ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

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International news

OSRL UNVEILS INTERNATIONAL WELL CAPPING EQUIPMENT

March 15 - Oil Spill Response Ltd (OSRL) today unveiled cutting edge well capping equipment that can be deployed around the world in the event of a subsea well control incident. It is available to oil and gas companies across the industry, marking a major advancement for international oil spill response capability. Norway's Minister for Petroleum and Energy, Ola Borten Moe, attended an inauguration event at OSRL's Base in Stavanger to commemorate the opening of this new facility where the equipment is stored.

OSRL's Subsea Well Intervention Service (SWIS) provides for swift subsea incident response around the world. The integrated subsea well intervention system includes four capping stacks to shut-in an uncontrolled subsea well and two hardware kits to clear debris and apply subsea dispersant at a wellhead, creating safer surface working conditions and enhancing bio-degradation. The SWIS

International news (continued)

equipment is suitable for the majority of known subsea wells. It can be deployed in water depths up to 3,000m and control flow pressures up to 15kpsi.

The equipment will be stored in four international locations – Norway, Brazil, South Africa and Singapore – and maintained ready for immediate mobilisation and onward transportation by sea and/or air in the event of an incident. The first equipment is now available for international use from OSRL's Norway Base, and a further three devices will be delivered during Q2 and Q3 2013.

SWIS is the culmination of unprecedented industry collaboration. In 2011, nine international oil and gas companies formed the Subsea Well Response Project (SWRP), pooling resources to develop equipment that could enhance subsea well control capability. OSRL collaborated with them to construct this equipment for the benefit of the wider industry, and companies can now subscribe to SWIS to incorporate this equipment into their own incident response plans.

Robert Limb, Chief Executive of Oil Spill Response Ltd, said: "SWIS represents a transformational addition to OSRL's portfolio of services, helping our members prepare for, and handle, potential subsea well control incidents on a global scale. Members benefit from world-class capping capability, supported by OSRL's industry-leading response and preparedness expertise. This pivotal development is wholly consistent with our mission to enable the most efficient, safe and effective response to oil spills wherever they may occur – and we are committed to extending this service to ensure a fully integrated response to all our members. Today's development is the first step in a global programme that will ensure a response capability that has never been provided before."

Keith Lewis, Project Manager, Subsea Well Response Project, said: "Incident prevention is the oil and gas industry's number one priority, but we can never be complacent. The delivery today of world-class intervention equipment is a major milestone for technical capping capabilities, but also for industry collaboration. Working together and sharing resources across the industry has strengthened our knowledge and the technology on offer. This co-operation will continue to be the most effective path in our ongoing commitment to enhance drilling safety." *OSRL* Read more

EUROPE: EMSA REVISED FOUNDING REGULATION NOW IN FORCE

March 11 - The long-awaited amendments to the founding regulation were published in the Official Journal of the European Union on 9 February 2013 and have now entered into force. Regulation (EU) No 100/2013 fine tunes EMSA's tasks and clarifies some governance issues. The amended regulation specifies the role of the Agency in assisting the Commission and in facilitating cooperation between the Commission and Member States, and its work with Member States.

Core tasks also include traffic monitoring systems, supporting the investigation of marine casualties and incidents, provision of technical assistance in case of pollution caused by ships as well as marine pollution caused by oil and gas installations. The amended founding regulation also includes the geographical extension of technical assistance to European Neighbourhood Policy countries. Overall, the Agency shall contribute to the efficiency of maritime traffic and maritime transport, so as to facilitate the establishment of a European maritime transport space without barriers. The amended regulation also introduces the potential for ancillary tasks to be assigned to the Agency under certain conditions in order to use its expertise and tools for other EU activities related to the EU's maritime transport policy. *EMSA Newsletter* Read more

Incident reports

USA: COAST GUARD: VESSEL CARRYING FUEL AND OIL SINKS NEAR NEW ORLEANS

March 8 - A spokesman for the Coast Guard said that a salvage and pollution response is under way after a towing vessel carrying 5,336 gallons of diesel fuel and 100 gallons of lube oil sank about 2 a.m. on Thursday. The 56-foot-long vessel sunk in the Mississippi River in St. James Parish, the Coast Guard said Friday.

The vessel, named "Justice," began taking on water and sank near mile marker 161.5 by the old Uncle Sam Plantation site by Convent, according to the spokesman, who said responding units were at the scene around 6 a.m. Friday. Boom was also deployed, the spokesman said. *The Times Picayune* Read more

UK: SEABIRDS KILLED AFTER OIL WASHED UP ON NORTH YORKSHIRE BEACHES

March 12 - OIL deposits have been washed up along a 15-mile stretch of North Yorkshire coastline, with seabirds being killed and a wildlife organisation warning thousands more could be in danger.

Scarborough Borough Council said deposits of oil were found between Scarborough and Speeton late yesterday afternoon and overnight, with the largest being the size of a plate. *Gazette & Herald* Read more [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group and ADR Training UK]

USA: REFINER DELEK CLEANING UP 5,000-BARREL SPILL IN ARKANSAS BAYOU

March 13 - The U.S. Environmental Protection Agency and Delek US Holdings Inc. (DK), a refiner that owns a plant in El Dorado, Arkansas, are working to clean up a 5,000-barrel oil spill about 20 miles north of the Louisiana border.

The EPA has removed about 4,200 barrels of crude from the March 9 spill that fouled about three miles of Little Cornie Bayou near Magnolia, Arkansas, Jennah Durant, a spokeswoman for EPA Region 6, said in a telephone interview today. Work to clean up the remaining barrels has been stalled by rain and freezing temperatures, according to an EPA incident report yesterday. *Bloomberg* Read more [Thanks to Don Johnston of ISCO Industry Partner. DG & Hazmat Group]

USA: HUGE BLAZE ERUPTS AFTER TUGBOAT PUSHING OIL BARGE HITS PIPELINE ON LA. BAYOU

March 13 - A tugboat pushing an oil barge struck a gas pipeline in a bayou south of New Orleans on Tuesday night, igniting a blaze that burned for hours and left two people injured, one critically.

Ensign Tanner Stiehl told The Associated Press the collision occurred at about 6 p.m. Central time on Bayou Perot, in a marshy area near where Lafourche and Jefferson parishes meet, about 30 miles south of New Orleans. *CBS News* Read more

AUSTRALIA: CHEMICALS FLOW INTO INLET

February 16 - A highly toxic chemical is likely to have polluted Trinity Inlet when a malfunction caused by ants led to more than 30,000 litres of water containing fire-fighting foam being released at a fuel terminal, a report says.

The Department of Environment and Heritage Protection is investigating what damage has been done to the inlet's water quality and marine life and whether people have been exposed to the pollutant.

At 6am on January 28, the firefighting deluge boom at the BP fuel terminal at the corner of Kenny and Draper streets, Portsmith, was accidentally activated for about one hour, during which up to 31,000 litres of water containing fluorinated foam was released. *Cairns.com.au* Read more [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

USA: GROWING MOUNDS OF PETROLEUM COKE RAISE FEARS ALONG DETROIT RIVER

March 13 - Hulking, pitch-black mounds resembling coal have grown exponentially in the last week along the banks of the Detroit River in southwest Detroit, prompting concern about potential pollution from residents and legislators on both sides of the river.

The petroleum coke, or pet coke, mounds are a by-product of tar sands oil refining used in energy production and when mixed with coal is used as a low-cost fuel. *Detroil Free Press* Read more

SOUTH KOREA: OIL TANK EXPLODES IN CITY GRAPPLING WITH GAS LEAK

March 7 - A tank at an oil refinery in the southeastern city of Gumi exploded Thursday, with no injuries reported, police and fire officials said.

The 200,000-liter tank containing 4,000 liters of bunker C fuel oil at the Kyung Buk Kwang Yu Co. refinery located in Gumi, some 200 kilometers southeast of Seoul, exploded around 8:21 a.m., they said. *Yonhap News Agency* Read more [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group and ADR Training UK]

AUSTRALIA: ANOTHER CHEMICAL LEAK AT ORICA FACTORY

March 11 - Chemical firm Orica is investigating another toxic leak from its Kooragang Island plant in Newcastle.

A plume of ammonia belched into the air from the vent stack of an Orica factory about 1.15pm (AEDT) on Monday after a relief valve was activated because of a build-up of pressure.

There was a leak of carcinogenic hexavalent chromium from Orica's Kooragang Island plant in August 2011, followed by a leak of ammonium nitrate from the factory into the Hunter River in November 2011. *9News National* Read more

Incident reports (continued)

UKRAINE: OIL SPILLED INTO DANUBE RIVER IN UKRAINE

March 13 - A large oil slick was discovered on the surface of the Danube River in Ukraine's southern Odessa region, authorities reported Tuesday.

A pool of about 400 square meters has appeared, after fuel oil was spilled into the river from a "Timekstron-2" freighter near the port city of Reni on Monday, the State Service for Emergencies reported.

Emergency crew are containing the pollution and they will try to determine how much oil leaked, it said. *China.org.cn* Read more
[Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

USA: CRASH WHERE TWO MEN DIED CAUSED CHEMICAL SPILL IN WISCONSIN RIVER

March 15 - Divers are still working to remove chemicals that spilled into a Wisconsin river earlier this month during a fatal crash that killed two Minnesota men.

Mohammed Malin and Batrodin Siyad, both of Minneapolis, were in a semitrailer that slipped off a snow-covered Interstate 94 bridge in Menomonie on March 5. The truck was carrying nearly 12 tons of fertilizer, and the entire cargo ended up in the river.

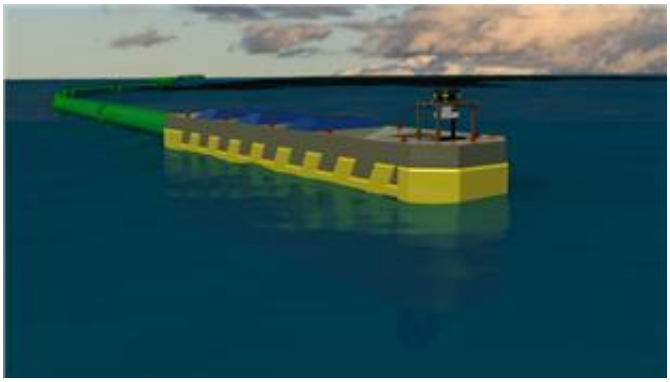
The fertilizer contains an herbicide for killing crabgrass, the Eau Claire Leader-Telegram reported.

LaCrosse Tribune Read more

Other news

USA: AIRBORNE OIL SPILL RESPONSE SYSTEM MAY TAKE OFF

Oil Spill Containment System: Image credit Scout Exploration



March 14 - An investment research report draws attention to Scout Exploration, Inc. developers of a unique airborne oil spill technology response system.

The system is designed to contain offshore and shoreline oil spills, of which there are hundreds every year, ranging from tens of millions of gallons to millions of barrels of oil in size, causing up to tens of billions of dollars' worth of ecological and business damages. Through a recent transaction, Scout has acquired the rights to what may be the most effective method of oil spill containment and remediation.

MarineLink.com Read more

USA: OIL SPILL READINESS PLAN COVERING 1,600 VESSELS APPROVED

March 7 - The Washington Department of Ecology (Ecology) has given its final approval of the Washington State Maritime Cooperative's (WSMC) umbrella oil spill readiness plan that covers more than 1,600 commercial vessels that transit Puget Sound and Grays Harbor. WSMC's oil spill readiness – or contingency – plan helps ensure that large commercial vessels can mount a rapid, aggressive and well coordinated response if they spill oil in state waters.

The plan identifies the location of different response equipment such as oil containment boom, skimming and towing vessels and vacuum trucks in Puget Sound and Grays Harbor. It also identifies how the equipment will be mobilized by private response entities during a spill to minimize harm to important environmental, cultural and economic resources.

WSMC's plan enrolls nearly all large cargo and passenger ships, commercial fish-processing vessels as well as some oil tankers and fuel barges that make transits in the shared waters of Puget Sound – including the Strait of Juan de Fuca and Haro and Rosario Straits – and Grays Harbor. State law requires all large commercial ships and vessels, oil tankers and tank barges have contingency plans to operate in Washington waters. Ecology reviews, approves and works with regulated vessels and shipping companies to continuously test and improve these plans. *Department of Ecology News Release* Read more

JAPAN: RADIOACTIVE DECONTAMINATION WORK FAR BEHIND SCHEDULE IN FUKUSHIMA

March 9 - Work to clear radioactive fallout in Fukushima Prefecture is so far behind schedule that government deadlines could be missed and evacuees may have to wait longer to return home, Environment Ministry documents showed.

The ministry on March 8 released its first progress reports on the government's decontamination project in 11 municipalities where some or all residents were forced to evacuate due to high radiation levels caused by the accident at the Fukushima No. 1 nuclear plant on March 11, 2011.

Cleanup work has started in only four of the municipalities, and progress rates remain extremely low in certain zones, according to the ministry's documents. *The Asahi Shimbun* Read more [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

OMAN-INDIA CO-OPERATION IN TACKLING OIL SPILLAGE CRUCIAL

March 10 - The Sultanate of Oman and India can play a crucial role in tackling oil spillage in the Arabian Sea effectively given the two friendly nations enhance joint operations in an active way, according to the Deputy Inspector General of the visiting Indian Coast Guard Ship ICGS Samudra Prahari, the first vessel fully dedicated to confronting oil spillage in the region.

"The joint operations of Oman and India will be one of the best in the sea forces against oil leakage by crude oil vessels that use this sea area. We are in talks with the Omani Inspector General and other senior officials," Donny Michael, Deputy Inspector General, who is the Commander of the ship, told the Observer.

The two sides have already exchanged their views and had held discussions to this effect. Accordingly, chances are both would agree on knowledge sharing and expertise management between them on a mutually beneficial basis, said the Chief of the Indian ship that leaves today to its hub in Mumbai. *Oman Daily Observer* Read more [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

JAPAN EXTRACTS 'FIRE ICE' GAS FROM SEABED

This NASA satellite image received on April 7, 2005 shows Shikoku island (bottom, left) western Japan. A huge layer of methane hydrate containing 1.1 trillion cubic metres in natural gas is believed to lie in the ocean floor off the coast of Shikoku.

March 12 - Japan said Tuesday it had successfully extracted methane hydrate, known as "fire ice", from its seabed, possibly unlocking many years' worth of gas for the resource-starved country.

In what they are claiming as a world first, a consortium is drilling for the hydrate, a fossil fuel that looks like ice but consists of very densely-packed methane surrounded by water molecules, one kilometre (3,300 feet) below sea level.

The solid white substance burns with a pale flame, leaving nothing but water. One cubic metre of it is estimated to contain many times the equivalent volume of methane in gas form.

The consortium, led by Japan Oil, Gas and Metals National Corporation, began initial work in February last year and on Tuesday started a two-week experimental production, an economy, trade and industry ministry official said. *Yahoo News* Read more [Thanks to ADR Training UK]

USA: JTF-CS HOSTS 100-PLUS FEDERAL, STATE HOMELAND RESPONSE LEADERS AT 'COMPLEX CATASTROPHE' EXERCISE

March 11 - More than 100 military leaders and emergency response representatives from across the U.S. met March 5-7 here to discuss the role military and emergency management agencies play in the event of a domestic catastrophic event.

Hosted by Joint Task Force Civil Support, the three-day exercise and conference allowed military commanders from various federal, state and National Guard response organizations to review response processes and capabilities following a "complex catastrophe" in the U.S., such as a nuclear detonation in a large metropolitan area.

The event focused on a need for continual collaboration by responders at all levels of government before an event occurs. Attendees participated in unit mission briefs, capabilities discussions, and an hour-by-hour domestic response "walkthrough" of military support to a state-led response following a chemical, biological, radiological or nuclear catastrophe. *DVIDS* Read more

JAPAN PAYS FOR TSUNAMI CLEAN-UP ON CANADIAN COAST

Japan provided $1 million on Wednesday to help clean up debris from the March 2011 tsunami that has washed up along Canada's shores.

Japanese Consul General Seiji Okada said the grant "represents a token of gratitude to the government of Canada and the Canadian people in recognition of the tremendous support provided to Japan" in the wake of the tsunami.

The tsunami followed a 9.0-magnitude subsea earthquake that rocked Japan on March 11, 2011, killing nearly 19,000 people. *TerraDaily* Read more

USA: EPA ORDERS ENBRIDGE TO DO ADDITIONAL DREDGING IN KALAMAZOO RIVER TO CLEAN UP OIL FROM 2010 SPILL

In this file photo, cleanup crews work in the Kalamazoo River near the Ceresco Dam to remove oil from the 2010 spill. MLive/Kalamazoo Gazette File

March 14 - The U.S. Environmental Protection Agency is ordering Enbridge Inc. to do additional dredging in the Kalamazoo River to clean up oil from a massive 2010 spill.

The order, which came down Thurday, requires Enbridge to do the dredging in sections of the river above Ceresco Dam near Battle Creek and in Morrow Lake in Comstock Township. The order comes more than two years after a 30-inch pipeline owned by Enbridge ruptured near Marshall and then traveled about 35 miles downstream before being contained.

The EPA has said previously that work crews removed 1.1 million gallons of oil and 200,000 cubic yards of oil-contaminated sediment and debris from the river following the July 26, 2010, spill.

Despite those efforts, EPA officials said Thursday that the agency "has repeatedly documented the presence of recoverable submerged oil in the sections of the river identified in the order and has determined that submerged oil in these areas can be recovered by dredging," according to an EPA news release. *MLive* Read more

U.S. WANTS MORE DETAILS BEFORE SHELL CAN RESUME ARCTIC DRILLING

March 14 - Royal Dutch Shell PLC will need to provide more detailed plans before it can make another attempt to drill off the coast of Alaska, the U.S. Department of the Interior said following a review of the company's troubled 2012 effort.

Shell has already said it is going to hold off on Arctic drilling this summer to prepare plans and equipment.

The Department of the Interior said key components of Shell's program weren't finalized going into the season, which put pressure on the company's operations and schedule. In the future, the government will require a more comprehensive plan describing every phase of the operation and will require Shell's management systems to be audited by a third party. It also found weak oversight of the contractors Shell relied on led to many of the company's problems.

Shell screwed up in 2012 and we're not going to let them screw up" when they return to the Arctic, Interior Secretary Ken Salazar told reporters during a conference call Thursday to discuss the review, which he had ordered in January. Shell said it will take the extra time to "apply lessons learned" from the review. *Fox News* Read more

Other news (continued)

USA: BP SAYS IT'S PAYING 'ABSURD' CLAIMS UNDER SPILL DEAL

March 15 - BP upped the ante Friday in its battle to keep from having to pay potentially billions of dollars more for Gulf of Mexico oil spill damages and attacked the administrator of the landmark settlement it reached last year with people and businesses that sued over the 2010 disaster. The British oil giant sought a court injunction to prevent the administrator handling claims under the class-action settlement from paying inflated or fictitious claims. *Houston Chronicle* Read more

People in the news

RETIREMENT DINNER HELD FOR ARCHIE SMITH

A retirement dinner was held on Wednesday 13th March 2013 in honour of Archie Smith, Chief Executive and Director of Oil Spill Response Ltd. from 1995-2013.

Approximately 200 guests from the oil industry worldwide attended – all friends and colleagues of Archie.

Archie has been in post for 18 years; the company has grown from 30 to 300 employees, with new bases being established in South Africa, Brazil, Norway in addition to the Global Alliances in Singapore, Australia and USA.

The venue was Drapers' Hall, Throgmorton Street, London, a most elegant palace setting befitting of the occasion. The Drapers' Company is one of the earliest Livery Companies in London. It's charter dates back to 1438. Displayed in the Palace is a large collection of art and silver www.thedrapers.co.uk

When the dust settles Archie hopes to spend some time with his new grandchildren and concentrate more on his charitable work. He also hopes to catch up on his skiing and other sporting interests. There was a detectable element of emotion in his farewell speech which is understandable for someone so well liked. However – "you can't keep a good man down". As anyone who has contact with him will know, he has a love of the industry as it loves him. I wouldn't be surprised if after a break this jovial and talented character doesn't pop up in a different role allied to the industry. This I think would meet with applause. A memorable evening enjoyed by all.

ISCO News

MISSING FORMULAE ON ISCO WEBSITE "USEFUL DOWNLOADS" PAGE

ISCO has been alerted that the links for downloading the following formulae from the website are currently not functioning –

- Boom Deployment Calculator (A tool that performs the calculations required for the effective deployment of containment booms).
- Conversion Calculator (A powerful conversion tool with responder specific categories, such as Volume to Weight and Application Rates, in addition to hundreds of standard units).
- Oil on Water Quantification Calculator (a user friendly interactive program that can calculate oil volume on the sea surface).
- Oil on Water Trajectory Calculator (a user friendly interactive program that performs the calculations required to predict the movement of oil on the sea surface)
- Amount of Product in Soil Calculator
- Pipeline Volume Calculator

The links for downloading these formulae relied on third party sites which unfortunately appear to be no longer operational. Help from members and readers in replacing availability on the ISCO website of these useful formulae would be very much appreciated. If you can assist, please contact john.mcmurtrie@spillcontrol.org

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INFO URGENTLY NEEDED BY IMO: MARINE HNS INCIDENTS - JUNE 2012 TO OCTOBER 2012

For an ongoing HNS work project IMO has already compiled information on incidents during this period involving the following vessels – Stena Scandinavica, Synthersis III, MSC Flaminia, Maersk Kinloss, Bunga Alpinia, Almanora, Oratank, Selat Madura, Wan Dong Fan.

If you can provide information on **any other** marine HNS incidents or near misses that occurred between June and October last year please send to Patricia Charlebois of IMO at pcharlebois@imo.org by Thursday 21 March 2013. Info needed: Date, Incident Location, Name of Vessel, Pollution Caused, Cargo, Bulk or Packaged, and brief description of the incident.

Cormack's Column

In this issue of the ISCO Newsletter we are printing No. 118 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 118: KNOWLEDGE THWARTED BY BELIEF-ONLY REGULATION

Having, emphasised the advantages of cargo/bunker transfer by reviewing the disadvantages of only belatedly doing so at the *Sea Empress Incident*, and having reviewed hypothetical scenarios on absolute failure to do so, I now emphasise the further advantages of expeditious transfer by reviewing the geographical extent of the shoreline pollution which could have arisen, had belief-only aversion to cargo/bunker transfer given rise to such as the stranding scenarios of article 117, had dispersant-use and recovery from seawater surfaces been no more acceptable/successful than in the actual incident, and had the time and costs of processing, recycling and/or disposing of shoreline-recovered materials been thus extended over more lost Easters and summer seasons and over even longer fishing bans, while greater amounts of emulsion and free-water took even longer to process and decant at the refinery.

As to geographical extent, releases under the onshore winds and tidal streams of scenario 1, would have been localised as in the actual incident to produce 4 times as much cargo and 9,4 times as much bunker pollution of the Haven itself, the external coast running northwest from St Anne's Head to and including Skokholm and Skomer Islands and the external coast eastwards to St Govan's Head, while the intervention of offshore winds, subsequent onshore winds and the tidal streams of scenario 2 would have extended coastal pollution to the east beyond Pendine Sands to the Gower Peninsula, the Three Rivers Estuary, the Bury Inlet and all points between, thus maximising belief-only excitement by including 35 SSSIs, two Nature Reserves, one Marine Nature Reserve and a substantial part of the Pembrokeshire Coast National Park. As to scenario 3, the area affected would have been that of scenario 2 with the quantities stranding being greater by a factor of 2.6 for cargo and 6.7 for bunkers'

As to the additional quantities of the fuel oil in these scenarios, the MPCU report of December 1996 confirms that the amount in the actual incident was disproportionately troublesome in comparison with the much larger amounts of the crude oil releases; that the co-presence of their emulsions complicated clearance, handling, recycling and final disposal operations by their higher viscosity and differing interaction with beach materials; that despite this higher viscosity, fuel oil emulsions sometimes penetrated lower than those of the crude oil and sometimes collected in depressions to form hard crusts of 'asphalt pavement' which when disturbed could cause further spreading of more liquid sub-layers. Clearly, the intensity and extent of these phenomena would have increased in proportion to the quantities stranding in each scenario.

However, even with releases smaller than from the *Sea Empress*, shoreline clearance can still be surprisingly troublesome when thwarted by belief-only regulation. Thus even when an eleven-day cargo transfer of 160,000 tonnes from the *Exxon Valdez* grounded on Bligh Reef in 1989, had limited damage-related release to 40,000 tonnes, when this was diminished by evaporation of the volatile fraction and by recovery of 2,350 tonnes from the emulsion collected from water surfaces, the emulsified amount which subsequently stranded caused nearly 6,000km of shoreline to be surveyed, of which some 2,400 km were subject to an operation involving over 11,000 workers at its height.

As to this latter, lightly scattered patches and tarry residues on shorelines outside Prince William Sound were recoverable by shovels, buckets and other hand tools, while some 400km within the Sound were washed with cold or hot water to release pollutant from beach material for recovery by 50-crew barges custom-built and equipped with some 10,000ft of boom, skimmers, pollutant storage tanks, power generators, heaters, fuel, and in some cases adapted concrete-pumps.

In addition, Exxon enhanced the performance of indigenous micro-organisms with additions of nutrients/fertilisers to achieve bioremediation rates 3 - 5 times normal as assessed by measuring increasing concentrations of the relatively non-degradable marker hopane, as those of biodegradable constituents decreased on 120km of coastline at a cost of $10 million from 1989-1991. Thus, we see the extent to which restoration of the environment to its pre-incident condition can be anything but quick and cost-effective when dispersant-use is constrained/ prevented by belief-only regulation.

Thus, we know that shoreline clearance can be a major task; that the capacity of dispersant-use and mechanical recovery to prevent and remove shoreline pollution is limited by the physicochemical properties of pollutants and their shore-material interactions; that it is further limited by belief-only regulations; that consequently the quickest possible provision of cargo/bunker transfer equipment preferably for use in safe havens ought to be the main objective of national response planning; and that its belief-induced absence is long overdue for knowledge-based rectification.

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 13

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

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Oil in Urban Areas (continued)

Recovery

Materials and equipment

- Pumps and vacuum systems (intrinsically safe)
- Storage systems and transportation
- Synthetic or natural absorbents

Method

- The oil is removed from the surfaces using vacuum systems. Sometimes recovery is assisted by flushing the oil with water to points where oil can be better recovered than at the spill site. Final removal of trace oil may be achieved with absorbent material.

Points to remember

- Recovery should be done as early as possible to remove pressure on containment and damming material
- Special heads for suction hoses will increase the recovery efficiency.
- Special care should be taken if there is any risk of damaging underground services e.g. telephone, electricity etc.

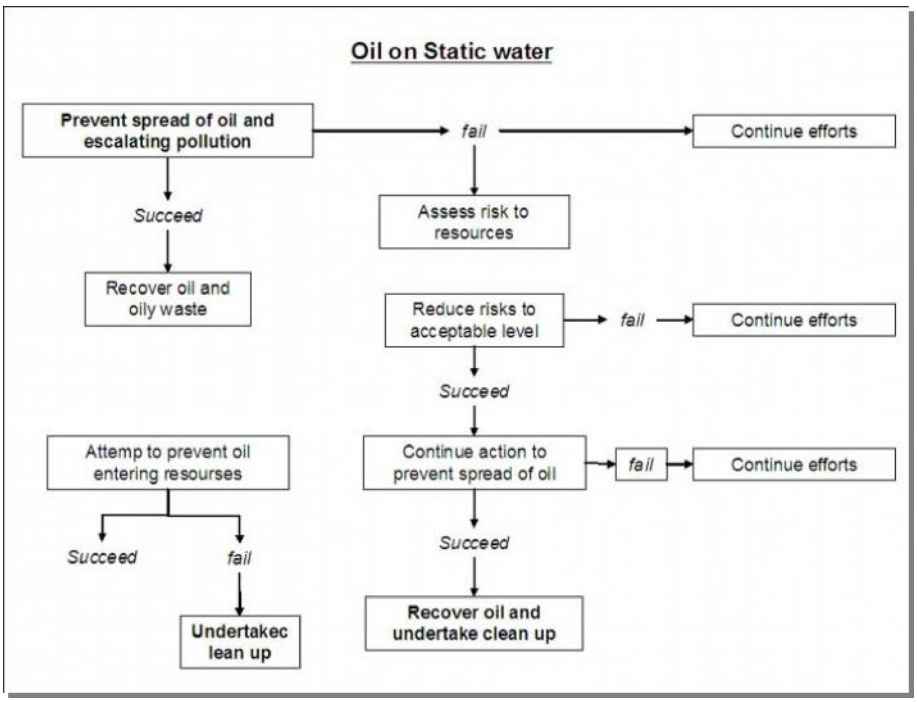
Advantages

- Most of the equipment required is the same as that which is usually available for sewage system cleaning.

Disadvantages

- Oil in complicated underground pipeline and cable systems may be difficult to recover
- Trenches associated the services often act as ducts underground and carry the oil to unpredictable points.

Oil on Static Water



Special feature - Inland spills (continued)

Response in Lakes

The direction and strength of the wind dominates oil movement. The geometry of the lake and direction of the wind can result in columns of complex currents. Currents are usually stronger in the shallow parts than in deep areas. This is a main simplification of the movement of the wind in the flow of the lakes.

The effect of wind and waves during oil spills in rivers and lakes are important to know. In rivers wind is of secondary importance to the current dependent on the width and amount of trees on the banks. In lakes, these effects normally determine the distribution of the oil.

The waves alter the movement and expansion of the oil. The slick absorbs the energy of the waves so that the amount of movement is decreased.

Collection points are usually visible in the areas where debris builds up. The removal of any debris should be done before the oil arrives as the oiled debris will cause another waste disposal problem.

This has various effects:

- Small waves tend to push the slick in the same direction.
- The oil is moved slightly faster than the water where it is floating. Depending on the waves the speed is between 0.7% and 1.4% of the wind speed. This is only true when the oil surface is smooth.
- With large waves the oil may form small droplets in the water column and be dispersed permanently. Large quantities may re-float. In fresh water the oil will stay submerged for more time than it would in salt water. In turbulent conditions over washing may happen, where oil drops can be submerged to greater depths.
- Large amounts of oil may be below the surface making it difficult to observe from the air.
- It is not uncommon for observation flights to inform that the spill has vanished, only to return when the weather improves.

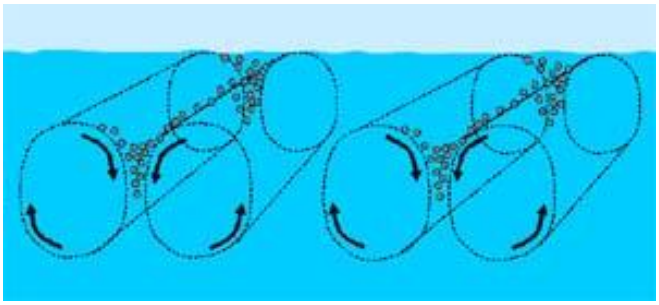
The current dynamic process as the wind it moves the water is complex.
The oil trajectory is the usually 3% of the velocity of the wind and in the same direction as the wind.

Current flow is unstable and it tends to break into patterns called Langmuir cells called after the Nobel prize winning chemist Irving Langmuir.

These appear when the wind is stronger than 3-4 knots. They are formed from vortices in line with the wind.

The distance between these cells can be from centimeters to meters. They are seen as strips, smooth water where debris collects.

It is thought that these cells in theory cause the oil windrows.



To be continued

Special feature – In situ burning

IN SITU BURNING: CHAPTER 10

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 tenth 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.

10. Advantages and disadvantages

In-situ burning has some distinct advantages over other spill cleanup methods. These advantages include:

- rapid removal of large amounts of oil from the water surface;
- significantly reduced volume of oil requiring disposal;
- high efficiency rates;
- less equipment and labor required; and
- may be only cleanup option in some situations, e.g., oil-in-ice conditions.[1,37]

The most significant of these advantages is the capacity to rapidly remove large amounts of oil. When used at the right time, and under the right conditions, in-situ burning can be very effective at rapidly eliminating large amounts of spilled oil, especially from water. This can prevent oil from spreading to other areas and contaminating shorelines and biota. Compared to mechanical skimming of oil, which generates a large quantity of oil and water that must be stored, transferred, and disposed of, burning generates a small amount of burn residue. This residue is relatively easy to recover and can be further reduced by repeated burns.

While the efficiency of a burn varies with a number of physical factors, removal efficiencies are generally much greater than those for other response methods such as skimming and the use of chemical dispersants. During the Newfoundland Offshore Burn Experiment (NOBE) conducted off the coast of Newfoundland in 1993, efficiency rates of 98 and 99% were achieved. Figure 10 shows the small amount of residue remaining after the first burn.

Figure 10 The residue remaining after the first burn of the Newfoundland Offshore Burn Experiment. This is the remains of 50 tons of oil amounting to about 30 kg.

In ideal circumstances, in-situ burning requires less equipment and labor than other techniques. It can be applied in remote areas where other methods cannot be used because of distances and lack of infrastructure. Often not enough of these resources are available when large spills occur. Figure 11 shows burning of oil on ice in the Arctic. It would be difficult to remove the oil by any other method. Burning is relatively inexpensive in terms of equipment needed and actually conducting the burn operations.

In-situ burning also has disadvantages, some of which are:

- large black smoke plume created and public concern about toxic emissions to the air and water;
- limited time frame in which the oil can be ignited;
- oil must be a few mm thick in order to ignite and quantitatively burn and must usually be contained to achieve this thickness;
- risk of fire spreading to other combustible materials; and
- burn residue must be disposed of.[37]

Figure 11 *Burning of oil in the Canadian Beaufort. This oil was a test spill put under the ice in the fall. In the spring, the oil resurfaces. The oil was burned as shown here.*

Special feature – In situ burning (continued)

The most obvious disadvantage of burning oil is the large black smoke plume that is produced and public concern about emissions. Extensive studies have recently been conducted to measure and analyze these emissions. The results of these studies are discussed in future episodes. The second disadvantage is that the oil will not ignite and burn unless conditions are right - such as thickness. Most oils spread rapidly on water and the slick quickly becomes too thin for burning to be feasible. Fire-resistant booms can be used to concentrate the oil into thicker slicks so that the oil can be burned. While this obviously requires equipment, personnel, and time, concentrating oil for burning requires less equipment than collecting oil with skimmers. And finally, burning oil is sometimes not viewed as an appealing alternative to collecting the oil and reprocessing it for reuse.

It must be pointed out, however, that recovered oil is usually incinerated as it often contains too many contaminants to be economically reused. Furthermore, reprocessing facilities are not accessible in most parts of the world.

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

37 ASTM F1788-08, Standard Guide for In Situ Burning of Oil Spills on Water: Environmental and Operational Considerations, ASTM, 2008

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	March 18 issue
EMSA Newsletter	European Maritime Safety Agency	March issue
Cedre Newsletter	News from CEDRE in Brest, France	February issue
The Essential Hazmat News	Alliance of Hazardous Materials Professionals	March 4 issue
USA EPA Tech Direct	Remediation of contaminated soil and groundwater	March 1 issue
Intertanko Weekly News	International news for the oil tanker community	No 10 ,2013
Intertanko Weekly News	International news for the oil tanker community	No 11, 2013
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	March 2013 issue
Soil & Groundwater Product Alert	From Environmental Expert	March 11 issue
Soil & Groundwater Ezine	Articles, papers and reports	March 2013 issue
Soil & Groundwater Newsletter	From Environmental Expert	March 14 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	Jan 16-31 issue

REPORT: DILBIT SINKS IN ENBRIDGE OIL SPILL, BUT FLOATS IN ITS LAB STUDY

March 14 - A recent industry-backed study of diluted bitumen, the Canadian crude oil that would be shipped through the proposed Keystone XL pipeline, contradicts what environmentalists have said for years—that diluted bitumen, or dilbit, sinks in water and is much more difficult to clean up than conventional crude oil.

Instead, the study found that dilbit floats when it spills into water, a claim that contradicts what happened during a major dilbit spill in Michigan's Kalamazoo River in 2010. The cleanup of that spill already has cost more than $810 million, and the Environmental Protection Agency is still struggling to figure out how to remove the submerged oil.

The study is important because there is little scientific research on how dilbit reacts in water, and because the Keystone would cross thousands of U.S. waterways, including the critically important Ogallala aquifer in Nebraska.

But five scientists interviewed by InsideClimate News say the study was so narrowly constructed that it shouldn't be used to draw conclusions about dilbit. The experiment's laboratory conditions didn't reflect most real-life situations, they said, and the study ignored the consequences of the Michigan spill.

"One single study doesn't answer very much at all," said Merv Fingas, a retired scientist from Environment Canada, the Canadian equivalent of the EPA, who studied dilbit in the 90's. "You really need a much more detailed study ... to explain the science behind all of this." *Inside Climate News* Read more

Events

INDONESIA TO HOST ASEAN OIL SPILL RESPONSE GROUP MEETING

March 11 - Indonesia is to host the ASEAN Oil Spill Response Action Plan (ASEAN-OSRAP) group meeting in Jakarta from March 19 to 21, local press reported Monday. The ASEAN OSRAP meeting will take place in Borobudur Hotel in Jakarta, Indonesian Transport Ministry said. The meeting will be held in cooperation with the International Maritime Organization (IMO) and the Global Oil and Gas Industry Association for Environmental and Social Issues, the ministry was quoted by Antara news wire as saying. *Global Times* More info

Events (continued)

USA: LOCAL WORKSHOPS FOLLOW JANUARY'S SPILL AT TAMINCO

March 9 - When the Taminco plant in Pace accidentally spilled thousands of pounds of a hazardous chemical while unloading a rail car in January, alarm sirens sounded, but many of the facility's neighbors didn't know what it meant or what to do.

Now, Santa Rosa County emergency management officials want to make sure that if that happens again, residents will be prepared. They are hosting a series of community workshops on how to safely "shelter in place" should another chemical accident occur at Taminco.

The first workshop is set for Monday night at Dixon Primary School, with seven more set over the next two weeks. Those workshops will be followed by a first responder exercise on April 20. *PNJ.com* More info [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

Company news

VIKOMA INTERNATIONAL AWARDED MULTIMILLION POUND DEFENCE CONTRACT BY KBR

Picture: A Vikoma engineer constructs the internal workings of the rugged and portable powerpacks following the multi-million pound defence contract win with KBR.

Vikoma International Limited, a Corporate Member of ISCO, has secured a second major contract with KBR (Kellogg, Brown and Root). The contract, worth more than £2.5million to Vikoma, is to support Ministry of Defence (MoD) deployable fuels infrastructure including aircraft and ground vehicle refuelling operations.

Vikoma will provide rugged and portable powerpacks for the Joint Operational Fuel System (JOFS) project covering the army, air force and navy. The contract also includes the supply of fuel tanker rollover kits.

The powerpacks designed, tested and manufactured by Vikoma, deliver hydraulic drive to operate refuelling pumps which facilitate fuel transfer, storage and issue in extreme weather conditions and harsh environments. The rollover kits are inflatable tanks which can capture any fuel spilt in the event of an accident causing a fuel tanker to roll over. The repeat order for an increased number of units comes after powerpacks supplied under the previous contract have been successfully used for over two years in locations as diverse as Afghanistan and the Falkland Islands. sales@vikoma.com

DEEPWATER SUBSEA WATERJET TECHNOLOGY MANUFACTURER CHUKAR WATERJET ANNOUNCES AUTHORIZED REPRESENTATIVE FOR MALAYSIA

Photo: Chukar Subsea Waterjet Skid

March 14 - Chukar Waterjet, Inc., a Corporate Member of ISCO and leading manufacturer and applications consultant for subsea ultra-high pressure waterjet equipment, announced today that Gurimas Marine and Engineering Sdn Bhd (GME) has been named its authorized representative in Malaysia.
Chukar Waterjet also announced that GME will exhibit Chukar's innovative deepwater subsea waterjet skid at OGA2013, the 14th Asian Oil, Gas & Petrochemical Engineering Exhibition, June 5-7 at the Kuala Lumpur Convention Centre. Look for GME in Stand 5069.

Chukar Waterjet offers underwater waterjet cutting and blasting equipment capable of operating at depths in excess of 3000 meters. Effective at cutting steel up to 250 mm thick or waterjet blasting at pressures up to 3800 bar, Chukar's subsea waterjet equipment has numerous applications for deepwater emergency response operations, salvage operations, and rapid de-mobilization operations. It can be used to blast away coatings and marine growth to inspect welds, or as a cutting tool in emergency response and salvage operations. Waterjetting equipment also may be used to provide turbulence in a stream of methanol for hydrate remediation, an application Chukar developed in emergency response to the Gulf oil spill, when the company was asked to rapidly manufacture a system to clear a clogged containment system 1500 meters underwater. More info and subsea@chukarwaterjet.com