHAPTER 121: KNOWLEDGE AND COUNTER-BELIEF

Articles 1-15 have shown that science and technology can be in harmony with environmental knowledge through that of the behaviour of water-immiscible systems (articles 16-30), the fate of released oils/HNS (31-46), enhancement of biodegradation by dispersant-use (47-61), slick thickness measurement and remote sensing (62-69), mechanical recovery of pollutants too viscous for dispersant-use (70-91), and the recovery and processing of such pollutants from shorelines (92-102), while all beliefs counter to knowledge have been shown to be disharmonious (103-106) as exemplified by actual response to the *Sea Empress Incident* (107-120).

As to eliminating the confusion arising from belief and knowledge remaining undifferentiated, articles 121-123 recall how knowledge is now definitively differentiated from belief. Later, articles 124-127, identify specific beliefs which erroneously reject knowledge, and where the reverse rejection is needed in all aspects of marine incident response, while articles 128 and 129 summarise the position now reached by identifying where knowledge refutes its counter-beliefs, where beliefs could now be validated or refuted by direct observation; and where beliefs ought to be suspended pending their validation or refutation as specific hypotheses

As to differentiating knowledge from belief in general, my most recent book has shown that the knowledge which is craftsmanship, science and technology and the knowledge-content of our traditional behaviour codes differs from the beliefs on which socio-political policies have always been based; that the failure of such policies in reality has caused violence, revolution and war since time immemorial; that nonetheless our species has failed to see this peaceful/non-peaceful contrast as itself being a differentiation of the knowledge/belief dichotomy; and that while this failure did not prevent our previous knowledge-based progress, it now thwarts it by eliding/conflating belief with knowledge in general and belief-consensus with science in particular.

However, the cited book shows how these ubiquitous errors could be eliminated by showing for the first time that imaginative beliefs become knowledge only when evaluated for compliance/non-compliance with reality; that belief remains belief when this reality-evaluation is impossible in principle or *pro tem* practice; that reality-evaluation also differentiates opinion and counter-opinion into belief/counter-belief and partially selected inconclusive facts/counter-facts; that debate is thus interminable in the absence of (conclusive) knowledge; that otherwise the only outcome is a transient belief-consensus wholly inadequate for reliable action; and that reality-evaluation not only differentiates the knowledge/belief dichotomy but also those of truth/ falsehood, wisdom/folly, right/wrong and good/bad.

Thus, having differentiated knowledge from belief in general, we see in particular that the belief which correlates species-extinction/ecological-disaster with pollutant-coating of individual organisms or the exposure of others to water column concentrations of pollutant, can be differentiated from knowledge of the numbers so coated being too low and the exposure concentrations being too low and too transient to cause any such species/ecological effects; that the belief which correlates such effects with dispersant-use can be differentiated from the knowledge of its reducing the numbers coated without increasing the concentrations in seawater beyond those arising from the natural dispersion of less persistent pollutants, while the subsequent concentration-depth profiles for dilution/biodegradation within the water column as a whole are indistinguishable whether natural or dispersant-induced.

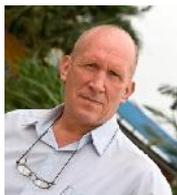
Again, we see that the belief which correlates global warming with anthropogenic release of carbon dioxide from fossil fuel combustion can be differentiated from our knowledge that the entire biomasses of land and sea are recycled through the atmosphere as carbon dioxide by photosynthesis and bio-oxidative degradation; that the tectonic plate movement which forms carbonate rock in mountain building and which decomposes it in volcanism also recycles carbon dioxide through the atmosphere; that were there no volcanic return, this sequestration as carbonate by the Urey reaction would have terminated the photosynthesis on which all life depends by removing all carbon dioxide from the atmosphere before hominid evolution could begin; and that these biological and geological carbon dioxide cycles are unlikely to be disturbed significantly by our combustion of organic material the carbon dioxide from which would be recycling through the atmosphere already had it not been 'fossilised' to natural gas, peat, petroleum or coal.

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

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

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

RESPONSE TO INLAND OIL SPILLS – PART 15



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://www.oilspillsolutions.org>

Rivers

Big wide rivers, in many cases sometimes form borders between states or countries, the effect of the wind may determine which bank the oil will impact.



Wider rivers with higher current speeds need to be studied to see where access and the best opportunity exist to recover oil.

Rivers normally flow in one direction but in some places rivers can flow in opposite direction. This can be caused by the laying down of eroded material as shown in the diagram *left above*. These areas give options that can be useful for recover operations.

Rivers are never satisfied with what they have and where they are. They are always trying to change their route by eroding the banks away as can be seen in this photograph *right above*. Over millennia this river has moved through the valley leaving Oxbow lakes behind throughout the area.



The two images above show different places where access is only by river or parachute

The photo left is in the Arctic region of FSU. The *photo right* is in Amazonia, Brazil. In both cases there are thousands of square kilometers of rivers with access only from the river. During the rainy season in tropical regions, you are just seeing the canopy of the trees under that is also water, up to 10 meters deep.

To be continued

IN SITU BURNING: CHAPTER 13



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

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.

Summary of the Serial

This is the 13th 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.

13. Emissions – I

In-situ burning of oil spills has been tried for more than thirty years with limited acceptance as an oil spill cleanup option in certain parts of the world. Recently the Deepwater Horizon burns opened up the doors to wider acceptance. Such lack of acceptance was primarily because of the lack of understanding regarding combustion products. Extensive research was undertaken to understand emissions of burning oil. A consortium of several agencies in the United States and Canada had joined forces to study burning and to conduct large scale experiments. This effort has resulted in data which has led to broader acceptance of in-situ burning as an acceptable spill countermeasure alternative. Table 5 lists the burns monitored in the past for emission studies. Figure 12 shows some of the samplers used at a burnt test site.

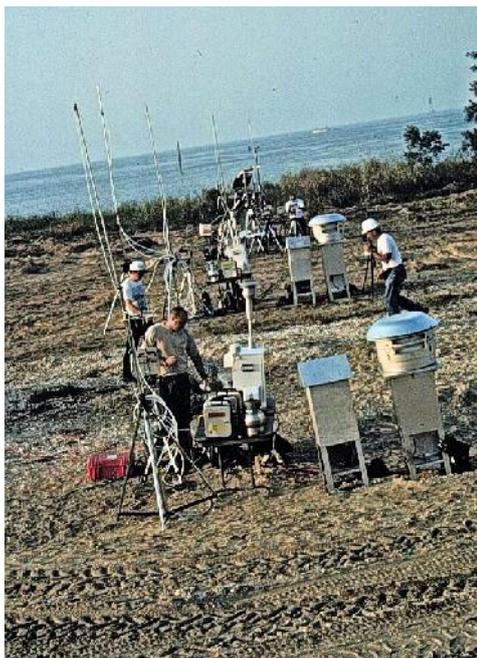


Figure 12 A view of three of the downwind stations used to measure emissions at a diesel burn. Note that 15 stations were set up with more than 150 instruments. This particular burn was also used to test fire-resistant booms.

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, have a variety of chemicals absorbed and adsorbed. Complete analysis of the emissions from a burn involves measuring all of these components.

Several types of emissions are formed and released when oil is burned. The atmospheric emissions of concern include the smoke plume, particulate matter precipitating from the smoke plume, combustion gases, unburned hydrocarbons, organic compounds produced during the burning process, and the oil residue left at the burn site. Although consisting largely of carbon particles, soot particles contain a variety of absorbed and adsorbed chemicals. Complete analysis of the emissions from burns has involved measuring all these components. The emphasis in sampling has been on air emissions at ground level as these are the primary human health concern and the regulated value. This section will focus on these emissions.

It should be noted that the monitoring of emissions conducted at past burns was as comprehensive as possible and the best field samplers and instrumentation available at the time were used. Measurement techniques have progressed over the years, however, and continue to improve. In addition, the data from these burns are so extensive that not even encapsulating summaries can be provided here. The summarized data appears in the references cited in this section and qualitative statements about that data will be made here.

Extensive measurement of burn emissions began in 1991 with several burns conducted in Mobile, Alabama to measure various physical facets of oil burning.¹ Analysis of the data from these burns showed several interesting facts as well as some gaps in the data. In 1992, two further series of burns were monitored for emissions.¹ In 1993, two major burns were conducted at sea specifically to measure emissions, although many other measurements were also taken.²⁷ Further tests were conducted in 1994 and 1997.^{39,40} Heavy oil burning emissions tests were carried out in 2003 and 2004.⁴¹

Particulate Matter/Soot - All burns, especially those of diesel fuel, produce an abundance of particulate matter which is the primary emission from an oil fire that exceeds recommended human health concern levels. Concentrations of particulates in emissions from burning diesel are approximately four times that from similar sized crude oil burns at the same distance from the fire. Particulate matter is distributed exponentially downwind from the fire. Concentrations at ground level (1 m) can still be above normal health concern levels ($35 \mu\text{g}/\text{m}^3$ for PM 2.5) as far downwind as 500 m from a small crude oil fire. The greatest concern is the smaller or respirable particulates. The PM-10 fraction, or particulates less than 10 μm , are generally about 0.7 of the total

Special feature – In situ burning (continued)

particulate concentration (TSP) of all particulates measured. The PM-2.5 fraction is currently the subject of particular concern at this time.¹ It is important to note that currently the fine particles are coming under increasing scrutiny as health concerns.

Polyaromatic Hydrocarbons (PAHs) - Crude oil burns result in polyaromatic hydrocarbons (PAHs) downwind of the fire, but the concentration on the particulate matter, both in the plume and the particulate precipitation at ground level, is often an order-of-magnitude less than the concentration of PAHs in the starting oil. This includes the concentration of multi-ringed PAHs, which are often created in other combustion processes such as low-temperature incinerators and diesel engines. 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. When diesel fuel is burned, the emissions show an increase in the concentration of multi-ringed PAHs in the smoke plume and residue, but a net destruction of PAHs is still found.

Table 5 Summary of Studies Used to Measure In-Situ Burn Emissions

Location	Year	Number of Burns	Number Monitored	Oil Type	Prime Purpose	Burn Area Range (m ²)	Time of Burns (min.)	Number of Instruments	Number of Target Compounds
Mobile	1991	14	14	Louisiana crude	physics	37 to 231	20 to 60	30	70
Mobile	1992	6	6	Louisiana crude	physics	36 to 231	20 to 60	30	70
Calgary	1992	20	3	crude, diesel	emissions	37	70	25	40
Newfoundland	1993	2	2	crude (ASMB)	emissions	467 to 600	60 to 90	200	400
Mobile	1994	3	3	diesel	physics boom	231	80	95	400
Mobile	1997	9	8	diesel	tests boom	25	60	95	400
Mobile	1998	12	12	diesel	tests	25	60	67	400
Ottawa	2003	8	8	Heavy Oils	burnability	0.5 to 3	4 to 36	6	200
Ottawa	2004	10	10	Heavy Oils	burnability	1 to 4	4 to 36	6	200
Total		66	48						

References

- 1 Fingas, M., "In-situ Burning", Chapter 23, in *Oil Spill Science and Technology*, M. Fingas, Editor, Gulf Publishing Company, NY, NY, pp. 737-903, 2011
- 27 Fingas, M.F., F. Ackerman, K. Li, P. Lambert, Z. Wang, M.C. Bissonnette, et al., *The Newfoundland Offshore Burn Experiment - NOBE - Preliminary Results of Emissions Measurement*, AMOP, 1099, 1994
- 39 Fingas, M.F., P. Lambert, Z. Wang, K. Li, F. Ackerman, M. Goldthorp, et al., *Studies of Emissions from Oil Fires*, AMOP, 767, 2001
- 40 Fingas, M.F., M. Goldthorp, P. Lambert, Z. Wang, K. Li, F. Ackerman, et al., *Monitoring Emissions from the In-Situ Burning of Oil Spills on Water*, Environment Canada Manuscript Report Number EE-167, 2001
- 41 Fingas, M.F., Z. Wang, B. Fieldhouse, C.E. Brown, C. Yang, M. Landriault and D. Cooper, *In-situ Burning of Heavy Oils and Orimulsion: Analysis of Soot and Residue*, AMOP, 333, 2005

To be continued

Publications

FOR YOUR INTEREST – LINKS FOR RECENT ISSUES OF PERIODICALS

ASME EED EHS Newsletter	News and commentary on HSE issues from George Holliday	April 1 issue
Bow Wave	Sam Ignarski's Ezine on Marine & Transport Matters	April 3 issue
The Essential Hazmat News	Alliance of Hazardous Materials Professionals	March 4 issue
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	April 1 issue
Intertanko Weekly News	International news for the oil tanker community	No 14, 2013
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	April 2013 issue
Soil & Groundwater Product Alert	From Environmental Expert	April 1 issue
Soil & Groundwater Ezine	Articles, papers and reports	April 2013 issue
Soil & Groundwater Newsletter	From Environmental Expert	March 28 issue
Soil & Groundwater Events	Upcoming events compiled by Environmental Expert	March 2013 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	February 1-15 issue

Publications (continued)

[IMO Publishing News](#)
[Pollution Online Newsletter](#)
[EMSA Newsletter](#)
[JOIFF "The Catalyst"](#)

New and forthcoming IMO publications
News for prevention & control professionals
News from the European Maritime Safety Agency
Int'l Organisation for Industrial Hazard Management

March 2013 issue
March 27 issue
April 2013 issue
April 2013 issue

AUSTRALIA: GUIDELINES FOR THE PREPARATION OF A TRANSPORT EMERGENCY RESPONSE PLAN

A Transport Emergency Response Plan (TERP) is required to meet the requirements of Regulation 14.5 of the Road Transport Reform (Dangerous Goods) Regulations (C'wlth) 1997 (the Regulations), and Rule 14.5 of the Rail (Dangerous Goods) Rules (the Rail Rules). A well constructed TERP could prevent a minor incident from becoming a disaster, save lives, prevent injuries, and minimise damage to property and the environment.

This guide is aimed at assisting in the preparation of a TERP, and is not meant to cover all the topics to be addressed in every conceivable planning situation, nor must all the topics covered in the guide be addressed in every TERP prepared. The document is what its title indicates – a guide – to be used as needed when preparing the plan. [Download the guidelines](#) See also April issue of the [CROIERG Newsletter](#) [Thanks to ISCO member, Brian O'Connor of CROIERG]

INTERTANKO: SAFETY DATA SHEETS FOR CHEMICAL TANKERS

ISCO Industry Partner INTERTANKO, in collaboration with industry stakeholders including shipowner representatives and organisations representing shippers, has worked on and put together an information paper on the requirements for Safety Data Sheets (SDS) for Chemical Tankers. [More info](#)

Events

IRELAND: ISAA OIL SPILL SEMINAR IN DUBLIN ON 9th MAY 2013



You are invited to participate in an Oil Spill Response Seminar being held at the Carlton Hotel, Dublin Airport on Thursday 9th May. Speakers include representatives from the Insurance Industry, Coastguard, Port Authorities and Local Government. Specialists in oil spill response will update delegates on techniques and a central theme of the seminar will be client expectations regarding the performance of response contractors.

For overseas visitors a shuttle bus will operate from the airport. This one day event runs from 10 am to 4.30 pm. Places are limited and it is recommended to book your place as soon as possible. The cost of attendance is £40/€50 for ISAA members/associate members and £60/€70 for non-members. The booking fee is inclusive of teas/coffees and a carvery lunch.

To register your interest and request the programme and booking form, contact john.mcmurtrie@spillcontrol.org

UAE: OIL SPILL PREPAREDNESS, RESPONSE AND RECOVERY MENA 2013

The Oil Spill Preparedness, Response and Recovery MENA 2013 Conference will bring together all key industry players who will address common challenges with respect to political co-operations and legal aspects to prevent and respond to oil spills. They will also update themselves about new technologies by hearing case-studies from around the world and learn how they can apply these to minimise the adverse effect on the environment.

16 - 19 June, 2013 - Beach Rotana - Abu Dhabi, Abu Dhabi, United Arab Emirates [More info](#)

UK: SCOTTISH ENVIRONMENTAL TECHNOLOGY NETWORK (SETN) NETWORKING EVENT

ISCO Industry Partner, The Scottish Environmental Technology Network, invites you to join this event being held in Edinburgh. Whether you are a company seeking an environmental solution or you have one to offer, SETN is giving those with a business interest in Environmental and Clean Technology a platform to reach potential customers, investors and collaborators through a unique evening of networking. [More info](#)

Date: Thursday 18th April 2013

Time: 4.30pm to late

Venue: King James Thistle Hotel, 107 Leith Street, Edinburgh, EH1 3SW



Events (continued)

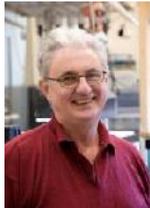
UK: ENERGY INSTITUTE - HUMAN FACTORS APPLICATION IN MAJOR HAZARD INDUSTRIES

Call for abstracts - deadline Monday 3 June 2013

This biennial conference, organised by the Energy Institute Human and Organisational Factors Committee and the Stichting Tripod Foundation, explores the practical application of human factors in the management of major accident hazards (MAH) in the energy and allied process industries.

The event will include special sessions on learning from incidents, supported by the Stichting Tripod Foundation, providing delegates with the opportunity to explore the use and development of Tripod and related methods for understanding and learning from incidents. More info – Contact Stuart King at e: sking@energyinst.org ; t:+44 (0)20 7467 7163.

UK: 4th MARITIME SALVAGE & CASUALTY RESPONSE – NEW CONFERENCE PRESENTATION



David Wright, Centre for Environmental Science, University of Maryland, will be addressing “Lessons Learned Within Oil Spill Response, and its Place in the Midst of Major Incidents” This presentation will include first-hand observations from the Deepwater Horizon Spill, offering approaches to sampling and data collection in an oil spill situation.

London, 4-5 September, 2013 [Download the full agenda](#)

Training

OHMSETT ADVANCED OIL SPILL RESPONSE STRATEGIES AND TACTICS TRAINING



When an oil spill occurs, your team needs to know how to set up an incident command system, what strategies to use, and what equipment should be deployed for successful response operations.

Learn this and more at OHMSETT's Advanced Oil Spill Response Strategies and Tactics Training, June 11-14, 2013. This 3 1/2-day training session will take place at OHMSETT in Leonardo, NJ. It will emphasize practical experience in full-scale oil recovery operations in the OHMSETT outdoor wave tank. You will increase your proficiency using boom and skimmers while practicing removing spilled oil. The course is presented in partnership with Texas A&M National Spill Control School. At the completion of the course, you will receive a NSCS Certificate of Completion.

The cost is \$1,270 per person. For course information and registration visit www.ohmsett.com/registration.html, or call 732-866-7286.

Company news

VIKOMA TO LAUNCH “MAJOR NEW PRODUCT” AT SPILLCON

ISCO Corporate Member, Vikoma International Limited, will be exhibiting at Spillcon 2013, the Asia-Pacific Oil Spill Prevention and Preparedness Conference and Exhibition held in Cairns, Australia from 8-12 April 2013.

Vikoma will partner with its Australasian Agents, the New South Wales-based OPEC Systems on Stand 39-44 as well as on Stand 9, where the business will launch a major new product for the oil spill response market.

Vikoma Managing Director, Peter Tyler said “Spillcon offers us an excellent opportunity to interact with a broad range of our clients and prospects from across Australasia and South East Asia, and provides a forum for our new Sales and Marketing Director, Guy Downie to be formally introduced to the Region.”

Regional Sales Managers, Peter Hoyle and Kevin Leppard will also be in attendance at the show.

<http://www.vikoma.com>

Legal disclaimer: Whilst ISCO takes every care to ensure that information published in this Newsletter is accurate unintentional mistakes can occur. If an error is brought to our attention, a correction will be printed in the next issue of this Newsletter. Products and services featured in the ISCO Newsletter and/or the ISCO website, including the International Directory of Spill Response Supplies and Services, have not been tested, approved or endorsed by ISCO. Any claims made by suppliers of products or services are solely those of the suppliers and ISCO does not accept any liability for their accuracy.