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International news

RISKS OF OIL & CHEMICAL POLLUTION IN THE BALTIC SEA



New publication summarises results and recommendations from HELCOM's BRISK and BRISK-RU projects

Despite the high level of regional preparedness, the trend of more traffic — and more oil transported at sea — leads to higher risks of spills of oil and hazardous substances, thus posing the risk of environmental damage. An increase in oil spills always means higher costs for the countries involved in the response actions both during and after a spill.

This is why all the Baltic Sea countries, on an initiative by the HELCOM Response Group, have during 2009–2012 conducted a comprehensive joint risk assessment through the project "Sub-regional risk of spill of oil and hazardous substances in the Baltic Sea" (BRISK).

Based on the best available knowledge the project has defined new measures to strengthen the preparedness and response both for the whole Baltic region and in specific sub-areas.

The overall aim of the project was to increase the preparedness of all Baltic Sea countries to respond to major spills of oil and hazardous substances from shipping. [Download this new publication from HELCOM](#)

CHINA: SPILL UNDERLINES ENVIRONMENTAL CONCERNS



March 2 - The first warning came in the form of dead fish floating in a river. Then officials in this city got confirmation that a chemical spill had taken place at a [fertilizer](#) factory upstream. They shut off the tap water, which sent residents into a scramble for bottled water. In the countryside, officials also told farmers not to graze their livestock near the river.

The spill, which occurred on Dec. 31, affected at least 28 villages and a handful of cities of more than one million people, including Handan. Officials here were irate that their counterparts in Changzhi, where the polluting factory was located, had delayed reporting the spill for five days. For the past two months, Changzhi officials and executives at the company running the factory, Tianji Coal Chemical Industry Group, have generally stayed silent, exacerbating anxiety over water quality. *New York Times* [Read more](#) [Thanks to ISCO Committee Member, Marc K. Shaye]

BRAZIL: PETROBRAS HALTS SPILL AT BRAZILIAN OFFSHORE OIL FIELD

March 4 - Remote-operated underwater vehicles (ROVs) were sent in to stop an oil spill coming from a group of underwater pipes and valves designed to manage the flow of oil and natural gas from a Petrobras deep-water well, reports Fox Business.

A drill rig was also at the site to begin intervention work on the well connected to the pipe/valve cluster, also known as a “wet Christmas tree”.

A Petrobras representative noted that the problem was solved by intervention work that was done by specialized ships, along with the ROVs. They did not confirm whether an oil slick was still visible on the ocean's surface near the Marlim field off the coast of northeast Rio de Janeiro. The Campos Basin, where the Marlim field is located, produces more than 85% of Brazil's crude oil. *The Maritime Executive* [Read more](#)

NIGERIA: IKARAMA COMMUNITY REPORTS FRESH OIL SPILL FROM TAYLOR CREEK

March 3 - The Ikarama Community in Yenagoa Local Government Area of Bayelsa on Sunday reported fresh oil spills from Taylor creek oil well operated by Nigeria Agip Oil Company (NAOC).

The News Agency of Nigeria (NAN) reports that an earlier oil spill incident from NAOC's pipeline network in neighbouring Kalaba Community in Yenagoa had continued since Feb. 20.

NAN gathered that the oil leakage from the Taylor Creek oil well 'A' had spread and contaminated the surrounding environment since it was noticed by members of the community on Saturday. *News 24 Nigeria* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, DG & Hazmat Group]

UK: NORTH SEA OIL PLATFORM SHUT DOWN AS SECOND LEAK IS FOUND



Picture: The Cormorant Alpha Production Platform in the North Sea

March 2 - A North Sea oil platform has been shut down and more than 70 workers taken off after a leak was detected in one of the rig's legs for the second time this year.

The Cormorant Alpha platform's pipeline infrastructure was also shut down as a precaution when the leak was discovered at 9.40am today, during maintenance work.

The leak was contained within the leg and there had been no release of hydrocarbons into the sea, said the rig's owner and operator, TAQA Bratani. *The Times* [Read more](#) (Registration required)

Incident reports (continued)

USA: 22 CONTAINERS TOPPLE OFF BARGE NEAR KEY BISCAYNE



March 6 - At approximately 1 p.m. Monday, the Coast Guard received a report that 22 containers fell off the 91-foot barge Atlantic Trader and into the ocean 18 miles east of Key Biscayne, Fla.

Coast Guard Watchstanders at Sector Miami received notification from the Tug Spence that 22 containers on a voyage from Jacksonville, Fla., to Guantanamo Bay, Cuba fell off the barge into the water.

An aircrew from Coast Guard Airstation Miami launched to the scene and initially located some of the containers floating around the Tug Spence. Coast Guard Cutter Gannet crewmembers were diverted and arrived on scene along with crewmembers from commercial salvage who marked the

containers with strobe lights to prevent a hazard to navigation. *The Maritime Executive* [Read more](#)

Other news

USA: AMONG MOST POLLUTED IN US, NYC AREA AWAITS CLEANUP

This Oct. 24, 2012 photo shows wastewater lapping the banks of Newtown Creek in New York. Just across the East River from Manhattan, within sight of the United Nations and shimmering midtown skyscrapers, tens of millions of gallons of pollution are awaiting cleanup in a neighborhood where working-class families have lived for generations and wealthier ones are moving in. Newtown Creek straddling Brooklyn and Queens is home to a federal Superfund site the size of 55 football fields. (AP Photo/Mary Altaffer)

March 2 - Just across the East River from midtown Manhattan's shimmering skyscrapers sits one of the nation's most polluted neighborhoods, fouled by generations of industrial waste, overflow from the city's sewage system and an underground oil leak bigger than the Exxon Valdez spill.

It's easy to see — and smell — the filth in and around Newtown Creek, which runs through an area of working-class homes, warehouses and industrial lots straddling Brooklyn and Queens. The odor of petroleum mixes with the smell of sewage, particularly on rainy days when the city's treatment plants can't handle the volume and municipal pipes send trash and human waste straight into the creek.



Oily, rainbow-slicked water is filled with soda cans, plastic bottles, raw sewage and decaying food. Ditched vehicles are stuck in the mud on the banks. And what was once a creek teeming with fish, surrounded by marshland, is now a dull gray waterway that cannot sustain life. *Boston.com* [Read more](#)

NIGERIA: TWO NEW ARTICLES

Pollution; The Agony of Ogoni

March 7 - When the UNEP report on the assessment of the Ogoni environment was released in August 2011 the world was astounded at the level of devastation visited on the territory by decades of oil extraction and pollution.

Ogoniland in Nigeria shot into international glare in the early 1990s when the people peacefully demanded an end to reckless despoliation of their land and waters. When the UNEP report was released there was a general sense of relief that at last a definitive scientific study has been carried out in at least a part of the Niger Delta and that remediation steps would be taken to rescue the people from the impacts of the pollution.

Shell Petroleum Development Company (SPDC or Shell), the major polluter in the territory, paid for the study in a rather poetic turn of events, on the polluter-pays basis. If that was not an admission of culpability in the ecocide in Ogoniland, you may have to invent another word for the crime. *The Africa Report* [Read more](#)

Nigerian Oil Thieves Return to Decimate Output Hurting Shell

March 5 - Nigeria's oil thieves are back in action, sabotaging pipelines to rob Africa's biggest crude producer of more than a 10th of its daily production.

In the first two months of this year alone, Royal Dutch Shell Plc and other oil companies have declared three force majeure, a legal clause that allows them to miss contracted deliveries due to circumstances beyond their control.

Other news (continued)

The thefts threaten to outpace the worst year, 2009, at the height of the insurgency by militants in the Niger River Delta.

“The situation in the last few weeks is unprecedented,” Shell Nigeria’s Managing Director Mutiu Sunmonu said yesterday in an e-mailed statement. “The volume being stolen is the highest in the last three years; over 60,000 barrels per day from Shell alone.” *The Maritime Executive* [Read more](#)

INDONESIA: CONTRACTORS ‘MUST CLEAN UP THEIR OWN SPILLS’

March 2 - Oil and gas contractors set to launch drilling campaigns in the deep waters of eastern Indonesia this year would have to face the consequences should their high-risk offshore drilling damage the environment, an official has said.

Newly appointed spokesman for upstream regulator SKKMigas, Elan Biantoro, told The Jakarta Post on Friday that the Indonesian government was “fully aware” of the risks involved when exploring deep waters to unearth new hydrocarbon reserves.

“However, all production-sharing contracts [PSCs] state that oil and gas contractors will bear the responsibility should their operations damage the environment,” he said in Jakarta. *The Jakarta Post* [Read more](#) [Thanks to Don Johnston of ISCO Industry Partner, Dg & Hazmat Group]

CANADIAN AQUATIC SCIENCE AND ENVIRONMENTAL LEGISLATION UNDER THREAT

Below is the introduction to an article by Peter G. Wells, Faculty of Management (School for Resource and Environmental Studies; Marine Affairs Program), Dalhousie University, 6414 Coburg Road, P.O. Box 15000, Halifax, Nova Scotia, Canada B3H 4R2 International Ocean Institute, Dalhousie University, 6414 Coburg Road, P.O. Box 15000, Halifax, Nova Scotia, Canada B3H 4R2

“Over the past 6 years, Canada has been governed by a Conservative government that has focussed on expanding Canada’s resource- and energy-based economy, supported by large multinational corporations, and on eliminating the national deficit after years of overspending. At the same time, the government has suppressed the free flow of information, strictly controlled government communication, and reduced support for the public service and non-governmental organizations (NGOs). The mantra is: reduce the budget, reduce the number of civil servants regardless of their essential role to the country and the wider global community, and reduce funding to NGOs. It is important that the implications of these policies and actions be widely known, as ultimately they do affect our oceans.

One major impact of such governance, in the name of economic growth and budget reduction, has been to eviscerate Canada’s federal, aquatic science programs – staff reductions, closures of laboratories, closures of marine science libraries, and cessation of key research programs. One long-lasting effect will be greatly reduced capacity in Canada for front-line, competitive, long-term and much needed research on the effects of toxic chemicals in marine ecosystems. Fisheries and Oceans Canada (DFO), the lead department on oceans, is ending all of its toxic chemicals research on exposure chemistry, ecotoxicology (monitoring and toxicology), and risk assessment, by letting go researchers, through firings or reassignments, and closing related research units.” *Marine Pollution Bulletin* [Read the complete article](#) [Thanks to Gerald Graham, World Ocean Consulting]

CELEBRATING 50 YEARS OF CONCAWE

March 4 - This year, CONCAWE is celebrating 50 years of scientific and technical contributions towards bringing the European oil industry to a more sustainable future. The organisation was established in 1963 by a small group of leading companies to carry out research on environmental issues relevant to the oil and gas industry. The scope of CONCAWE’s activities has expanded in the line of development of societal concerns over environmental, health and safety issues, and now cover areas such as fuel quality and emissions, air and water quality, soil contamination, waste, occupational health and safety, petroleum product stewardship and cross-country pipeline performance.

This important milestone was celebrated at their 10th Symposium, which took place from 25-26 February 2013, in Brussels, Belgium. The Symposium provided an opportunity for participants to exchange information and hear about CONCAWE’s latest research activities, EU legislation, and pre-legislative activities affecting the oil industry. *IPIECA* [Read more](#)

ISCO news

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Applicants seeking award of AMISCO, MISCO, or FISCO are reminded that authenticated copies of certificates must be included with the completed Application Form, CV and other documentation. Failure to comply with all of the requirements will result in delay of assessment of candidates seeking Professional Recognition.

ISCO news (continued)

When applying for Professional Recognition please take care to carefully follow the instructions on the Application Form.

Professional recognition is a visible mark of quality, competence and commitment, and can give you a significant advantage in today's competitive environment.

All who have the relevant qualifications and the required level of experience can apply for Professional Membership of ISCO. The organization offers independent validation and integrity. Each grade of membership reflects an individual's professional training, experience and qualifications.

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To out more about the different classes of ISCO membership and find which is the most appropriate for you, visit spillcontrol.org - [Classes of members](#)

To learn more about the benefits of ISCO Membership, visit spillcontrol.org - [Benefits of Membership](#)

By joining ISCO, you will be supporting the work that the organisation is doing for the international spill response community.

Science and Technology

ROVING ROBOTS PICK UP ANTHRAX SPORES

March 6 - Homeland Security: Commercial vacuum robots could help emergency responders scan areas quickly for contamination after a biological weapons attack

In the event of a biological weapons attack, first responders might deploy legions of vacuum robots to quickly find contaminated areas. Researchers at the [Environmental Protection Agency](#) report that commercial cleaning robots, such as the Roomba, can **effectively collect spores** from *Bacillus anthracis*, the bacterium that causes anthrax (*Environ. Sci. Tech.*, DOI: [10.1021/es4000356](https://doi.org/10.1021/es4000356)).

First responders typically test potentially contaminated areas by wiping hard surfaces with a sponge or collecting samples from carpet using a vacuum hose. The problem is that these tests cover only a small area at a time, not much more than a square meter. This limitation could slow cleanup and recovery after a large-scale attack, write the study's authors, led by Sang Don Lee. They believe cleaning robots, which can roam from 100 to 400 m² on one battery charge, might prove superior spore collectors. *Chemical & Engineering News* [Read more](#)

DRY ICE VACUUM CLEANER ROBOT BOUND FOR FUKUSHIMA

February 15 - A remote controlled robot that uses dry ice to vacuum up radiation was unveiled by Japanese researchers on Friday, the latest innovation to help the clean-up at Fukushima.

The caterpillar-tracked device blasts dry ice -- frozen CO₂ -- against floors and walls, evaporating and carrying radioactive substances with it, engineers said. The nozzle also sucks up the resulting gases.

The robot has two boxy machines the size of large refrigerators and moves on crawlers that are remotely controlled. Each machine has four cameras that allow the device to "see" what it is doing, an engineer told reporters.

"As the machine blasts tiny grains of dry ice against the surface, the impact of it as well as the energy of evaporation help detach radiological substances," said Tadasu Yotsuyanagi of Toshiba, which developed the robot. *RoboDaily* [Read more](#)



REGIONAL OPRC LEVEL 2 TRAINING COURSE HELD AT PUSAN, REPUBLIC OF KOREA

Woo-Rack SUH of the Korea Marine Environment Management Corporation (KOEM) reports on last week's Regional Training Course at the KOEM Training Facility. www.koem.or.kr



The Regional OPRC Level 2 Training Course took place hosted by KOEM (Korea Marine Environment Management Corporation) and IMO from 25 February to 1 March, for 5 days, at KOEM's training facility in Busan, Republic of Korea.

KOEM's training facility, MERTI (Marine Environment Research and Technology Institute) completed its construction at the end of 2010, subsidized by Korean government and being operational from 2011.

MERTI includes cutting-edge training facilities including artificial shoreline connected by pool with wave maker, laboratory, class rooms and accommodation for 39 trainees who can stay at the same time.



For the training course, 20 foreign participants from 10 countries mainly from Southeast Asian nations and 8 national participants from oil companies of Korea attended the program and professional consultants from IMO, ITOPF, Marentas and KOEM were involved as lecturer and course operators.

This program was funded by ITCP (Integrated Technical Cooperation Program) of IMO and consisted of modules based on OPRC Model course Level 2 for managers/on-scene commanders, and included a technical tour to experience oil spill response preparedness by visiting the response stockpile and OSRV of KOEM during the course.

KOEM expressed the view that it was a good experience to build up global level of oil spill training for multi-national participants with a focus on international networking.



In this issue of the ISCO Newsletter we are printing No. 117 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 117: KNOWLEDGE THWARTED BY BELIEF-ONLY REGULATION

Before reviewing the waste-management regulations which now additionally thwart emergency response, I here consider how much worse the *Sea Empress Incident* could have been, had belief-only environmental concerns succeeded in releasing all of the cargo/bunkers to the environment.

Let us suppose that the un-released 58,000 tonnes of oil had not been discharged to the refinery as all but the first impact release of 2000-5000 tonnes could have been; that it had been released to the sea as the 72,000 tonnes had been; and that it had been released in various amounts and subjected to onshore/ offshore winds as the 72,000 tonnes had been.

Thus, had it been released over three days and stranded under onshore winds with an average age of 1.5 days, the stranding would have amounted to 24,800 or 18,720 tonnes of oil to create 3 times these tonnages of emulsion for evaporative losses of 32 or 40% respectively (scenario 1).

Again, if this last 58,000 tonnes had been released in the same proportion and to experience the preponderance of onshore winds as in the actual incident, the amounts released would have been 11,600 tonnes to strand in 1.5 days to the extent of 5,800 tonnes and 46,400 tonnes to strand after an average age of six days to the extent of 2,900 tonnes which together amount to 8,700 tonnes of oil which after evaporative loss of 32% or 40% would have been 5,916 or 5,220 tonnes of oil in emulsions of 3 times these amounts (scenario 2).

On the other hand, if all of the 130,000 tonnes had been released from 15 - 21 February, this would have resulted in 26,000 tonnes coming ashore at the average age of 1.5 days to the extent of 13,000 and of 10,400 tonnes coming ashore at the average age of 6 days to the extent of 6,500 tonnes, to give a combined total of 19,500 tonnes which after an evaporative loss of 32% or 40% would have been 13,260 or 11,700 tonnes of oil as emulsions of 3 times these tonnages (scenario 3).

Thus, had greater damage occurred in the exposed Haven entrance than did occur, thus permitting release of the additional 58,000 tonnes in three consecutive days of onshore winds as of the period 15 - 18 February (scenario 1), had this additional amount been released in the proportions of the actual incident between the period of offshore winds of 19 - 21 February and the period of onshore winds of 22 - 27 (scenario 2), and had the casualty been damaged to the extent of losing all of its cargo in the period 15 - 21 February (scenario 3), we see that the beach pollution would have been greater by the factors shown in the following tabulation which also considers the 2,400 tonnes of fuel oil of which 360 tonnes were released in the incident.

Incident	Oil Release, tonnes	Oil Stranded, tonnes	Footnote	Factor
(Figures per MCA Report)				
Cargo	72,000	3,000-5,000	a	1
Bunkers	360	216		
(Applying half-life method)				
Cargo	72,000	3,000-5,000	b	1
Bunkers	360	270		1.25
Scenario 1				
Cargo	58,000	17,400-19,720	c	4
Bunkers	2,040	2,040		9.4
Scenario 2				
Cargo	58,000	5,220 -5,916	c	1.2
Bunkers	2,040	1,424		6.6
Scenario 3				
Cargo	130,000	11,700-13,260	c	2.6
Bunkers	2,400	1,440		6.7

a: stranding estimated for the actual incident by the MPCU, the factor thus being unity.
 b: stranding estimated by the half-life method used for the incident and for scenarios 1,2,3
 c: the factor by which to multiply the MPCU estimate of 5,000 tonnes stranded in the incident to obtain the stranding to be expected for each scenario.

Further to the above, we recall that the above tonnages should be multiplied by three to obtain the emulsion tonnages for the crude oil at the reported water-content of 60%, and by two for the fuel oil.

Thus, we see that failure to discharge the casualty at the refinery caused a release of at least 67,000 tonnes of oil in addition to the 2,000-5,000 lost on initial impact; that quite credible scenarios indicate the scale of additional shoreline cleaning which could have arisen had commonsense not finally permitted the casualty to be discharged as it ought and could have been sooner; and that early objection to what was later successful must have been due to belief rather than to knowledge.

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.

Special feature - Inland spills

RESPONSE TO INLAND OIL SPILLS – PART 12



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>

Water supplies



A ship's captain's knows it only takes a teaspoon of oil to contaminate a ships drinking water supply.

So let's take that theory to a road accident. 5ml of diesel can contaminate 75,000 lts of drinking water.

Here we have a road tanker on its side with a capability of losing 30,000 lts of diesel which translates to a possible contamination of 450,000,000 lts of drinking water.

Not letting this product get into a water course is of course extremely important.

The blocking of drains is one of the first priorities. This used to be made more difficult, as when the fire brigade arrived they often spread foam over the product, thus obscuring any drains in the area. This has now changed with legislation.

Oil in Urban Areas

If oil is spilled on soft surfaces, or even into soil from buried tanks or pipelines, reference should be made to appropriate clean up methods.

Containment

Surface containment: purpose: to prevent the spread of the oil on the surface and to collect it for recovery.

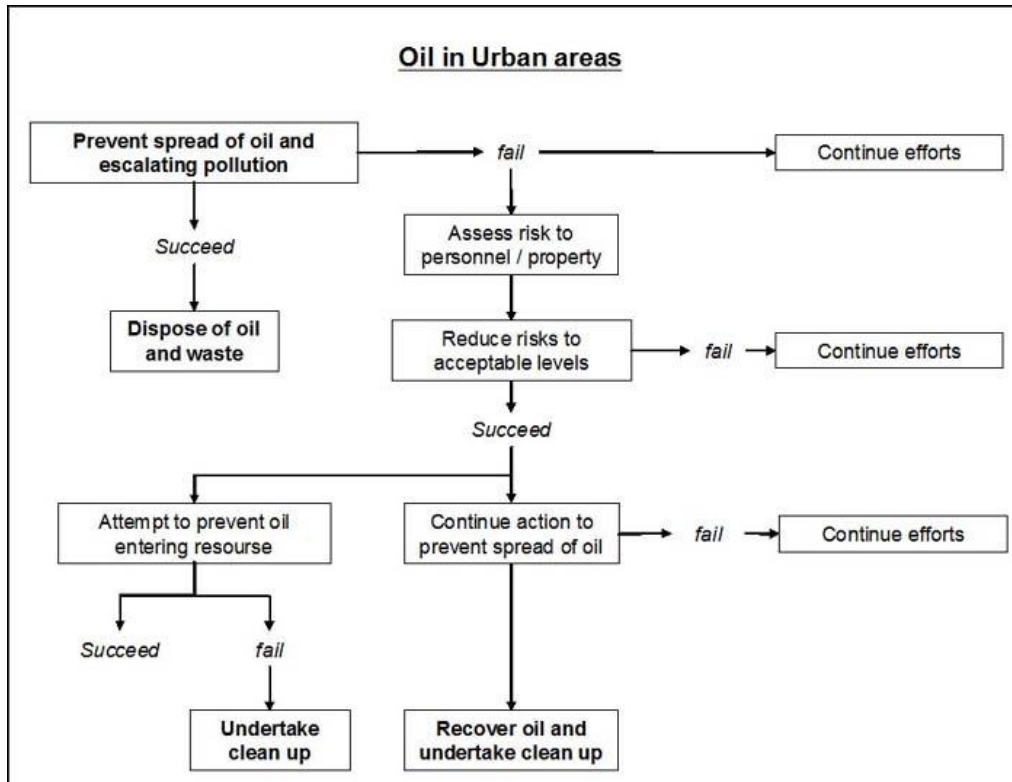
Materials and equipment

- Damming materials.
- Pumps, vacuum and storage systems.
- Synthetic or natural absorbents.

Method

- Prevent oil from entering drains, sewage systems, pipe and cable ducts, ventilation ducts of rail tunnels etc. to prevent the risk of explosion and contamination of sewage treatment plants and water courses.
- Use dams made from soil, sand bags or absorbents to protect inlets.
- Seal drain gratings with plastic bags filled with water and sand.
- Plug drain pipes up to 30 cm with football bladders.
- If oil has entered and underground pipeline systems contact the operators immediately to get an overview of the contaminated system.
- In some cases it may be advantageous to wash the oil down the line to less sensitive places; employ sewage cleaning contractors.

Special feature - Inland spills (continued)



Points to remember

- Pay particular attention to matters of safety
- Stop traffic and any ignition source
- Inform the police and fire service
- Inform affected system operators (utilities, railways, telephone etc)
- Initiate evacuation of endangered people

Advantages

- Confinement and damming can be achieved using readily available materials and ease the task of subsequent oil recovery.

Disadvantage

- Oil vapours are heavier than air and will gather in underground pipes and ducts where they will not be able to evaporate therefore there will be a high risk of fire and explosion.



Rubble in center of street destroyed by sewer explosions in Guadalajara, 1992. Photo credit, with permission (Jon Seals): Disaster Recovery Journal at: http://www.drj.com/dnworld/content/w2_028.htm; accessed May 5, 2006.

An example: The result of petrol getting into a sewer system was seen in Guadalajara, Mexico on April 22, 1992 when 5 explosions between 10:06 and 14:20 blew open the streets and carved an enormous 9 mile ditch down the middle of Avenida Gante 80 feet wide and 25 feet deep.

The blast threw a bus onto the second floor of a house.

Approximately 1,000 buildings collapsed or were heavily damaged.

Initial reports by the Mexican Government and confirmed by team member Al Nixon of the Atlanta Red Cross said at least 2,000 people were injured, 200 people were killed and over 20,000 were left homeless.

Damage to building was estimated at \$300million.

Special feature - Inland spills (continued)

An investigation into the disaster found that there were two precipitating causes:

- New water pipes, made of zinc-coated iron, were built too close to an existing steel gasoline pipeline. The underground humidity caused these materials to create an electrolytic reaction, akin to that which occurs inside a zinc-carbon battery. As the reaction proceeded it eventually caused the steel gasoline pipe to corrode, creating a hole in the pipeline that permitted gasoline to leak into the ground and into the main sewer pipe.
- The sewer pipe had been recently rebuilt into a U-shape so that the city could expand its underground metro railway system. Usually sewers are built in a slope so that gravity helps move waste along. In order to get the U-shape to work, an inverted siphon was placed so that fluids could be pushed against gravity. The design was flawed, however. While liquids were successfully pumped through, gases were not, and gasoline fumes built up.



Corrosion and hole in larger gas pipe caused by smaller water pipe on top. Photo courtesy of Jose M. Malo, Electrical Research Institute, Mexico. Source: <http://www.corrosion-doctors.org/Localized/sewer.htm>; accessed May 5, 2006.

In the aftermath, city officials and corporations pointed fingers at each other. Some people initially thought a cooking oil manufacturing company was leaking hexane, a flammable liquid similar to gasoline, into the sewers, but this was later found to be erroneous. Numerous arrests were made in an attempt to indict those responsible for the blasts. Mayor Enrique Dau Flores was indicted for ignoring the warnings; he subsequently resigned from office. Eight others in the government and PEMEX, the national oil company, were also charged in the case. Ultimately, however, these people were cleared of all charges.

To be continued

Special feature – In situ burning

IN SITU BURNING: CHAPTER 9



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 ninth 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.

9. How In-situ Burning is Conducted at Sea

Several burn guidance documents have appeared in the past.³³⁻³⁶ Many of these require revision in light of the Deepwater Horizon burns. This is particularly true of the statements in these manuals as to what oils will readily burn and what will not. The Deepwater Horizon oil at the point of burning was a heavy, weathered crude and this has a positive effect in terms of the lack danger of rapid fire spread and the relative efficiency of burning.

There are several distinct steps involved in burning oil spills at sea. When an oil spill occurs, the situation is examined and analyzed for possible countermeasures. The type of oil, its thickness, and its state at the time burning could be applied are reviewed. The questions to be asked before deciding to use in-situ burning at a particular spill situation are important. If burning is possible and the response organization is prepared for burning, planning will then begin. A plan is formulated using pre-established scenarios, check lists, and safety procedures. In many cases, containment will be required either because the slick is already too thin to ignite or will be too thin within hours. In other cases, such as the Deepwater Horizon, containment was used to collect the oil as well as to separate the fires from adjacent areas.

Personnel and equipment are then transported to the site. In most cases, fire-resistant boom is deployed downwind of the spill and a tow begun. When enough oil is collected in the boom, it is ignited using an igniter. The tow is resumed and continued until the fire is extinguished or the tow is stopped for operational reasons. The burning and progress of the tow are monitored by personnel on aircraft and/or on a larger ship from which an overview of the slick and conditions is possible. The monitoring crew can also direct the boom tow vessels to slick concentrations upwind. During the burn, monitoring normally includes estimating the area of oil burning at specific time intervals so that the total amount burned can be estimated. The amount of residue is similarly estimated. Particulate matter downwind might be monitored to record the possible exposure levels.

Special feature – In situ burning (continued)

The burn could be stopped in an emergency by releasing one end of the boom tow or by speeding up the tow so that oil is submerged under the water. If the burning stops because there is not enough oil in the boom, the tow can be resumed going downwind and then turning around into the wind before re-igniting. After the burn operation is finished, for the day or for the single burn, the burn residue must be removed from the boom. As the burn residue is very viscous, a heavy-oil skimmer may be required if there is a large amount of material. A small amount of residue can be removed by hand or by sorbents.

During the cleanup of the *Exxon Valdez* spill in 1989, 137 m of boom and 152 m long tow lines were used in a U configuration to concentrate several patches of slightly emulsified oil.¹ An estimated 57,000 to 114,000 L of oil were collected. The collected oil was then towed to an area away from the surrounding slick and set on fire by igniting a small plastic bag of gelled gasoline and throwing it towards the slick from one of the tow boats.

During the burn, the fire's intensity was controlled by adjusting the speed of the tow vessels. Slowing down the tow speed increased the size of the burn area and moved it towards the opening of the U. Increasing the tow speed increased the concentration of the oil in the apex of the boom. The burn lasted 1 hour and 15 minutes, with the most intense part of the burn lasting about 45 minutes. The residue from the burn was a thick tar-like material that was easily recovered. The total volume of residue was approximately 1,100 L, resulting in an estimated burn efficiency of greater than 98%.⁴⁴

Oil can also sometimes be burned without containment and by using natural containment features such as oceanic fronts, ice, or shorelines to contain oil. Details on the use of booms and other techniques will be given in later episodes.

During the Deepwater Horizon burns, the technique was to collect oil in a fire-resistant boom and then ignite the oil and slowly pull the fire boom forward to push the oil to the rear or wait if the winds and currents were doing this.^{21, 32} The oil was spotted using a fixed-wing aircraft. Two shrimp boats (about 100 foot long) towed about 150 m (500 ft) of fire boom at about ½ to ¾ knot to avoid loss of the oil through entrainment under the boom. The tow lines were about 100 m (about 300 ft) for the safety of the tow crews.



Once sufficient oil had been collected for a burn and marine and air monitoring approved, ignition was requested. A small boat carrying two persons would approach from upwind and an igniter dropped over the edge of the boom. The igniters were made from a plastic jar (about 1 Litre) of gelled diesel fuel, a marine flare and some Styrofoam floats. The flare, once activated, burned down to the bottle of gelled diesel fuel, which started burning and acted as a primer to ignite the oil. Figure 9 shows oil contained for the burn.

Once lit the heavy, weathered oil would burn until most oil was removed. The burn was monitored from the air by trained observers and from larger vessels in the area. The amount burned was gauged by measuring the burning area in the boom and multiply by the areal burning rate.^{21, 32}

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
- 18 Allen, A.A., *Contained Controlled Burning of Spilled Oil during the Exxon Valdez Oil Spill*, *Spill Techn. News.*, 1, 1990
- 21 Mabile, N., *Controlled In-situ Burning: Transition from Alternative Technology to Conventional Spill Response Option*, *AMOP*, 584, 2012
- 32 Allen, A.A., N.J. Mabile, D. Jaeger, and D. Costanzo, *The Use of Controlled Burning during the Gulf of Mexico Deepwater Horizon MC-252 Oil Spill Response*, IOOSC, 2011
- 33 Allen, A.A., *In-situ Burning Manual, An Economical Solution for Oil Spill Control*, Elastec/American Marine Inc., 1994
- 34 Fingas, M.F. and M. Punt, *In-Situ Burning: A Cleanup Technique for Oil Spills on Water*, *Environment Canada Special Publication*, 2000
- 35 USCG, *In-situ Burn Operations Manual: Oil Spill Response Offshore*, *United States Coast Guard Report CG-D-06-03*, 2003
- 36 RRT, *In-Situ Burning Guidelines for Alaska, Revision I*, *Regional Response Team, Alaska*, 2007

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 4 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 9 ,2013
CROIERG Enews	Canberra & Regions Oil Industry Emergency Response Group	March 2013 issue
Soil & Groundwater Product Alert	From Environmental Expert	March 4 issue
Soil & Groundwater Ezine	Articles, papers and reports	March 2013 issue
Soil & Groundwater News	From Environmental Expert	March 7 issue
Technology Innovation News Survey	From US EPA - Contaminated site decontamination	Jan 16-31 issue

REMPEC: OIL SPILL VOLUNTEER MANUAL NOW AVAILABLE



The [Oil Spill Volunteer Management Manual](#), developed under the Task C.1 of the POSOW project is now available for download. The manual has been prepared by ISPRA in collaboration with all project partners and with the cooperation of Legambiente.

This publication is aimed at providing the required knowledge on volunteer management in the field of oil spill response to the competent authorities and Non-Governmental Organisations (NGOs), in view of optimising this valuable resource.

This manual is one of 4 manuals produced in the framework of the POSOW project. The others address [Oiled Shoreline Assessment](#), [Oiled Shoreline Cleanup](#) and Oiled Wildlife Response (soon available).

The manual can be downloaded [HERE](#) or [in POSOW's website](#).

Events

GHANA: NATIONAL WORKSHOP FOR THE DEVELOPMENT OF THE NATIONAL OIL SPILL CONTINGENCY PLAN

Accra, 25-29 March, 2013. [More info](#)

AZERBAIJAN: 20TH INTERNATIONAL CASPIAN OIL & GAS CONFERENCE AND EXHIBITION

Baku, 4-7 June, 2013 - Celebrating its 20th anniversary, Caspian Oil & Gas continues to be the largest and best-attended oil and gas event in the Azerbaijan and the Caspian region. The event is held annually under the patronage of the **President of the Azerbaijan Republic, HE Ilham Aliyev** and is **officially supported by the Ministry of Industry and Energy of Azerbaijan** and SOCAR. [More info](#)

SINGAPORE: ICOPCE PROGRAMME & SPEAKERS ANNOUNCED

The **9th biennial International Chemical and Oil Pollution Conference and Exhibition 2013** will be held from 9 to 12 April 2013, and is a key event in the Singapore Maritime Week calendar. **ICOPCE 2013** is organised by the Maritime and Port Authority of Singapore, and will be a platform to reinforce industry initiatives as well as learn best practices from around the world.

[More info, programme and speakers](#)

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