



ISCO NEWSLETTER

The Newsletter of the International Spill Response Community
Issue 396, 5 August 2013

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International news

EUROPE: MONTE ARUCAS SUCCESSFULLY COMPLETES ACCEPTANCE TEST



The *Monte Arucas* tanker has joined EMSA's network of standby-oil spill response vessels after passing the acceptance test held in Ferrol, Spain on 3-4 July. The vessel owned by Sertosa Norte and operated by Naviera Urbasa brings an additional 2,940m of storage capacity to the network as well as state-of-the-art oil recovery equipment, including a high capacity skimmer, ocean oil boom, rigid sweeping arms and oil slick detection system.

The *Monte Arucas*, stationed in Ferrol, will provide pollution response to the Bay of Biscay, where maritime traffic is heavy, particularly on the route that runs from the English Channel to the strait of Gibraltar. EMSA [Read more](#)

Incident reports

INDONESIA: PERTAMINA TANKER SPILLS CRUDE OIL INTO MOLUCCA SEA

July 31 - An oil tanker owned by Indonesia's state oil and gas company, Pertamina, spilled around 5,400 tonnes of fuel into the Molucca Sea, the

Incident reports (continued)

domestic media reported on Wednesday.

The KM Patriot Andalan was carrying 7,000 tonnes of fuel from Papua and was anchored at the port of Ternate in eastern Indonesia when high seas caused the tanker to hit a dock and eventually sank. *The Maritime Executive* [Read more](#)



KM Patriot Andalan Sinks at the Dock, Unleashes Major Oil Spill



July 31 - The KM Patriot Andalan, a Pertamina oil tanker, is seen as it sinks at Ternate port, Indonesia Maluku Utara province July 31, 2013. *gCaptain* [Read more](#)

THAILAND: OIL SPILL HITS THAI TOURIST ISLAND

July 29 - Thai navy personnel battled Monday to clean up a major oil slick which coated a beach on a popular tourist island in a national park after a pipeline leak.

Roughly 50,000 litres of crude oil gushed into the sea on Saturday about 20 kilometres (12 miles) off the coast of the eastern province of Rayong, operator PTT Global Chemical said.

The oil reached Ao Phrao beach on the island of Ko Samet where hundreds of navy personnel, national park officials, company workers and villagers raced to remove it. *AhramOnline* [Read more](#)



Oil spill blackens Thai island beaches

July 31 - The oil slick soon began washing ashore on the tourist island of Samet, fouling several popular white sand beaches, and now has spread to nearby smaller islands.

Pipeline operator PTT Global Chemical Plc. has apologized and pledges to have the spill cleaned within days, as tourism officials have raised alarms about the sharp drop in tourist dollars. Gathered here are images of the early clean-up work taking place on Thailand's Samet Island. [21 photos] *The Atlantic* [Read more](#)

Tourists abandon blackened Koh Samet beach

August 1 - For the past four days crude has been washing up here and cleanup crews have been dealing with it the best way they can -- pumping it into holding tanks, containing it with booms, even mopping it up with absorbent pads. *CNN News*

[Read more and watch videos](#)

Incident reports (continued)

AUSTRALIA: CONCERNS FOR WILDLIFE AFTER BRISBANE OIL SPILL

July 30 - Across the Tasman, there are concerns for marine animals following yesterday's oil spill at the Port of Brisbane. Wildlife carers are trying to capture birds and animals injured by the oil, so they receive proper treatment. *NewstalkZB* [Read more](#)

Authorities move to clean up oil spill at Port of Brisbane

July 29 - Authorities say between five and 10 tonnes of heavy oil was spilled in an area near the port's outer wharves late last night.

Authorities have spent the morning investigating the source of the spill and trying to contain it. Queensland Transport Minister Scott Emerson says it could take a week to clean up. *ABC News* [Read more](#)

Dominica Offers Support to AMSA Following Pollution Incident in Brisbane River

August 1 - The Commonwealth of Dominica Maritime Administration is offering full support into the investigation and consequent activities following notification of a [marine pollution incident](#) involving a Commonwealth of Dominica flagged ship in the Brisbane River on 28 July 2013. *TheMaritime Executive* [Read more](#)

COLOMBIA: BLAST SHUTS COLOMBIAN PIPELINE

July 30 - An explosion shut down Colombia's 80,000 barrel-per-day Cano Limon-Covenas oil pipeline in an attack blamed on leftist rebels, according to reports.

The 780 kilometre pipeline was attacked on a stretch near Saravena, in Arauca province close to the border with Venezuela. It was the third attack on the pipeline this month, Reuters reported. The explosion, which took place on Sunday, was likely carried out by a rebel group, two military sources told the news agency.

No details on how much crude was spilt by the explosion or the environmental damage were immediately available. The pipeline carries crude from the Cano Limon fields to the port of Covenas on the Caribbean coast for export. *Upstream* [Read more](#)

USA: FUEL REMOVAL COMPLETE, SALVAGE BEGINS ON ITB HOOK POINT-ALAGANIK ON GULF OF ALASKA

July 29 - The Coast Guard continues to monitor the integrated tug and barge Hook Point-Alaganik following the [vessel's grounding on the Gulf of Alaska coast](#), sixty miles southeast of Cordova, Alaska.

Alaska Marine Response, LLC personnel arrived at the site of the grounding via aircraft Thursday evening, offloaded response equipment and began fuel removal operations on the tug and barge.

As of late Friday afternoon, all recoverable fuel and oil have been removed from the vessel, totaling 1,740 gallons of diesel fuel and 225 gallons of hydraulic and miscellaneous fluids. *The Maritime Executive* [Read more](#)

UK: RIVER PAR POLLUTANT KILLS MORE THAN 1,000 FISH

July 29 - More than 1,000 fish have been killed by a pollutant in a four-mile (7km) stretch of river in Cornwall, the Environment Agency has said. Sea trout, salmon and flounders are among the fish killed in the River Par.

The agency said it was focusing on a tributary and hoped samples would identify the type and source of the pollution, which was found on Friday. *BBC News* [Read more](#)

CANADA: ALBERTA OILSANDS SPILL: 6,000 BARRELS OF BITUMEN RECOVERED

July 30 - Alberta's energy regulator has acknowledged that nearly 6,000 barrels of bitumen have been recovered from a series of underground oil leaks at an oilsands facility, though the overall size of the spills remains unknown.

In releasing the update, the Alberta Energy Regulator noted that all four spills are ongoing at the site of the project in Cold Lake operated by Canadian Natural Resources Ltd. and have so far killed animals including 11 birds, 21 amphibians and 4 small mammals. *TheStar.com* [Read more](#)

Mechanical failure triggered bitumen contamination, Canadian Natural Resources says

July 31 - A mechanical failure caused contamination at its Primrose Project on the Cold Lake Air Weapons Range, but Canadian Natural Resources Ltd. said Wednesday the damage has been contained and cleanup is ongoing. *Edmonton Journal* [Read more](#)

Incident reports (continued)

USA: ENBRIDGE BEGINS FRESH CLEAN-UP ON 2010 MICHIGAN OIL SPILL

July 30 - [Enbridge Energy Partners LP](#) has begun a new round of dredging on the Kalamazoo River, Michigan, to clean up oil from a huge pipeline spill in 2010, the U.S. Environmental Protection Agency said on Tuesday.

Twelve miles of the Kalamazoo River near Marshall, Michigan, will be temporarily shut while Enbridge dredges approximately 350,000 cubic yards of contaminated sediment.

Over the past three years nearly 1.15 million gallons of oil have been recovered from the river. *Reuters* [Read more](#)

USA: WELL INTERVENTION WORK MOVES FORWARD ON ALL FRONTS AT HERCULES GAS RIG

July 31 - The Bureau of Safety and Environmental Enforcement (BSEE), U.S. Coast Guard, and Walter Oil & Gas Corporation (Walter), through the Unified Command, continue to oversee and coordinate response efforts to secure the South Timbalier 220 natural gas Well A-3. Safety of personnel and protection of the environment remain the top priorities.

Walter's application for permit to drill a relief well was approved Saturday by BSEE. The Rowan EXL-3 jack-up rig, contracted by Walter, is on location at South Timbalier 220 and crews are preparing the rig for drilling. The crew is expected to begin drilling the relief well early Thursday. *The Maritime Executive* [Read more](#)

Responders Complete Clean-up Onboard Hercules Rig, Pipe Driving Begins

August 2 - All available options to safely secure the natural gas well remain under consideration. Work is moving forward on all approaches. Clean-up work on board the Hercules 265 Rig has been completed. Gas detectors and high-capacity water jet fire monitors have been installed on board the Hercules 265 rig.

BSEE has reviewed and approved Walter's plans and procedures for debris removal from the well site. Work to safely remove and secure debris was expected to begin late on August 1. *The Maritime Executive* [Read more](#)

NORWAY: WASTE SHIP SITS HIGH AND DRY IN NORWAY [INCIDENT PHOTO]



August 1 - The Danish tanker "Dart" is sitting high and dry today after running aground early Thursday morning in Norway.

This ship was en route Karmøy to Florø when she went aground overnight in Åfjorden in Hyllestad, local media reports.

The 67-meter Dart is listed as a "waste disposal vessel" and is reportedly carrying "mud." There have been no reports of pollution or injuries to the seven crewmembers.

gCaptain [Read more and watch video](#)

DANGEROUS GOODS - HAZARDOUS MATERIALS GROUP & NETWORK - NEWSY STUFF

August 3 - There are so many industrial spills and road tanker incidents every week that the ISCO Newsletter could not possibly report on these - and there really isn't any need because Don Johnston of ISCO Industry Partner, the DG & Hazmat Group is already doing such a great job in his publication "Newsy Stuff".

Incident reporting in the ISCO Newsletter tends to focus on marine incidents, pipeline spills and river pollution events and we don't cover the same range of subject matter as "Newsy Stuff".

"Newsy Stuff" is an electronic publication arriving by email at least twice a week, each issue giving 15 to 20 pages of news on events like road tanker spills, incidents at fuel stations, tank ruptures, industrial fires and explosions, etc.

Sometimes your editor picks up on Don's reports and uses links he provides when composing the ISCO Newsletter but if you want a really comprehensive source of information on types of incidents that are generally not covered by the ISCO Newsletter, you should join the DG & Hazmat Group and read Don's "Newsy Stuff".

You can find out more by visiting <http://tech.groups.yahoo.com/group/DangerousGoods/>

CANADA: ALBERTA FINANCE MINISTER CALLS NEWS CONFERENCE ON TRANSCANADA PIPELINE TO MARITIMES

"This is an historic opportunity to connect the oil resources of western Canada to the consumers of eastern Canada, creating jobs, tax revenue and energy security for all Canadians for decades to come," said Russ Girling, TransCanada's president and CEO. Photograph by: Eric Hylden, THE CANADIAN PRESS

August 2 - Alberta Premier Alison Redford welcomed news Thursday that TransCanada Corp. will proceed with its Energy East pipeline project to transport crude oil to Canadian refineries and export terminals as far east as New Brunswick.

The proposed pipeline system will take crude from western provinces as far east as Saint John, N.B., passing through other Canadian cities including Montreal and Quebec City. The project — which still requires environmental approval — will include some existing TransCanada pipelines between Western Canada and Montreal, plus new lines to be constructed to take the crude further east. *Edmonton Journal*
[Read more](#)



CANADIAN SHIP-SOURCED SPILL PREPAREDNESS AND RESPONSE - SUBMISSIONS MADE TO TANKER SAFETY EXPERT PANEL

The Canadian Government has completed a consultation process under which submissions were invited in relation to anticipated new tanker traffic that would be generated by the proposals for export of crude oil.

Transport Canada has published the text of the submissions received. [Access and read these submissions](#) [Thanks to Gerald Graham of World Ocean Consulting]

BP RAISES OIL SPILL CHARGE AS Q2 MISSES FORECASTS

July 30 - International oil company BP Plc <BP.L> increased its giant accounting provision for the 2010 oil spill to \$42.4 billion (27.6 billion pounds) from \$42.2 billion on Tuesday and said its \$20 billion fund to pay spill compensation had only \$300 million left in it. *Euronews* [Read more](#)

NIGERIA: CONFORM TO INTERNATIONAL STANDARDS, DICKSON TELLS OIL FIRMS

July 25 - The Bayelsa State Governor, Seriake Dickson, has accused oil companies operating in Nigeria of not conforming to international standards and practices in their operations in the Niger Delta region.

Dickson, said this Wednesday when the Ambassador of Netherlands to Nigeria, Ambassador Bert Ronhaar, paid him a courtesy call in Yenagoa. Condemning the application of double standards by multinationals, in the country, the governor said such attitude contributed to the impoverishment of the environment and people in the region. *All Africa* [Read more](#)

CANADIAN COAST GUARD SHIPWRECK CLEAN UP EXPECTED TO TAKE THREE MONTHS



July 26 - Almost seven decades after a U.S. military transport ship sank to the ocean floor off the north coast of British Columbia, the Canadian Coast Guard has received approval to remove bunker oil and other potentially hazardous materials from the Second World War-era vessel.

The maritime safety agency issued a request for proposals on Friday for a contractor to tap into the rotting hull of the Brigadier General M.G. Zalinski where it lies 100 kilometres south of Prince Rupert, B.C., burping oil to the surface.

The ship's manifest listed at least twelve 500-pound bombs, .30 and .50-calibre ammunition and 700 tonnes of bunker oil, and the fishing community is concerned about the potentially toxic effects of those materials on shellfish and other marine life. *Huffington Post* [Read more](#) [Thanks to Gerald Graham]

Other news (continued)

Coast Guard taking on clean-up of forgotten shipwreck off B.C. north coast

July 26 - The project is expected to begin in September and take up to three months using a process called "hot-tapping" — drilling holes into the side of the vessel to pump hot steam into the fuel tanks. As the steam increases the temperature of the oil, it flows more easily and can be pumped to the surface. *The Canadian Press* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

USA: BP BRACES FOR LENGTHY LEGAL BATTLE AS OIL SPILL PAYOUTS LEAP

July 30 - BP is digging in for a long legal battle over the Gulf of Mexico oil spill, Chief Executive Bob Dudley said on Tuesday after compensation costs soared for a second straight quarter.

The payouts, [the scale of which BP is disputing](#) even though they are one part of the case that was settled last year, have been the focus of attention in recent months in a wider legal process that has saddled BP with a \$42.4 billion clean-up, fines and compensation burden and could yet cost billions more.

BP has said some of claims being paid are "absurd" and "fictitious" and that the terms are being misinterpreted to allow businesses which had no spill-associated loss receive payment. It has so far failed in all its attempts to stop them.

"As we continue to fight these absurd (compensation) outcomes and as the likelihood of extended litigation on other matters increases ... we want everyone to know that we are digging in and are well prepared for the long-haul on legal matters," Dudley said at BP's quarterly results news conference. *The Maritime Executive* [Read more](#)

JAPAN: FUKUSHIMA CLEAN-UP TURNS TOXIC FOR JAPAN'S TEPCO



Photo: Workers wearing protective suits and masks constructing water tanks are seen through a bus window at Tokyo Electric Power Co. Credit: Reuters/Issei Kato/Files

July 30 - Two and a half years after the worst nuclear disaster since Chernobyl, the operator of Japan's wrecked Fukushima plant faces a daunting array of unknowns.

Why the plant intermittently emits steam; how groundwater seeps into its basement; whether fixes to the cooling system will hold; how nearby groundwater is contaminated by radioactive matter; how toxic water ends up in the sea and how to contain water that could overwhelm the facility's storage tanks.

What is clear, say critics, is that Tokyo Electric Power Co is keeping a nervous Japanese public in the dark about what it does know.

The inability of the utility, known as Tepco, to get to grips with the situation raises questions over whether it can successfully decommission the Fukushima Daiichi plant, say industry experts and analysts. *Reuters* [Read more](#)

NIGERIA: VILLAGE CLEARED OF LEAD AFTER DEADLY OUTBREAK

Health workers excavate soil contaminated with lead poison in Dareta village, in the Zamfara state on June 10, 2010. Medical charity MSF said Wednesday the Nigerian village that suffered an unprecedented and deadly lead poisoning outbreak had been cleared of the toxin, but that nearly 1,000 exposed children needed treatment.

July 31 - Medical charity MSF said Wednesday a Nigerian village that suffered an unprecedented and deadly lead poisoning outbreak had been cleared of the toxin, but that nearly 1,000 exposed children needed treatment.

The crisis in northwest Zamfara state first came to light in 2010, and was "the worst outbreak ever recorded," Medecins Sans Frontieres said. At least 400 children have died from poisoning.



Lead exposure in several areas of Zamfara was blamed on unsafe techniques used in extracting gold. Illegal mining is more lucrative than agriculture for impoverished farming communities. *France24* [Read more](#)

Other news (continued)

USA: EXECUTIVE ORDER IMPROVING CHEMICAL FACILITY SAFETY AND SECURITY

Statement from Chairperson Rafael Moure-Eraso on Executive Order Improving Chemical Facility Safety and Security

August 1 - I applaud the issuance of the Executive Order entitled, "Improving Chemical Facility Safety and Security." Increased coordination, communication, and data collection amongst federal, state, tribal, and local agencies should result in action and assist community members and emergency responders in helping to prevent and respond to chemical incidents.

Incidents the CSB has been investigating, such as the recent tragic explosion and fire in West, Texas, have revealed serious gaps in the prevention of accidents and in response preparations for major chemical releases by companies and government authorities, leaving Americans vulnerable. [NewsCSB.gov](#) [Read the complete statement](#) [Read the text of the Executive Order](#)

INDIA: CONTAMINATION OF UCIL SITE REMAINS A THREAT FOR BHOPAL

August 1 - Three decades after it was shut down, the Union Carbide factory in Bhopal continues to be a real danger to the people of Bhopal. Almost every study done to measure the impact of the waste dumped within and outside the site by UCIL has come up with one conclusion there is large-scale contamination in the soil and water of the area where the factory is located.

In the first initiative of its kind, New Delhi-based research and advocacy body Centre for Science and Environment (CSE) has analysed all the studies and their conclusions. CSE released the key findings of its analysis here today at a media briefing. It also released a comprehensive action plan for ridding the site of this contamination.

CSE presents action plan, prepared in consultation with experts from across the country, to clean the site -

- Wastes dumped by UCIL in and around the plant causing massive contamination of soil and groundwater and affecting health of the people in surrounding areas
- CSE analyses all studies done so far. For the first time, brings together all stakeholders to find a way out
- Expert group concludes disposal of stored 350 tonnes of waste is only one small part of the bigger problem of decontamination of soil and groundwater
- CSE presents comprehensive action plan for waste disposal and remediation

CSE WebNet [Read more](#)

People in the news

MOHAMED IBRAHIM IS NOW OIL SPILL SUPERVISOR AT ZADCO



Mohamed Ibrahim has been appointed as oil spill supervisor at Zakum Development Company (ZADCO), a co-venture between ExxonMobil, Abu Dhabi National Oil Company (ADNOC) and Japan Oil Development Company (JODCO).

Mohamed's previous positions were Oil Spill Response Team Leader at ADNOC, manager of Oil Spill Response Center at ADNOC and Manager of Oil Spill Response Center at PESCO – Egypt. [Source: Linked-in]

ISCO news

PROVIDING A CAREER DEVELOPMENT PATH VIA PROFESSIONAL MEMBERSHIP

Students, apprentices and trainees can join ISCO as student members and pursue a career development path that, as qualifications and experience are gained, can lead to eligibility for Associate Membership (AMISCO), Membership (MISCO) and, eventually, Fellowship (FISCO). The key word is "professional" when applied to men and women who are making a success in their careers and have the necessary levels of knowledge and expertise.

Professional recognition is a visible mark of quality, competence and commitment, and can offer a significant advantage in today's competitive environment. More information can be found on the ISCO website at www.spillcontrol.org Look under Membership and click on Professional.



In this issue of the ISCO Newsletter we are printing No. 138 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 138: THE GENERAL CONTINGENCY PLAN

To ensure that this new contingency plan starts from knowledge, it must open with a clear statement that all matter exists as gases, liquids, or solids at ambient temperatures, that when released from containment, gases dilute in the atmosphere, liquids dissolve in water or if insoluble disperse as droplets and float or sink while doing so, as do solids while dissolving or remaining un-dissolved; that gases diluting in the atmosphere, dissolved liquids and solids in seawater and dispersed non-coalescing droplets are non-recoverable; that only non-soluble/non-dispersed liquids and solids are candidates for possible recovery; and that immiscible liquids are possible candidates for induced- droplet dispersion.

Again, to avoid encumbering this new contingency plan with beliefs counter to knowledge, it must clearly state that the entire global biomass of land and ocean recycles as carbon dioxide and water from and to the atmosphere by photosynthesis and biodegradation; that operational discharges and accidental releases of oils or organic HNS liquids complete the biodegradation hemicycle previously interrupted by fossilisation and subsequent chemical processing; that in doing so they cannot cause species-extinction/ecological-disaster because their initial seawater concentrations from solution or natural dispersion are too low to be toxic and rapidly dilute to zero while being non-toxically/micro-biologically degraded to carbon dioxide and water as is the entire oceanic biomass when dead; that their natural sulphur-contents recycle through atmosphere and biomass by incorporation in photosynthesis/ biodegradation as sulphite, sulphate and sulphur dioxide while nitrogen cycles by the symbiosis of plant and microbial life and subsequent biodegradation as nitrite, nitrate and nitrogen oxides; that dissolved inorganic HNS are diluted and neutralised in the buffered pH system which is seawater; and that the numbers of birds and animals killed by physical coating are too low to cause species-extinction/ ecological-disaster at sea or onshore because natural reproduction is sufficient to replace such losses

As to the nature of floating slicks, this new contingency plan should clearly state that the thickness of Fay's phase II spreading layer being ~ 0.1mm, the concentration in the bottom/top metre of the atmosphere/water-column is never more than 100ppm, is subject to unrestricted dilution to zero, and thus cannot cause species-extinction/ecological-disaster even were it not subject to biodegradation; that attainment of 100ppm concentration being impossible because rates of evaporation solution and dispersion are too low, their increase by applying dispersants (themselves biodegradable) at the dispersant : oil ratio of 1 : 20 cannot significantly alter a concentration-depth profile which untreated by dispersant runs from < 100ppm to zero even were biodegradation to be absent; that the combined toxicity of oil dispersant mixtures at this ratio are measured by adjusting concentration to the LC50 value which is at least 3 orders of magnitude higher than those measured in the top metre of the water column, let alone at greater depths; and that this same disregard for concentrations of actual exposure is exhibited by those who quote LC50 values for individual HNS in support of their self-serving beliefs.

As to the inherent limitations of response techniques, this new contingency plan must state clearly that the slick thickness of 0.1mm, limits the encounter rate of response to 0.18m³h⁻¹ per metre swath-width per knot of advance, there being only 100m³ of pollutant per km² of sea surface; that response techniques are only applicable to small fractions of slicks while evaporation, solution or dispersion occurs over the entire area, the quantity thus removed without human intervention being proportional to the total slick area; that meanwhile slicks may be moving towards shore as the sum of the tide vector and 3% of the wind vector with natural processes removing more than the response; that evaporation removes about 25%-30% of crude oils in < 5 hours while natural dispersion removes half of the non-volatiles as water-in-oil emulsion droplets in successive half-live periods of 4 to > 48 hours; while heavy fuel oils have half-lives 4-8 days; that insoluble non-volatile HNS do not form emulsions and, apart from about 15 of them, have viscosities < 5cSt at 15 C and thus have half-lives < 4hours while only about 25 are solid at ambient temperatures; that volatile HNS evaporate entirely and soluble HNS dissolve entirely; that given the inherently low encounter rate, no at sea response is likely to deal with more oil prior to stranding than is equivalent to the maximum release expected from damage to a single cargo tank; and that there is thus an unavoidable need for cargo/bunker transfer in safe havens.

However, in light of this inherently limited response opportunity, this new contingency plan must state that HNS tanks are smaller than oil tanks, respective bunker tanks are smaller than cargo tanks, that cylinders and packages within containers are progressively smaller still; that releases are thus ever more localised; that none arise from undamaged containment; and that gas releases can only be monitored as to concentration or flared to diluting carbon dioxide and water.

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.

IN SITU BURNING: CHAPTER 29



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 30th 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.

30. Monitoring and Sampling

In the last episode we discussed real time monitoring of particulate matter resulting from burns. In this episode we cover conventional sampling and analysis methods.

Sampling Particulates Using Filters

Figure 37 (below): A sampling station at a burn experiment. The large devices to the right are high volume air samplers.



Particulate levels from a burn can be most accurately determined by collecting a representative sample on a quartz fibre filter using a high-volume sampling pump.^{1,76} The accumulation of particulate on the filter can be measured by differential weighing. The concentration can be calculated by dividing the weight collected by the volume of air. An added advantage of this particulate sampling method is that, after weighing, the collected particulates can be analyzed for polyaromatic hydrocarbon (PAH) compounds by gas chromatography, following a solvent extraction procedure. Other burn products of interest, such as metals, could also be analyzed.

rate must be recorded at both the initiation and conclusion of sampling, while the filter is in place. The flow rate is usually determined as a function of the back pressure created by the pump, although it is sometimes measured by an in-line mass flow meter.

All high-volume samplers operate on AC power due to the current required to run the pump. The unit will either have a power switch or be controlled by AC supply. There is generally a voltage regulator that can be adjusted externally. The frame for the conventional quartz fibre filter is designed to hold either a 4" diameter filter circle or an 8" x 10" filter sheet. In most cases, the total suspended particulate (TSP) fraction is being collected, for which a filter with 0.8 micron (μ) pore size is used. The collected sample can be used to determine particulate levels by differential weighing and/or can be analyzed for various burn products, usually PAHs.

VOC Sampling Using Summa Canisters

The Summa canister is one method used to collect a metered amount of whole air for laboratory analysis.¹ Air is collected in these evacuated, stainless steel canisters to be analyzed for volatile organic compounds (VOCs). In conventional high volume sampling methods, the VOCs are lost either during sampling or in transit. By contrast, the Summa canister method ensures that most of the VOCs are captured and remain stable between the sample collection on-site and the subsequent laboratory analysis. The amount of VOCs found in air samples collected close to oil burns varies, depends on several factors including fuel composition and distance from the burn.

The Summa canister is a spherical, polished stainless steel container with a single manually controlled valve. The canister must be cleaned and evacuated by an accredited laboratory before use. A pre-cleaned and pre-calibrated flow restrictor valve is affixed in order to meter the flow into the canister. No restrictor valve is necessary to collect an instantaneous grab sample. These canisters

Special feature – In situ burning (continued)

are most commonly available in sample volumes of 6 L, although 1 L and 20 L sizes, as well as less common sizes, are also available.

Both the extraction and VOC analysis of the contents of the Summa canisters should be performed by an accredited laboratory. The canister must then be cleaned and re-evacuated before it is used to collect more samples.

The main limitation of Summa canisters is that the analysis of the canisters must be done off-site so there is no on-site indication of the quality of the sample collected.

Combustion Gas Measurement

Combustion gases of concern include carbon dioxide, carbon monoxide, sulphur dioxide and nitrogen oxides.

Carbon Dioxide - Carbon dioxide is the end result of combustion and is found in increased concentrations around a burn.⁷⁷ Normal atmospheric levels are about 300 ppm and levels near a burn can be around 500 ppm, which presents no danger to humans. Carbon dioxide can be measured in a number of ways, real time instruments generally measure it using an infrared technique, discrete samples can be taken and quantified by gas chromatography and infrared open-path instruments can provide real-time measurement.

Carbon Monoxide - Carbon monoxide levels are usually at or below the lowest detection levels of the instruments and thus do not pose any hazard to humans. Carbon monoxide appears to be distributed in the same way as carbon dioxide. Measurements of carbon monoxide can be done using similar techniques as for carbon dioxide.

Sulphur Dioxide - Sulphur dioxide, per se, is usually not detected at significant levels or sometimes not even at measurable levels in the area of an in-situ oil burn. Sulphuric acid, or sulphur dioxide that has reacted with water, is detected at fires and levels, although not of concern, appear to correspond to the sulphur content of the oil. Sulphuric acid aerosols can be measured by titrating caustic solutions through which the sample air was drawn (impinger method) or using a reactive tape instrument.

Monitoring PAHs on particulates

PAHs or Poly Aromatic Hydrocarbons are aromatic compounds found in crude oil and are often produced as a result of combustion.⁷⁸ Some PAHs are toxic to man and the environment, particularly the larger PAHs. Crude oil burns result in PAH downwind of the fire, but the concentration on the particulate matter is often an order-of-magnitude less than the concentration in the starting oil and sometimes several orders-of-magnitude less. Diesel contains low levels of PAHs with smaller molecular size, but results in more PAHs of larger molecular sizes after burning. Larger PAHs are either created or concentrated by the fire. Larger PAHs, some of which are not even detectable in the Diesel fuel, are found both in the soot and in the residue. The concentrations of these larger PAHs are low and often just above detection limits. Overall, studies have shown that more PAHs are destroyed by the fires than are created.

The analysis of target PAHs and other hydrocarbons is performed on a gas chromatograph by a qualified laboratory.

Carbonyls

Carbonyls such as aldehydes and ketones are created by oil fires, but do exceed health concern levels only very close to fires.⁷⁹ Monitoring for Carbonyls is conducted using a specialized sorption tube (DNPH) and sampling pump. Analysis is conducted in the laboratory.

The methods are detailed and require experienced laboratory personnel, but are not fraught with particular difficulties. Accuracies are ensured by the use of standards and internal standards. The condition of the sample tubes is important and sample tubes must be kept frozen before use.

The particular limitation that is noted is that the sensitivity of the method depends on the amount of soot collected and small samples often have insufficient material to allow proper detection of PAHs.

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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	Most recent issue
Bow Wave	Sam Ignarski's Ezine on Marine & Transport Matters	Current issue
Cedre Newsletter	News from Cedre in Brittany, France	June 2013 issue
The Essential Hazmat News	Alliance of Hazardous Materials Professionals	July 22 issue
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	August 1 issue
USA EPA Tech News & Trends	Contaminated site clean-up information	May 2013 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	June 1 - 15 issue
Intertanko Weekly News	International news for the oil tanker community	No. 31 2013
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	August 2013 issue
Soil & Groundwater Product Alert	From Environmental Expert	July 29 issue
Soil & Groundwater Ezine	Articles, papers and reports	August 2013 issue
Soil & Groundwater Newsletter	From Environmental Expert	August 1 issue
Soil & Groundwater Events	Upcoming events compiled by Environmental Expert	July 2013 issue
IMO Publishing News	New and forthcoming IMO publications	July 2013
IMO News Magazine	News from the International Maritime Organization	No 1, 2013
Pollution Online Newsletter	News for prevention & control professionals	July 31 issue
EMSA Newsletter	News from the European Maritime Safety Agency	July 2013 issue
JOIFF "The Catalyst"	Int'l Organisation for Industrial Hazard Management	July 2013 issue
Int'l Environmental Technology	Environmental Monitoring, Testing and Analysis	April 2013 issue
HELCOM Newsletter	Baltic Marine Environment Protection Commission	May 2013 issue

Training

ISAA 2013 TRAINING DAYS AT CASTLE ARCHDALE, ENNISKILLEN, NORTHERN IRELAND



The ISAA Training Days are on Tuesday 3rd and Wednesday 4th September 2013 and the event will take place at Castle Archdale, Enniskillen, Northern Ireland. The facilities at the Castle Archdale Country Park, provided by arrangement with the Northern Ireland Environment Agency, include the marina on the beautiful Lough Erne and the classroom and tearoom at Castle Archdale.

This year attendees are being offered a choice of three options -

- (1) A two-day MCA Level 2 Oil Spill Response Training Course on 3 and 4 September
- (2) Attendance at Day 2 only (4 September) of the MCA Level 2 Course covering deployment and recovery of oil spill response equipment. Note that this option does not qualify trainees

for award of a MCA Level 2 Course Certificate.

- (3) A one day Introduction to Contaminated Soil and Groundwater remediation on September 4 only.

[More information](#) [Online booking form](#)

SINGAPORE: LOYANG BASE, OSRL SUBSEA WELL INTERVENTION SERVICES INTERFACE TRAINING IN AUGUST 2013

This is the first Subsea Well Intervention Services (SWIS) Interface Training Workshop for all SWIS members and potential members. The course is tailored for all drilling staff and operations of the oil and gas companies who will need to understand the installation, maintenance and logistics requirement of the Subsea Well Capping Device and the Subsea Dispersant Toolkit in times of activation.

Jointly supported by both manufacturers - Oceaneering A S from Norway and Trendsetter from USA as well as OSRL SWIS engineers, this quality workshop will be held alongside the larger-than-life stacking devices at the newly-minted OSRL Singapore Base at Loyang Offshore Supply Base.

With the technical and operational knowledge of the 3 companies we endeavour to bring the highest educational value to the delegates of this workshop and knowledge-transfer of the latest technology in OSRL.

Do not miss this opportunity and do email us your registration on a first-come-first-served basis. Email Vincent Goh vincentgoh@oilspillresponse.com to guarantee your seats today! [More info and registration](#)

NOSCA SEMINAR 2013 ON OIL SPILL TECHNOLOGY IN LOFOTEN, NORWAY

This year's seminar will have focus on Oil Spill in Remote Areas and Vulnerable areas. With continuous oil exploration in new and remote areas, new challenges have been surfacing with higher traffic in these regions. How do we handle the higher drilling/ship activities related to conflict of interest, legislations, vulnerable environment and what tools should we use to clean up spills.

9-12 September, 2013 [Download the detailed seminar programme](#)

Events

USA: CLEAN GULF CONFERENCE SCHEDULE RELEASED

Over 2,600 emergency responders are set to converge from November 12-14, 2013 in Tampa, Florida, for the CLEAN GULF Conference & Exhibition.



Key professionals and decision makers from throughout the Gulf Coast and beyond will come together to discuss the latest trends and best practices in response operations.

Attendees will walk away with viable solutions they can incorporate to safely produce and transport petroleum products and effectively respond when a spill occurs. In addition to the conference sessions, the exhibit floor features more than 200 companies ready to assist you with finding new solutions and technologies that will work best for your organization. [View the Clean Gulf Conference Schedule](#)

UK: CROWDFUNDING FOR CLEANTECH

Have you explored every potential finance route? Businesses and entrepreneurs are invited to explore new investment opportunities, aimed specifically at the ECT sector, with this 'introduction to crowdfunding' event.

Crowdfunding is increasingly proving a viable means of raising finance for businesses and entrepreneurs but many are unaware of exactly how it works and how best to utilise the system.

Hosted in conjunction with the Scottish Environmental Technology Network and CrowdMission, Caledonia General Partners will unlock the mysteries of crowdfunding and demonstrate the opportunities for SMEs, business leaders and entrepreneurs.

This initial event will be followed up with a more in-depth session for parties interested in progressing a crowdfunding application and guide them through the process.

Date: Wednesday 28th August 2013 Times: 1pm – 2.30pm Venue: Lecture Theatre 5.12, Royal College Building, University of Strathclyde, 204 George Street, Glasgow

For more information and to register, visit: <http://www.setn.org.uk/wordpress/crowdfunding/>

The Scottish Environmental Technology Network is an Industry Partner of ISCO



Products and services

USED OIL RECYCLING – UNDERSTANDING THE IMPACT OF OIL SKIMMERS

Abanaki recently published an infographic demonstrating how our oil skimming technologies are an environmentally safe and low-cost method to recycle your used oil. Learn more about how the Model 8 Belt Oil Skimmer and the rest of our products can assist you in recycling your used oil. Additionally, learn how beneficial it is to recycle used oil. Download and share this infogr - See more at: <http://www.abanaki.com/oil-skimmer-blog/recycle-used-oil-with-abanaki-oil-skimmers/#sthash.9MqNHVNs.dpuf>

The ISCO Newsletter is published weekly by the International Spill Control Organisation, a not-for-profit organisation supported by members in 45 countries. ISCO 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 organisations. 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 Paul Pisani** (Malta), **Mr Simon Rickaby** (UK), **Mr Li Guobin** (China), and **Captain Bill Boyle** (UK). 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 Psaraffis** (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). More info on Executive Committee and Council Members can be found on the ISCO website at www.spillcontrol.org

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