THE NEWSLETTER OF THE INTERNATIONAL SPILL RESPONSE COMMUNITY info@spillcontrol.org | www.spillcontrol.org

#### **ISCO & THE ISCO NEWSLETTER**

FRNATIONAL SPILL CONTROL ORGANIZATION

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The International Spill Control Organization, a not-for profit organization dedicated to raising worldwide preparedness & co-operation in response to oil and chemical spills, marime & freshwater pollution by plastics. promoting technical development and professional competency, & to providing a focus for making the knowledge and experience of spill control professionals available to Intergovernmental, Governmental, NGO's and interested groups and individuals. ISCO holds consultative status at the International Maritime Organisation & Observer Status at the Iternational Oil Pollution Compensation Funds

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# **IMO - FUTURE MARINE FUELS AND TECHNOLOGY -**NEW WEBSITE LAUNCHED

Access to latest information on zero and near-zero marine fuels and technologies, including pricing information and the latest research, can be found on futurefuels.imo.org.

The website has been developed by the Future Fuels and Technology Project (FFT Project), a partnership project between IMO and the Republic of Korea, supporting the development of new regulation within the possible IMO Net Zero

Framework to achieve the targets contained in the 2023 IMO GHG Strategy.

Data providers and collaborators involved on the Future Fuels website to date include Ammonia Energy Association, Argus Media, DNV's Alternative Fuels Insight, IAPH, Ipieca, Korean Maritime Cooperation Center (KMC), Methanol Institute, OECD, SEA-LNG, SGMF, Zero Emission Shipping Mission and ZESTAs, and the IMO partnership projects GHG-SMART, GreenVoyage 2050 and Next-GEN. Current information on the website is sourced from a range of stakeholders and data providers who have joined the initiative in its early stages. Other data providers are invited to join this collaboration.

The FFT project's website aims to enhance access to information for all stakeholders involved in IMO's climate change discussions and to facilitate relevant information sharing. Inclusion on the website does not imply endorsement or expression of any opinion on the part of IMO regarding the data or the data sources. IMO / Read more

## **NEWS FROM AROUND THE WORLD**

# **BELGIUM - THE BRAND-NEW EU LEADER IN THE FIGHT** AGAINST ECOCIDES

March 31 - On 22 February 2024, Belgium became the EU frontrunner in the fight against ecocides by being the first EU member state to criminalise ecocide, in the new Belgian Criminal Code. Belgium also became the first member state to recognise ecocide as an international crime, alongside war crimes, genocide, crimes against humanity, and crimes of aggression.

(China)

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# SNEWS FROM AROUND THE WORLD (CONTINUED)

The crime of ecocide, in Article 94 of the new Belgian Criminal Code, consists of "deliberately committing, by act or omission, an illegal act causing serious1, widespread2 and long-term3 damage to the environment4 in the knowledge that this act is causing such damage, provided that this act constitutes an infringement of federal legislation or an international instrument that is binding on the federal authority or if the act cannot be located in Belgium." The crime of ecocide may be sanctioned, regardless of whether it is committed in time of peace or war.

The crime of ecocide may be punished by a sanction against any natural person entailing imprisonment for up to 20 years, and a fine of up to  $\leq 1.6$  million against legal persons. Mondaq / <u>Read more</u>

# **INDIA: POLLUTER PAYS PRINCIPLE - CRITICAL ANALYSIS**

April 2 - The aim of this article is to delve into the role played by the National Green Tribunal in determining the scope of Polluter Pays Principle in India and the significance of economic instruments concerning widening the scope of this concept.

It is well accepted that as you sow, so shall you reap. With regard to the environment this idiom is perfectly summed by the Polluter Pays Principle. Black's Law Dictionary defines Polluter-Pays Principle as "a principle that states that the costs incurred due to pollution control, prevention and treatment should be paid by the entity which is responsible for causing the pollution in the first place."1

In a nutshell, Polluter Pays Principle stipulates that whoever is responsible for causing pollution should meet the cost of mitigating the damage caused.2 Ergo, the liability of causing pollution and making right the wrong done to the environment lies on the polluter.

In this research paper, Mrinalini4 in the context of National Green Tribunal, which provides a forum for resolving judicial disputes largely involving environmental issues, examines the specific role of the Polluter Pays Principle, in order to determine whether or not Polluter Pays Principle isa useful tool for holding polluters accountable, creating a deterrent, compensating those harmed by the environment, and raising enough money to restore the environment to its pre-pollution state.

Moreover, the author examines the benefits and limitations of this approach because Polluter Pays Principles are currently more often used as a compensation mechanism than for other objectives. Mondaq / <u>Read more</u>

# IRELAND: EPA ANNOUNCES FUNDING OF €14.5M FOR NEW ENVIRONMENTAL AND CLIMATE RESEARCH

April 4 - The EPA announces funding of €14.5m for new environmental and

climate research across open themes, focusing on medium- to longer-term environmental research needs. Research proposals are invited for research across the following areas:

- Addressing Climate Change Evidence Needs
- Delivering a Healthy Environment
- Facilitating a Green and Circular Economy
- Protecting and Restoring our Natural Environment

### EPA / Read more

# ITALY: ISPRA AT THE ROME SCIENCE FESTIVAL

April 4 - Mistakes and wonders is the theme of this edition, dedicated to the wonder that accompanies every discovery, the engine that pushes scientists to explore, ask questions and question consolidated knowledge, always going further. Wondering, even in the face of crises and problems, is the first step in seeking new answers and solutions, on a path not without missteps, failures and denials, errors. Apr 16, 2024 to Apr 21, 2024, Rome, Auditorium Parco della Musica Ennio Morricone. ISPRA / <u>Read more</u>

# NEWS FROM AROUND THE WORLD (CONTINUED)

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# MALAYSIA: STATE EXCO: 231 MONITORING STATIONS SET UP IN JOHOR TO ENSURE WATER QUALITY

April 4 - A total of 231 river water quality monitoring stations have been set up across Johor to assess water quality levels and prevent the recurrence of pollution incidents like the one in Sungai Kim Kim, Pasir Gudang. "As we all know, there are 14 rivers in Johor with water quality categorised as polluted. The State Department of Environment (DOE) has taken steps to improve the water quality in these rivers. Malay Mail / <u>Read more</u>

# NIGERIA: OGONI CLEAN-UP: ENVIRONMENT MINISTRY, HYPREP LAUNCH INTERACTIVE SESSIONS FOR YOUTHS

March 29 - The Federal Ministry of Environment, in collaboration with the Hydrocarbon Pollution and Remediation Project (HYPREP), has launched quarterly interactive sessions aimed at engaging Ogoni youths in the ongoing remediation and restoration efforts in Rivers State. Channel STV /Read more

# ROMANIA: TRAINING IN ROMANIA PREPARES COUNTRIES FOR MANDATORY AUDITS

March 27 - IMO is assisting Member States as some prepare to undergo audits this year under IMO's Member State Audit Scheme (IMSAS).

IMSAS requires all Member

States to undergo a mandatory audit within the seven-year audit cycle. An audit determines to what extent the audited Member State is implementing and

enforcing the applicable IMO instruments.

To support Member States in this exercise, an IMO regional training course for auditors was held in Constanta, Romania (20-22 March), primarily for countries in Eastern Europe. IMO / <u>Read more</u>

# USA: EPA PUBLISHES CLEAN WATER ACT "WORST-CASE" SPILL RULE

March 28 - On March 28, the U.S. Environmental Protection Agency (EPA) published its <u>Final Rule</u>: Clean Water Act Hazardous Substance Facility Response Plans (Final Rule) requiring facilities that handle hazardous substances to create Facility Response Plans (FRPs) addressing discharges of Clean Water Act (CWA) Hazardous Substances into federally regulated waters. This is EPA's inaugural FRP rule issued under CWA authorities, and has been widely referred to as the "worst-case" spill rule. While the CWA is a new statutory framework, the FRP requirement supplements (and arguably duplicates, in some instances) existing requirements under the Resource Conservation and Recovery Act (existing Contingency Plan requirements), the National Oil and Hazardous Substances Pollution Contingency Plan (existing "One Plan" requirements), and the Clean Air Act (existing – <u>and</u> <u>recently updated</u> – Risk Management Plan requirements). Stinson / <u>Read more</u>

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# USA: U.S. COAST GUARD, BSEE AND BOEM SIGN AGREEMENT TO ADVANCE SAFE AND ENVIRONMENTALLY SUSTAINABLE ENERGY DEVELOPMENT

April 1 - To strengthen interagency cooperation in the advancement of safe and environmentally sustainable non-mineral (renewable) energy development, including offshore wind, on the Outer Continental Shelf (OCS), the U.S. Coast Guard (USCG) signed a Memorandum of Understanding (MOU) today with two Department of the Interior bureaus: the Bureau of Safety and Environmental Enforcement (BSEE) and the Bureau of Ocean Energy Management (BOEM). U.S. Coast Guard Deputy Commandant for Operations Vice Admiral Peter Gautier, BSEE Director Kevin Sligh and BOEM Deputy Director Dr. Walter Cruickshank signed the MOU during a ceremony at the USCG Headquarters in Washington, D.C.

## **NEWS FROM AROUND THE WORLD (CONTINUED)**



The new agreement strengthens federal collaboration in support of the Biden-Harris administration's priority to deploy clean energy to combat the global climate crisis. USCG, BSEE and BOEM share responsibilities for the planning, siting, construction, operation, maintenance and decommissioning of federal offshore non-mineral energy facilities. The memorandum will serve as a guide for coordination of respective roles for offshore safety and environmental protection in federal waters, and outlines agency leadership for specific oversight functions. BSEE / <u>Read more</u> [Photo courtesy of BSEE]

## **USA: LATEST NEWS FROM NOAA OR&R**

April 1 – Please click on the link below to read the latest news.

## OR&R Prepares U.S. Coast Guard for Shoreline Cleanups

The Emergency Response Division of NOAA's Office of Response and Restoration (OR&R), provided three days of <u>Shoreline Cleanup</u> <u>Assessment Technique</u> (SCAT) training for the U.S. Coast Guard (USCG) Sector Charleston on March 19-21, 2024.

# USA: BIDEN BOOSTS WILDLIFE PROTECTION EFFORTS PREVIOUSLY DIALED BACK

April 1 - The administration's finalized rules enhance the Endangered Species Act, allowing for more robust protection of species threatened by climate change and other factors.

The rules prohibit economic considerations from influencing decisions on species protection, addressing a key concern among environmentalists. Critics, particularly from industry and Republican ranks, argue that these protections could hamper economic activities and are gearing up for legal challenges. EHN / <u>Read more</u>

# **PEOPLE IN THE NEWS**

# **UK: INTERIM CHAIR OF JOINT NATURE CONSERVATION COMMITTEE APPOINTED**

April 4 - Cath Denholm has been appointed the interim Chair of the Joint Nature Conservation Committee (JNCC).

The JNCC is the only statutory nature advisor to the UK Government, working with the four nations of the UK, and our Overseas Territories and Crown Dependencies. It provides robust scientific evidence and advice to help decision makers turn science into action for nature recovery. The JNCC works across land and sea with partners throughout the UK, the UK Overseas Territories, the Crown Dependencies and around the world.

Cath has been a member of the Committee since April 2022 and was previously the Deputy Chair. Her appointment will last until 30 June 2024 or until a substantive Chair is appointed following completion of the public appointment process.

Gov.UK / Read more

## **NEWS FROM ISCO MEMBERS**

# FROM OSRL - SUCCESSFUL SALE OF LOWER WILLIAM STREET SITE TO MDL MARINAS



We are delighted to announce the successful sale of the Oil Spill Response Limited (OSRL) Site at Lower William Street to MDL Marinas (MDL). This strategic move aligns with our ongoing efforts to streamline operations and focus on core business areas, ensuring continued value to our members.

OSRL has been a longstanding presence at Lower William Street since 1985. As a company dedicated to marina operations and services, MDL's acquisition promises a bright future for the site.

Richard Morrish, OSRL Finance Director, expressed his views on the sale: "Lower William Street has served us well for nearly 40 years. However, as part of our strategic realignment, we

recognised that the site was no longer suitable for our evolving needs. We are excited to announce that our response teams will be relocating to a new facility on the edge of Southampton, Strategic Park, which will foster a better work environment and enable us to serve our members more effectively."

There will be no immediate change in our operations as MDL has granted OSRL a leaseback for the majority of the site to allow a managed transition. OSRL will continue to operate from Lower William Street until the new Strategic Park site is ready for use. The transition period provides us valuable time to conduct necessary work at our new location, Strategic Park, and facilitate the relocation of our equipment and personnel whilst ensuring response readiness throughout. <u>www.oilspillresponse.com</u> [Photo courtesy of OSRL]

# **RECENT INTERESTING PEER-REVIEWED OIL SPILL PUBLICATIONS**

## A COLUMN CREATED BY DR. MERV FINGAS, Hon.FISCO, MEMBER OF ISCO COUNCIL



This is part of a weekly column which provides the references and abstracts of new peer-reviewed scientific publications on oil spills. These references are selected on the basis of those papers that provide new insights into the fate, effects and control of oil spills. Readers may choose to obtain the full publications and to do so, one of three methods is suggested; contact your library, search the internet with the DOI (digital object identifier) provided, or search the internet for the exact title. These are given in the order of likely success in obtaining the article. Merv Fingas, ISCO Colleague.

Dr Fingas' column will be moving to the ISCO website. Following discussion within the ISCO Council, the agreement of Dr Fingas and ISCO website manager, Mr Mike Watson, your Editor has decided to relocate this column (usually about 2.5 pages) to the ISCO website. This will help reduce the size of the newsletter.

Instead of printing the complete text of the column every week we will provide you with a "one-click" link that you can use to access and read Dr Fingas' column. A positive benefit will be that readers will be able to easily access and read past issues of the column without having to search through previous issues of the newsletter.

# 83. The impact of chronic and acute problems on sea turtles: The consequences of the oil spill and ingestion of anthropogenic debris on the tropical semi-arid coast of Ceará, Brazil

Feitosa A.F., Menezes Í.B.H.M.P., Duarte O.S., S. B. Salmito-Vanderley C., Carneiro P.B.M., Azevedo R.N.A., Oliveira A.H.B., Luz A.C.S., Nascimento A.P., Nascimento R.F., Martins L.L., Cavalcante R.M., Feitosa C.V. (2024) Aquatic Toxicology, 269, art. no. 106867 DOI: 10.1016/j.aquatox.2024.106867

**ABSTRACT:** Sea turtle mortality is often related to materials that reach the coast from different anthropic activities worldwide. This study aimed to investigate whether sea turtle mortality was related to older marine problems, such as solid waste, or one of the largest oil spill accidents on the Brazilian coast, that occurred in 2019. We posed three questions: 1) Are there solid residues in the digestive tract samples, and which typology is the most abundant? 2) Can meso- and macro-waste marine pollutants cause mortality? 3) Is the dark material found really oil? A total of 25 gastrointestinal content (GC) samples were obtained, of which 22 ingested waste of anthropogenic origin and 18 were necropsied. These 22 samples were obtained during or after the 2019 oil spill, of which 17 specimens were affected, making it possible to suggest oil ingestion with the cause of death in the animals that could be

# **RECENT INTERESTING PEER-REVIEWED OIL SPILL PUBLICATIONS (CONTINUED)**

necropsied. Macroscopic data showed that the most abundant solid waste was plastic (76.05 %), followed by fabrics (12.18 %) and oil-like materials. However, chemical data confirmed only three specimens with oil levels ranging from remnants to high. It was possible to infer possible causes of death in 16 of the total 18 necropsied cases: Most deaths were due to respiratory arrest (62.5 %), followed by pulmonary edema (12.5 %), cachexia syndrome (12.5 %), circulatory shock (6.25 %), and head trauma (6.25 %), which may have been caused by contact with solid waste, oil, or both. The study showed that not all dark material found in the GCs of turtles killed in oiled areas is truly oil, and in this sense, a chemical analysis step to prove the evidence of oil must be added to international protocols.

# 84. Spatial heterogeneity and oil pollution structured the soil microbial community in salt marshes in Barataria Bay, Louisiana, USA, eight years after the Deepwater Horizon oil spill

Cagle G.A., Chen H., Fleeger J.W., Deis D., Lin Q., Hou A. (2024) Ecological Indicators, 160, art. no. 111884 DOI: 10.1016/j.ecolind.2024.111884

**ABSTRACT**: The Deepwater Horizon (DWH) oil spill significantly impacted salt marsh ecosystems, with numerous repercussions observed in the subsequent years. However, the long-term effects of chronic oil exposure on soil microbial communities remain unexplored. This study, conducted in 2018, aimed to identify how the legacy of heavy oiling from the DWH spill in 2010 influenced the soil microbial community. We surveyed vegetation and soil variables while simultaneously employing high-throughput 16s rRNA gene sequencing to examine microbial communities in soils across 21 marsh sites that exhibited varying degrees of initial oil contamination following the DWH incident. The effects of these variables, including geographic location, on taxonomic and phylogenetic metrics of community composition were disentangled using variance partitioning analysis and permutational ANOVA. Results showed a strong and significant longitudinal trend in microbial community composition that was partially confounded with degree of initial oil exposure and contemporary vegetation biomass. However, significant indicator species for heavily oiled sites included oil-degrading bacteria, and there were significant differences in microbial community composition among marshes that received variable levels of initial oiling after controlling for this spatial effect. The level of soil petroleum residues that remained in 2018 had significant explanatory power for community composition after controlling for location, whereas the effects of vegetation biomass were largely confounded with longitude. Collectively, our results indicate that persistent oil pollution as well as unidentified spatial processes, possibly associated with spill-induced alterations in erosion or wave dynamics, played a role in structuring soil microbial communities within this ecosystem.

## 85. Evaluation of the capability of oil specific discrimination in detection dogs,

DeChant M.T., Bunker P.C., Hall N.J. (2024) Behavioural Processes, 216, art. no. 105014 DOI: 10.1016/j.beproc.2024.105014

**ABSTRACT**: Dogs are used for oil detection to support spill remediation and conservation, but little is known about the effects of weathering and aging of oil odorants on dogs' ability to generalize and discriminate unweathered oil from aged/weathered tar ball oil. Three dogs were trained to detect unweathered oil odorant using a three-alternative choice procedure and automated olfactometers. We evaluated dogs' ability to discriminate unweathered target oil from four different weathered/tar ball samples. All three dogs successfully discriminated the unweathered target oil from the four nontarget weathered oils with an accuracy of 96%, 97%, and 100%. After the oil discrimination test, dogs' ability to discriminate unweathered target oil from novel natural odorants on a beach (plastic bottle lid, bird feathers, and rocks) was tested in a novel discrimination test yielding an accuracy of 95%, 100%, and 100%. These data suggest dogs are successful in discriminating unweathered oil from weathered oil with explicit training.

# 86. Numerical and experimental simulation on efficiency of air bubble barrier on various pollutants for preventing oil spill spread

HAZAR C., TÖZ A.C. (2024) Marine Pollution Bulletin, 201, art. no. 116254, DOI: 10.1016/j.marpolbul.2024.116254

**ABSTRACT:** This study conducts experimental and numerical simulations and analyzes the effects of the air bubble barrier (ABB) on the oil spill spread prevention efficiency regarding the varying aperture diameter, air discharge, and pollutant type. In a computational fluid dynamics simulation, a multiphase flow is studied using the finite volume method with the volume of fluid technique in the Star CCM+ software. The pipe generating air bubbles is fixed at the bottom of the tank at 1.8 m from the side of the experimental setup. The distinctive points of the study are the experiments conducted on different pollutants and the utilization of a novel adjustable air nozzle positioned on the air feed pipe. The effectiveness of the ABB in mitigating the spread of marine

# **RECENT INTERESTING PEER-REVIEWED OIL SPILL PUBLICATIONS (CONTINUED)**

pollution is contingent on the aperture size, air discharge, and pollutant type. This study demonstrates that the ABB's feasibility for preventing the oil spill spread has improved.

## 87. The influence of sea-ice conditions on crude oil spill behaviour

Saltymakova D., Desmond D.S., Galley R., Polcwiartek K., Neusitzer T.D., Firoozy N., Barber D.G., Stern G.A. (2024) Cold Regions Science and Technology, 221, art. no. 104160 DOI: 10.1016/j.coldregions.2024.104160

**ABSTRACT**: Sea-ice conditions during a crude oil spill govern oil behaviour and the rate of weathering processes. This study utilized data from past mesocosm experiments conducted at the Sea-ice Environmental Research Facility and compared the sea-ice temperature, salinity, and chemical composition of light crude oil under three sea-ice conditions. An oil spill under discontinuous pack ice showed a decrease in ice thickness with an increase in oil concentration, as well as the highest photooxidation of organosulfur compounds amongst all experiments. An oil spill under a continuous ice volume demonstrated a decrease of sea-ice bulk salinity with an increase in crude oil concentration. Also, oil exhibited the lowest evaporation, along with the highest dissolution and carbonylation rates. An oil spill before ice formation demonstrated the reduction of sea-ice thickness and bulk salinity in contaminated ice. The oil in this case exhibited the highest evaporation and photooxidation rates. Tested oil-in-ice scenarios produced quantitative differences in sea-ice properties and crude oil composition.

# 87. The impact of chronic and acute problems on sea turtles: The consequences of the oil spill and ingestion of anthropogenic debris on the tropical semi-arid coast of Ceará, Brazil,

Feitosa A.F., Menezes Í.B.H.M.P., Duarte O.S., S. B. Salmito-Vanderley C., Carneiro P.B.M., Azevedo R.N.A., Oliveira A.H.B., Luz A.C.S., Nascimento A.P., Nascimento R.F., Martins L.L., Cavalcante R.M., Feitosa C.V.
(2024) Aquatic Toxicology, 269, art. no. 106867
DOI: 10.1016/j.aquatox.2024.106867

**ABSTRACT:** Sea turtle mortality is often related to materials that reach the coast from different anthropic activities worldwide. This study aimed to investigate whether sea turtle mortality was related to older marine problems, such as solid waste, or one of the largest oil spill accidents on the Brazilian coast, that occurred in 2019. We posed three questions: 1) Are there solid residues in the digestive tract samples, and which typology is the most abundant? 2) Can meso- and macro-waste marine pollutants cause mortality? 3) Is the dark material found really oil? A total of 25 gastrointestinal content (GC) samples were obtained, of which 22 ingested waste of anthropogenic origin and 18 were necropsied. These 22 samples were obtained during or after the 2019 oil spill, of which 17 specimens were affected, making it possible to suggest oil ingestion with the cause of death in the animals that could be necropsied. Macroscopic data showed that the most abundant solid waste was plastic (76.05 %), followed by fabrics (12.18 %) and oil-like materials. However, chemical data confirmed only three specimens with oil levels ranging from remnants to high. It was possible to infer possible causes of death in 16 of the total 18 necropsied cases: Most deaths were due to respiratory arrest (62.5 %), followed by pulmonary edema (12.5 %), cachexia syndrome (12.5 %), circulatory shock (6.25 %), and head trauma (6.25 %), which may have been caused by contact with solid waste, oil, or both. The study showed that not all dark material found in the GCs of turtles killed in oiled areas is truly oil, and in this sense, a chemical analysis step to prove the evidence of oil must be added to international protocols. SOURCE: Scopus

## 88. Where will the next oil spill incident in the Niger Delta region of Nigeria occur?

Wekpe V.O., Whitworth M., Baily B. (2024) Environmental Research Communications, 6 (2), art. no. 025018 DOI: 10.1088/2515-7620/ad29b5

ABSTRACT: Oil spill incidents are almost a daily occurrence within the Niger Delta region of Nigeria with far-reaching environmental, economic and social consequences. This study aimed at understanding the spatial and temporal context of the problem as a panacea for forecasting likelylocations of oil spill incidents within the region. About 76.77% of crude oil spilt in the Niger Delta is lost to the environment with only about 23% of the crude oil recovered from the environment. This represents a very worrying statistic in terms of the known and unknown negative impacts of oil spills. Space Time Pattern Mining (STPM) tools were adapted to explore and interrogate historical spill data. Time series forecasting was then used for forecasting possible locations of future oil spills within the region. Results show that there is a pattern of oil spill occurrences in the Niger Delta with statistically significant hotspots identified in Rivers State, Bayelsa State and Delta State. The forecast root mean square error (RMSE) and forecast validation RMSE are -1.016328 and 1.035992 respectively. This suggests an ability of the model to fairly predict likely locations of future oil spills. This was further verified by counting the number of spills that occur within any area based on the predicted likelihood of spill

# **RECENT INTERESTING PEER-REVIEWED OIL SPILL PUBLICATIONS (CONTINUED)**

occurrence. This study has shown that STPM tools can be deployed to understand the occurrence and prediction of oil spill incidents. This will ultimately aid in the deployment of scarce management resources to where they are most needed.

# 89. Effects of Reduced Seawater pH and Oil Contamination on Bacterial Communities and Biochemical Markers of Estuarine Animal Hosts

Louvado A., Galhano V., Lima F., Cleary D.F.R., Lopes I., Gomes N.C.M., Coelho F.J.R.C. (2024) Environments - MDPI, 11 (2), art. no. 37 DOI: 10.3390/environments11020037

ABSTRACT: Ecosystem functioning depends on complex interactions between microorganisms, hosts, and the environment. Changes in environmental conditions (e.g., ocean acidification) in combination with anthropogenic pollution have been shown to affect the composition and function of free-living microbial communities, but little is known about the effects these stressors on hostassociated communities. This study aims to characterize the response of host-associated bacterial communities of the bottomdwelling polychaete Hediste diversicolor and the epibenthic gastropod Peringia ulvae to oil contamination and reduced seawater pH. The independent and interactive effects of both stressors were simulated under controlled conditions. The response of hostassociated bacterial communities was assessed using the high-throughput sequencing of the 16S rRNA gene and several biochemical markers related to host metabolic pathways, e.g., neurotransmission, anaerobic metabolism, biotransformation, oxidative stress, and energy consumption. In H. diversicolor, reduced seawater pH was associated with a high relative abundance of Cyanobacteria, while in P. ulvae oil contamination was associated with a reduction in the relative abundance of Chitinophagales. In P. ulvae, enrichment with oil hydrocarbon-degrading bacteria suggests a possible role of these organisms in the dispersion of oil hydrocarbon degraders. Furthermore, oil supplementation shifted some specific biochemical markers of gastropods related to oxidative stress and energy consumption, which suggests host stress. In general, the bacterial communities and biochemical markers of the gastropod were more affected by stressors than those of the polychaete. Overall, this study contributes to a better understanding of the response of host-associated bacterial communities of benthic macrofauna to anthropogenic contamination and environmental change present on the GenBank database. The isolates of closest identity were Alcanivorax xenomutans and Acinetobacter junii with accession numbers, NR 133958.1 and KJ147060.1 respectively. Acinetobacter junii and Alcanivorax xenomutans isolated from Ghana's coast under pristine seawater conditions have therefore demonstrated their capacity to be used for the remediation of crude oil spills.

# SCIENCE & TECHNOLOGY (

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# ADVANCEMENTS IN ORGANIC POLLUTANT REMEDIATION: THE ROLE OF NITROGEN-DOPED RGO-CEO2 IN PHOTOCATALYTIC EFFICIENCY ENHANCEMENT

In this work, a novel nitrogen-doped reduced graphene oxide-ceria (N-doped rGO-CeO2) photocatalyst was successfully synthesized and exhibited a notable capability in degrading various organic pollutants. Among the synthesized samples, rGO-CeO2-900 N2 demonstrated the most efficient photocatalytic activity, achieving a 77.43% degradation rate for tetracycline (TC) fitting the modified Elovich model (R2 = 0.99). Science Direct / <u>Read more</u>

# COULD ROBOT SWARMS ENHANCE OIL SPILL CLEANUP EFFORTS AT SEA?

Oil spills can have significant and long-lasting consequences on marine ecosystems by contaminating water, demining habitats, and disrupting food chains. Traditional cleanup methods, while somewhat effective, often face limitations and challenges. Recently, swarm robots have emerged as an exciting prospect that could revolutionize how we respond to these environmental emergencies. AzoRobotics / <u>Read more</u>

# A SYSTEMATIC REVIEW OF POLYCYCLIC AROMATIC HYDROCARBON POLLUTION: A COMBINED BIBLIOMETRIC AND MECHANISTIC ANALYSIS OF RESEARCH TREND TOWARD AN ENVIRONMENTALLY FRIENDLY SOLUTION

Pollution caused by polycyclic aromatic hydrocarbons (PAHs) is a significant concern. This concern has become more problematic given the rapid modification of PAHs in the environment during co-contamination to form substituted PAHs. This review aims to integrate bibliometric analysis with a rigorous study of mechanistic insights, resulting in a more comprehensive knowledge of evolving research trends on PAH remediation. Science Direct / <u>Read more</u>

# **CONTRIBUTED ARTICLE**

An article received from Carlos Sagrera, MSc., IMO External Advisor, Hon. FISCO, ISCO Representative in Latin America and ISCO Council Member.



"Greetings from Panama again and here I am attaching this article that I consider important for the region about Mexico and this paradigmatic work done by the CIGoM (Gulf of Mexico Research Consortium). Reading it you will understand the scope of this work that goes far beyond the standards in Spanish speaking Latin America in our Spill Control issues, as it allows Mexico to have a baseline and key tools for prevention and response. The author is Dr. Edward Peters (photo attached which I suggest to be published and which shows the direct interaction of ISCO with him and his team), a scientific figure and unanimously recognised in Mexico, key with the new Mexico NCP (ISCO Newsletter Issue 930, March 25th)) and is someone we will soon propose as National Representative of Mexico in ISCO (subscriber process in progress)".

Photo – ISCO Observer with Dr Edward Peters and the CIGOM Team – Tampico, October 2023

# THE GULF OF MEXICO RESEARCH CONSORTIUM (CIGOM)

### By Edward M. Peters Recagno, Executive Director of CIGoM

The Gulf of Mexico Research Consortium (CIGoM) was created in 2015 focused on scientific research and environmental consulting services. It focuses on the execution of multidisciplinary projects and services mainly related to the oil and gas industry, with emphasis on possible environmental impacts on the marine ecosystems of the Gulf of Mexico.



## **OBSERVATORIO OCEANOGRÁFICO**

During the last 9 years, CIGoM has generated scientific knowledge and technological development in the Mexican portion of the Gulf of Mexico, such as; oceanographic observation platforms, the environmental baseline, an ocean and atmosphere monitoring system – through buoys, HF radars, gliders, remote sensing, an in-depth understanding of the Gulf Streams and the behavior of oil in the event of spills, the state of the art on the natural degradation of hydrocarbons and an ability to determine spill scenarios and forecasts and their potential effect on ecosystems.

To achieve this, the Consortium has worked on five lines of research in the study area.

• Oceanographic observation platforms: The physical and chemical conditions of the Gulf (currents, climate, salinity, oxygen, CO2, among others) are studied through measuring instruments in the field, to establish an early warning system in the event of a spill.

• Baseline and environmental monitoring: Samples are taken to evaluate the marine environment and to compare changes because of possible accidents in the marine ecosystem.

• Circulation and biogeochemistry models: Simulations are processed using mathematical models to predict the natural dispersion and degradation of hydrocarbons in the event of a spill.

• Natural degradation of hydrocarbons: The petroleum-degrading potential of bacteria is being investigated as a post-spill mitigation mechanism.

• Forecasts and oil spill scenarios: Through numerical models, observations, and field experiments, the (potential) consequences of a spill are analyzed, as support for public policies, and prevention by government agencies and companies operating in the study area.

**Repositories of knowledge and information generated.** - The vast amount of information generated by CIGoM required specialized management of spaces where information could be stored and socialized. To this end, a series of web developments were created as described below: Institutional Website <u>https://cigom.org</u>

A space for institutional communication, where you can find all the information related to the Consortium and the projects in execution.



Oceanographic Monitoring Group with Gliders - <a href="https://gliders.cicese.mx/">https://gliders.cicese.mx/</a>

The objective is to implement a new interdisciplinary sampling platform with gliders, equipped with sensors to measure both physical (temperature, conductivity, pressure, and current) and biogeochemical (fluorescence, turbidity, dissolved organic material and oxygen) variables and characterize the physical structure and biogeochemistry of the mesoscale and sub-mesoscale flows located in the western Gulf of Mexico.



## Regional Coastal Oceanographic Observatory — <u>https://oorco.ens.uabc.mx/</u>

OORCo began operations in August 2012, it aimed to measure ocean currents in real time, using oceanographic radar scatterometers. Today, OORCo covers the entire length of the Gulf of Mexico and the Mexican North Pacific, obtaining oceanographic parameters, multiparametric autonomous satellite probes (DORIS) and autonomous weather stations with real-time telemetry.



Gulf of Mexico Environmental Baseline Atlas – <u>https://atlascigom.cicese.mx/</u>

The Gulf of Mexico Environmental Baseline Atlas is a geographic representation of the physical, chemical, biological, and ecological characteristics of the ecosystem that focuses primarily on Mexico's Exclusive Economic Zone. This region is of strategic importance as it supplies natural resources, hosts high biodiversity, sustains tourism, and provides ecosystem services which intimately links it to social welfare and the national economy.



The Gulf of Mexico Weather Atlas for Spill Scenarios — https://pronosticos.atmosfera.unam.mx/atlasmeteorologico.gom/

It provides information on the mean state and variability of atmospheric conditions on different time scales, from hourly frequencies to interannual variations in the Gulf of Mexico. It also presents typical scenarios of the dispersion of atmospheric pollutants associated with oil spills in the Gulf of Mexico.



Regions, species, and ecosystems vulnerable to large-scale spill scenarios in the Gulf of Mexico – https://escenarios.cigom.org/

This collection presents the first global assessment of the regions, species, and ecosystems that could be affected if large-scale deepwater spills occur in the western Gulf of Mexico. The objective is to lay the scientific foundations and tools that help generate strategies for the prevention, attention, and mitigation of oil incidents in national territorial waters.

Sea Turtle Care Plan – <u>https://cigom.org/project/plan-de-atencion-a-tortugas-marinas-y-sus-habitats-ante-contingencias-por-</u> derrames-de-hidrocarburos-en-el-golfo-de-mexico/

> The objective of this document is to provide the necessary reference information and criteria for decisionmaking for this type of contingency in the Gulf of Mexico and the Mexican Caribbean.



## **Oil Spill Response Protocol** – <u>https://cigom.org/project/procedimiento-tecnico-de-operacion/</u>

CIGoM has developed techniques to detect oil in the sea, through satellite images, models for forecasting the trajectory of spills, instruments to measure ocean currents, waves and wind, as well as layers of socioenvironmental geographic information, useful for cataloguing ecosystems and their species as well as coastal communities, based on their vulnerability.

The results of the use of this procedure during a drill or incident are intended to provide recommendations to the operator or to the authority, to guide first response actions, once human life has been safeguarded, such as the use of specialized equipment to contain, disperse and recover oil, attention to oil-covered fauna and beach cleanups, among others.



The work carried out by the CIGoM responds to the need for solid scientific information for the establishment of prevention, early warning, and mitigation measures in the event of large-scale spills in the Gulf of Mexico. Therefore, Mexico is now better prepared, not only to react to an incident of this nature, but also to address the challenges and needs associated with the exploration and extraction of hydrocarbons offshore.

# TRAINING COURSES

Training Course Providers – Please check entries below and advise editor on any necessary updates

### USEFUL LINKS

- INTERNATIONAL IMO E-LEARNING PLATFORM e-learning platform
- AUSTRALIA AMOSC https://amosc.com.au/training/
- AUSTRALIA & NEW ZEALAND ALGA https://landandgroundwater.com
- CHINA http://www.sioetc.com
- EUROPE https://www.emsa.europa.eu/newsroom/latest-news/item/3609-emsa-training-catalogue-2019.html
- FRANCE CEDRE https://wwz.cedre.fr/en/content/download/10912/file/CalendrierFormation2023\_EN.pdf
   UK & WORLDWIDE OIL SPILL RESPONSE LTD. https://www.oilspillresponse.com/training/courses/
- UK & WORLDWIDE BRIGGS ENVIRONMENTAL SERVICES LTD. https://www.briggsmarine.com/services/training/
- UK & WORLDWIDE AMBIPAR GROUP <u>https://ambipar.com/uk/training/</u>
- UK & WORLDWIDE SIGMA ENVIRONMENTAL <a href="http://www.sigma-environmental.com">http://www.sigma-environmental.com</a>
- UK NCEC HAZMAT ACADEMY More info
- USA TEXAS A&M UNIVERSITY NATIONAL SPILL CONTROL SCHOOL https://www.tamucc.edu/research/nscs/
- USA MPC, DETROIT https://marinepollutioncontrol.com/services/training-and-compliance
- USA ALLIANCE OF HAZARDOUS MATERIALS PROFESSIONALS https://www.ahmpnet.org/events/event\_list.asp
- CANADA CONTAMINATED SITES HEALTH & SAFETY REFRESHER (8-HOUR HAZWOPER) FROM ECONEXT MORE INFO

Members who would like to be listed here, please contact your editor - john.mcmurtrie@spillcontrol.org

# **UPCOMING EVENTS**

# TO VIEW UPCOMING EVENTS CLICK ON HTTPS://SPILLCONTROL.ORG/UPCOMING-EVENTS/

To see ALL of the posted events you will need to click on "LOAD MORE" at the foot of each opened "upcoming events" page. Event organisers are requested to notify ISCO immediately if a listed event is cancelled or postponed. Your Editor does his best to keep the listing up-to-date but it should not be assumed that listed events have not been cancelled or postponed. It is recommended that you check with event organisers before finalising your attendance plans. Please advise the Editor if any of the entries require correction or updating. If you are holding an event you would like to be featured here, please send details to John.mcmurtrie@spillcontrol.org

The listings below give only very basic details – To get access to all information visit <a href="https://spillcontrol.org/upcoming-events/">https://spillcontrol.org/upcoming-events/</a>

## APRIL 2024

- USA Conference & Exhibition Clean Waterways April 9-11, Cincinatti, Ohio
- TUNISIA MOIG TRAINING COURSE IMO Level 3, 22-25 April 2024, South Hammamet
- UK IOPC Funds Meeting of the Governing Bodies, IMO London. 29 April to 2 May

## MAY 2024 Onwards

- USA Intrnational Oil Spill Conference & Exhibition, 13-16 May 2024, New Orleans, Louisiana
- AUSTRALIA ALGA Contaminated Land & Groundwater Conference, 16<sup>th</sup> 17<sup>th</sup> May 2024, Perth
- UK UK & Ireland Spill Association Marine Spill & Plastic Conference, 11th-12th June 2024, Southampton
- USA AHMP EHS HAZMAT SUMMIT, 14-17 July, 2024, Kansas City, Missouri
- CANADA International Conference on Environmental Pollution & Remediation, Montreal, 5-6 August 2024
- GERMANY "14<sup>th</sup> International Conference on Environmental Pollution & Remediation", Berlin, August 25-27, 2024
- SPAIN & ONLINE "14<sup>th</sup> International Conference on Environmental Pollution & Remediation, Barcelona, August 25-27. 2024
- CHINA / ONLINE WSH Asia Awards 2024, 5th September 2024

- UAE SPE International Health, Safety, Environment, and Sustainability Conference and Exhibition 10–12 September 2024, Abu Dhabi, United Arab Emirates
- USA Elastec River Spill Workshop, Carmi, Indiana, 8-10 October 2024
- UK Water, Waste & Environmental Monitoring 9-10 October 2024, NEC, Birmingham, UK
- CHINA 8<sup>th</sup> East Asian Seas Congress, Xiamen, 6-8 November 2024
- UK Seatrade Maritime Salvage & Wreck Conference, London, 11-12 December 2024

## SOME OTHER INFORMATION

- IOPC Funds has released a calendar of its upcoming events to view, click on <a href="https://iopcfunds.org/news-events/events/">https://iopcfunds.org/news-events/events/</a>
- Econext has released a programme of upcoming courses and webinars. This can be viewed at
   <u>https://econext.myvirtualcampus.co/product-category/webinars/?orderby=date&mc\_cid=9c2c758fcd&mc\_eid=6a430f153</u>
- Recordings of past ExxonMobil OSR Knowledge Transfer Webinar Recordings Access and Download
- UK & Ireland Spill Association Alternative Marine Fuels and their Implications For Spill Response Webinar is available to watch on YouTube. All six of UK & Ireland Spill Association's Webinar Series on the Wakashio Spill are also available to watch. More info
- Gulf-Alaska Knowledge Exchange A Workshop Series chaired by Ed Levine, Hon.FISCO More information
- IG P&I Podcast Exploring some of the topics discussed at the Seatrade Maritime Salvage & Wreck Conference Listen

# **UPDATES FROM EVENT ORGANISERS**

# **USA: CLEAN WATERWAYS 2024 - CLICK ON LINKS BELOW FOR UPDATES**

LIST OF EXHIBITORS <u>NEW UPDATED INFORMATION - RECEPTION AND NEW EVENTS JUST ANNOUNCED</u> - <u>READ MORE</u> <u>NETWORKING OPPORTUNITIES</u> <u>DISCOUNTS</u> <u>DIGITAL PROGRAMME</u>

Check out the 2024 CLEAN WATERWAYS Digital Conference Program! - A full, printable program is now available for this year's CLEAN WATERWAYS Conference, taking place April 9-11 at the Duke Energy Convention Center in Cincinnati, OH. Check out all that we have planned for the upcoming CLEAN WATERWAYS event! <u>READ MORE</u>The exhibit hall at this year's CLEAN WATERWAYS Conference, April 9-11 in Cincinnati, will feature an array of companies showcasing the latest technologies, services, and equipment for incident prevention and response in the inland environment. You will find consulting services, incident management services, new technology for response, equipment for inland response, GIS products, toxicology, remediation, oil spill removal organizations, and containment boom manufacturers... just to name a few! <u>READ MORE</u> <u>Registration information</u> April 9-11, 2024, Cincinnati, OH – "Incident Prevention & Response for Inland Regions & Waterways" <u>View the website</u> The CLEAN WATERWAYS program is developed by a government/industry-based committee of approximately 50 professionals, and the committee is looking for leaders to help shape the conference.

# USA: IT'S TIME YOU REGISTERED FOR IOSC 2024

 International Oil Spill Conference (IOSC) in New Orleans, May 13-16, 2024
 Click on links for updated info – LISTEN TO

 TESTIMONIALS
 LATEST UPDATED INFO
 EMERGING LEADERS PROGRAM
 EDUCATIONAL SPONSORSHIPS PROVIDE PRIME

 VISIBILITY AND IMPACT
 COMPLETE PROGRAM
 FILM FESTIVAL & PHOTOGRAPHY CONTEST

Take your 2024 International Oil Spill Conference (IOSC) to the next level by adding access to our day 1 Short Courses\* to your registration! Register today to secure your seat as these sessions will fill up quickly.

To qualify for a discounted registration rate, you MUST reserve a room at an <u>IOSC Hosted Hotel</u>. Your room must be booked by the Hosted Hotel cutoff date to receive the discounted rate. Please note that each hotel has their own cutoff date. IOSC will perform an audit on the housing block on April 15. Those that have not booked within the block by the respective hotel cutoff date will have their registration rate changed to reflect the difference.

In order to make it as easy as possible for you to join nearly 2,000 members of the international oil spill response community, IOSC has put together a Justification Toolkit to help you illustrate the value of attending this conference. Use the tools in this kit to explain to your supervisor how attending IOSC will be a smart investment in both your personal career growth and the growth of your organization. Download the Justification Kit

Meet Dr. Leonard Marcus, IOSC 2024 Keynote Speaker. Join us, May 13 - 16, 2024 in New Orleans, LA for the 2024 International Oil Spill Conference (IOSC) and be inspired by our opening keynote speaker, Dr. Leonard Marcus. <u>Read about Dr. Marcus</u>

Learn More about IOSC 2024 Be sure to follow IOSC on Facebook, Twitter, and LinkedIn for updates and announcements about #IOSC2024. Please contact registration@iosc.org for questions or additional information. Interested in exhibiting or sponsorship? Please reach out to: exhibits@iosc.org

# **USA: CLEAN GULF CONFERENCE & EXHIBITION 2024**

November 18-20, 2024 George R. Brown Convention Center I Houston, TX

# **UPDATES FROM EVENT ORGANISERS** (CONTINUED)

### PAPER SUBMISSION DEADLINE EXTENDED! THERE IS STILL TIME TO SUBMIT AN ABSTRACT FOR CLEAN GULF 2024 MORE INFO

Registration for the 2024 event will open in April and Exhibit and Sponsorships are already available! Contact Renie Mayfield at 720-289-7008 or rmayfield@accessintel.com to discuss how you can make an impact on buyers from oil & gas, maritime, rail, environmental companies and regulatory agencies with an Exhibit space or Sponsorship. <u>More imfo</u> Do you have real-world solutions for evolving environmental emergencies? Don't miss your chance to be heard at this year's CLEAN GULF Conference! Submit your abstract for review and your chance to take the stage this November

# INDIA: OIL SPILL INDIA CONFERENCE & EXHIBITION, NEW DELHI, 11-12 SEPTEMBER 2024

In the backdrop of the recent oil spill incident, caused during cyclone Michaung in Chennai's Ennore Creek, it is with a sense of urgency and shared responsibility that we announce that the 7th edition of Oil Spill India (OSI 2024), the region's flagship conference & exhibition on the Oil Spill Prevention, Planning, Preparedness, Response & Restoration industry, will be organised during 11th & 12th September 2024 at Hotel JW Marriott, Aerocity, New Delhi, India. <u>View the OSI 2024 website</u>

# EUROPE - INTERSPILL CONFERENCE & EXHIBITION - 8-10 APRIL 2025 - ExCel, LONDON

This internationally respected triennial event (which connects global stakeholders involved in marine oil spill research, prevention, preparedness, response and restoration) will return on 8-10 April 2025 at ExCeL London.

<u>https://www.interspill.org/2025/</u>Preliminary Programme & Call for Papers - Closing deadline 4 June 2024 – <u>More info</u> <u>PARTICIPATION UPDATE</u>

# CONTRACTS, TENDERS AND BUSINESS OPPORTUNITIES

# INTERNATIONAL OPEN TENDER NOTIFICATIONS

This is a subscription service. https://www.tender247.com/keyword/oil+spill+tenders+global

# **OTHER OPPORTUNITIES: USA & EUROPE**

US Government solicitations are frequently posted in Technology Innovation News Survey <u>https://clu-in.org/products/tins/</u>US Federal Contract Opportunities are posted at <u>https://clu-in.org/Federal-Contract-Opportunities</u> European Maritime Safety Agency invitations to tender are often posted in The EMSA Newsletter at - <u>https://www.emsa.europa.eu/newsroom/newsletters.html</u> ISCO Members can post requests for submission of invitations to tender for supplies / services in this section.

# LINKS FOR OTHER PUBLICATIONS

# TO VIEW LINKS FOR DOWNLOADING AND READING OTHER PUBLICATIONS PLEASE CLICK ON

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CLICK ON THE ABOVE ADVERTISEMENT FOR MORE INFORMATION

# **INCIDENT REPORTS**

## USA: LOUISIANA: COAST GUARD RESPONDS TO OIL SPILL

April 2 - The New Orleans sector of the U.S. Coast Guard Sector is responding to an oil spill in the Gulf of Mexico from a well head located approximately 60 miles south of Venice, Louisiana. The spill of crude oil was discovered around 8:00 a.m Sunday morning and resulted in a two mile by eight mile heavy sheen. It is believed that the spill occurred when an unidentified vessel struck a discharge pipeline coming from the well owned by Bois d Arc. Rigzone / Read more

# **RED SEA: A SHIP SINKS IN THE RED SEA, STIRRING ENVIRONMENTAL CONCERNS**

April 2 - The sinking of the Rubymar introduces substantial environmental risks, including the potential disruption of marine ecosystems from the release of 21,000 metric tons of fertilizer. The incident underscores the vulnerability of international commerce and marine life to geopolitical conflicts, as commercial and naval vessels become targets. The event prompts calls for immediate international response efforts to mitigate the environmental threat and highlights the ongoing tension in the region. EHN / Read more

# **CASPIAN SEA: OIL SPILL DETECTED IN CASPIAN SEA**

April 2 - "According to space monitoring data, received from Sentinel-1A (02:43 UTC), an oil spill was detected on March 30 in the area of Kashagan field in the Caspian Sea. The spill area is about 7 square kilometers. The spill was drifting to the north of the Caspian Sea," the publication reads. Inform.kz / <u>Read more</u>

# CAYMAN ISLANDS: CALL FOR AID AS DISABLED CARGO SHIP DRIFTS TOWARD SHORE

April 3 - The Government of the Cayman Islands and the Cayman Islands Coast Guard put out a call for assistance on Tuesday evening after they were advised that a containership had suffered an engine failure and was drifting toward the islands. The Cayman Islands Coast Guards' Operation Coordination Center was seeking assistance while the nearest tug from the islands was 60 nautical miles away. The Maritime Executive / Read more

# KAZAKHSTAN: IRAN CONCERNED AS SPILL IN KAZAKHSTAN THREATENS CASPIAN SEA ECOSYSTEM

April 4 - A possible oil spill in Kazakhstan's Kashagan Oilfield has sparked concern in Iran with pollution risks to the country's Caspian Sea coast. Globus, an environmental organization in Kazakhstan, reported that satellite imagery had detected a significant oil spill in the northern Caspian Sea vicinity of Kashagan. Iran Intl. / <u>Read more</u>

# HISTORY: FLASHBACK IN MARITIME HISTORY: EXXON VALDEZ OIL SPILL 24 MAR 1989

On 24 March 1989, the single-hull tanker EXXON VALDEZ was departing the Port of Valdez, Alaska with a full load of North Slope crude oil (approximately 1.26 million barrels) destined for Long Beach when it grounded on Bligh Reef in Prince William Sound.

EXXON VALDEZ grounded on Bligh Reef in Prince William Sound, Alaska, on 24th March 1989, releasing 37,000 tonnes of Alaska North Slope crude oil. Despite the utilisation of significant numbers of personnel, vessels, boom, skimmers and other resources, the oil spread widely to affect a variety of shores to varying degrees over an estimated 1800Km in Prince William Sound and along Alaska's south coast as far west as Kodiak Island. The response was the most expensive ever for a ship-source oil spill, with over 10,000 workers employed at the height of the clean-up operations, many of them in shoreline clean-up, often in remote areas. Maritime Cyprus / <u>Read more</u>

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