

OCEAN ORBIT

NEWSLETTER • THE INTERNATIONAL TANKER OWNERS POLLUTION FEDERATION LTD • OCTOBER 2005



THE ROLE OF SCIENCE

Much has been achieved through international co-operation in the last four decades to prevent or minimise the effects of pollution from shipping. The trend towards a uniform application of international conventions developed under the auspices of IMO has created benefits for the marine environment and for victims of oil and chemical pollution. Taken together, the MARPOL, CLC, IOPC FUND, OPRC, BUNKERS and HNS Conventions provide an integrated system which deals effectively with many aspects of marine pollution from ships. Our reliance on goods transported by sea makes this an important part of protecting our oceans.

The long-term viability, credibility and success of the international regime depend on many factors, including wide adoption and effective implementation of the Conventions. For the treaties to work properly, scientific input is required, for example, for the accurate identification of

operational discharges from ships and in making assessments of environmental damage as a result of a spill. Such investigations and assessments are often of a controversial nature and require rational and dispassionate treatment. Experience to date suggests that a fair and consistent interpretation of the science-based elements is of crucial importance.

Recent pollution cases demonstrate the difficulty of applying common principles across a wide variety of scenarios. The characteristics of different pollutants vary greatly once released to the sea. They also change with the passage of time. In addition, variations in topography and hydrography coupled with the dynamics of living systems create an ecological backdrop of great complexity. To assist regulators and claimants in gathering relevant evidence in marine pollution cases, codes of practice and protocols have been developed to provide guidance to scientists. Whilst such procedures may be less than perfect in some cases, abandoning a science-based approach would lead to a rapid loss of confidence in the regulations in place.

The same principles can be applied to the many interdependent issues related to the exploitation of the marine environment. Ship-source pollution is but one class of threat to our seas and at the site of any incident other influences from

man-made activity will inevitably be found. Scientific investigation must play a central role in unravelling the various causes and effects, thereby leading to a more accurate evaluation of the damage attributable to a spill.

This important subject will be addressed in an ITOPF paper entitled *"Integration of Scientific Perspectives in the Application of Maritime Law"* to be presented at the *Pacem In Maribus XXXI* Conference 2005 in Townsville, Australia in November, 2005. The theme also pervades this issue of *Ocean Orbit*, containing many examples of the value of the science-based approach adopted in the work of ITOPF.

INTERNATIONAL SEMINAR ON TANKER SAFETY, POLLUTION PREVENTION & SPILL PREPAREDNESS

ITOPF, INTERTANKO and OCIMF are jointly organising a Seminar to be held at the Four Seasons Hotel in Shanghai on Thursday 8th December. The Seminar will address tanker safety issues, highlighting opportunities for preventing pollution from ships, and recommending procedures for dealing with pollution incidents in an effective manner. The aim is to engage the interest of both government and industry representatives. Attendance is open to representatives of central and local government, oil companies, shipping companies, P&I Club correspondents, law firms, salvage companies, oil spill clean-up companies, environmental groups and academic institutions.

Attendance at the Seminar, including a buffet lunch, will be free of charge. Attendees will, however, be responsible for arranging and paying for their own travel and hotel costs. For further details, including a programme and booking form, please see the ITOPF website (www.itopf.com/news.html).



TRENDS IN OIL SPILLS FROM TANKERS

Since 1974, ITOPF has maintained a database of oil spills from tankers, combined carriers and barges, which includes all reported accidental spillages except those resulting from acts of war. The amount of oil spilt in an incident represents all the oil lost to the environment, including that which is burnt or remains in a sunken vessel.

The aim of this article is to examine some of the trends in oil spills from tanker vessels over the last ten years from 1995 to 2004, which are then compared to earlier periods (1975 – 1984 and 1985 – 1994), to try to identify the factors which may have contributed to any trends.

The majority of accidental spills on ITOPF's database fall into the smallest category i.e. <7 tonnes (84%). This data is incomplete, mainly because the quality of reporting varies so much between countries, ports and terminals and is therefore not amenable to statistical analysis. However, these smaller spills make a relatively minor contribution to the total quantity of oil spilt into the marine environment from tankers.

Figure 1 shows the number of oil spills in the 7-700 tonnes and the >700 tonnes categories that have occurred in the last 30 years. It can be seen from Figure 1 that the number of accidental oil spills in both size categories has reduced in successive 10-year periods over the last 30 years.

The 5-year averages in Table 1 show that this reducing trend is continuing, with 35% less spills of 7 tonnes and above occurring in the last 5 years compared with the previous 5 years.

The trends for the countries with the most spills are shown in Figure 2. With the exception of South Korea, all countries experienced a decline in the number of spills in the last 10 years, compared with the two previous 10-year periods. Large spills in South Korea during the 1990s were due mainly to groundings and collisions in the coastal zone during poor weather conditions. In response, the South Korean government has taken steps to move large vessels

	Total spills ≥ 7t	5 yr average for no of spills ≥ 7t
1995	23	27.8
1996	23	
1997	38	
1998	30	
1999	25	
2000	23	18.4
2001	19	
2002	15	
2003	18	
2004	17	

Table 1: No of Tanker Spills 7 tonnes and over, 1995 to 2004

further offshore and away from congested shipping lanes in coastal archipelagos. The relatively high frequency of spills occurring in the USA in any given period is partly attributable to the scale of US oil imports and partly to a more comprehensive dataset.

Turning to the European countries featured in Figure 2, the pattern can be interpreted by reference to the location and characteristics of the main tanker routes. Figure 3 shows that large quantities of oil are transported through the Mediterranean and past the Atlantic Seaboard to Northern Europe. Increasing oil exports from the Russian Federation through its ports of Murmansk, Primorsk and Novorossiysk result in significant quantities transported southward and westward along these routes. Other contributory factors include severe weather and navigational hazards.

In conclusion, the decrease in the number and size of spills in incidents from tanker ships continues despite a steady increase in seaborne oil trade since the mid 1980s.

The causes for this trend lie chiefly in improved ship management coupled with the adoption and application of effective international instruments for pollution prevention developed by the International Maritime Organization. In the case of the United States, a downturn in oil spills coincides with the introduction of the Oil Pollution Act (1990).

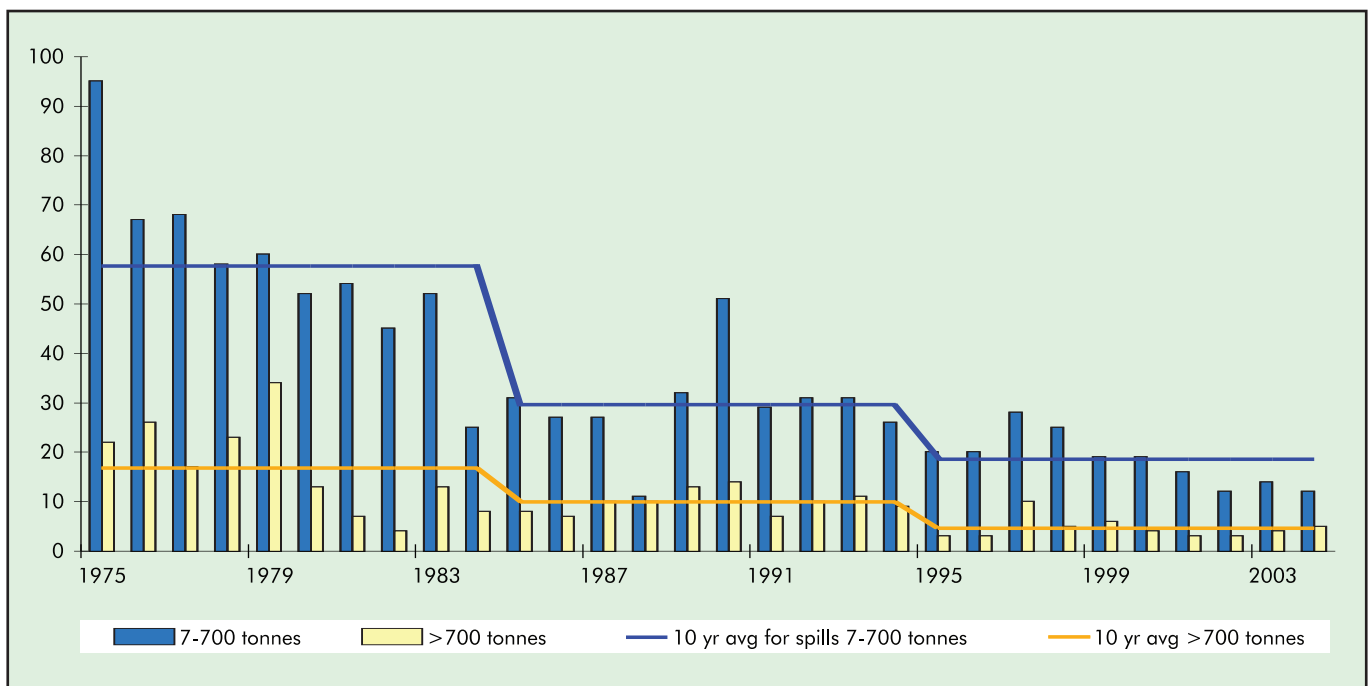


Figure 1: Frequency and 10-year averages for the number of tanker spills in size groups 7-700 tonnes and >700 tonnes, 1975 to 2004

RESPONSE TO HNS INCIDENTS

It is Friday afternoon and a report has just come in of a ship aground and spilling chemical products. ITOPF Technical Advisers quickly make an initial assessment of the severity of the incident and gather data on the substances involved. Information on the physical characteristics and toxic effects of these products for personnel as well as the environment is collected from reference manuals held in our library. Contact is made with manufacturers and with the chemical tanker owner to get the appropriate Material Safety Data Sheet (MSDS). Best response options are identified and soon technical advice can be provided to spill managers and authorities.

To be able to provide this kind of service, ITOPF has been steadily acquiring expertise in the area of response to incidents involving the loss of Hazardous and Noxious Substances (HNS). An internal working group on HNS was established two years ago to improve and maintain ITOPF response capacity in respect of HNS incidents by identifying sources of information, providing training to technical advisers and by developing a support network with specialised organisations such as chemical manufacturers, shipowners, freighters and government agencies. Recent activities of our group have included an internal training course on air monitoring at which staff from OSRL participated. Another important contribution has been participation in the work of the IMO OPRC-HNS Technical Committee for the development of an IMO HNS training course and the preparation of a response guide.

In the coming months, we will continue our programme of visiting representative chemical industries and chemical shipping companies in order to improve our links and build on existing capacity and expertise. We are also looking for opportunities to participate in training and exercises, and would welcome suggestions from our readers in this regard.

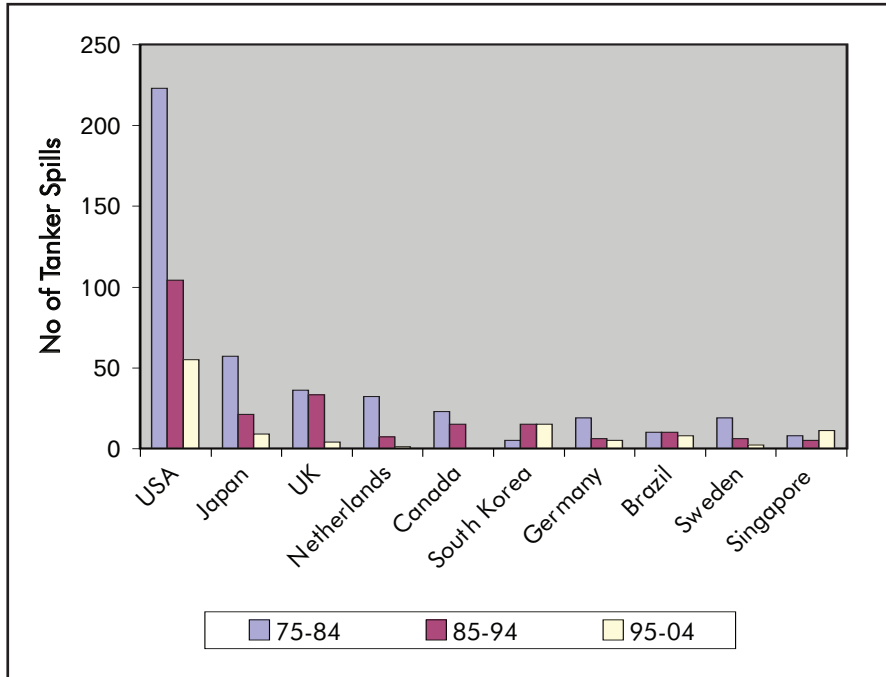


Figure 2: Number of spills by country per decade for countries with more than 25 Spills

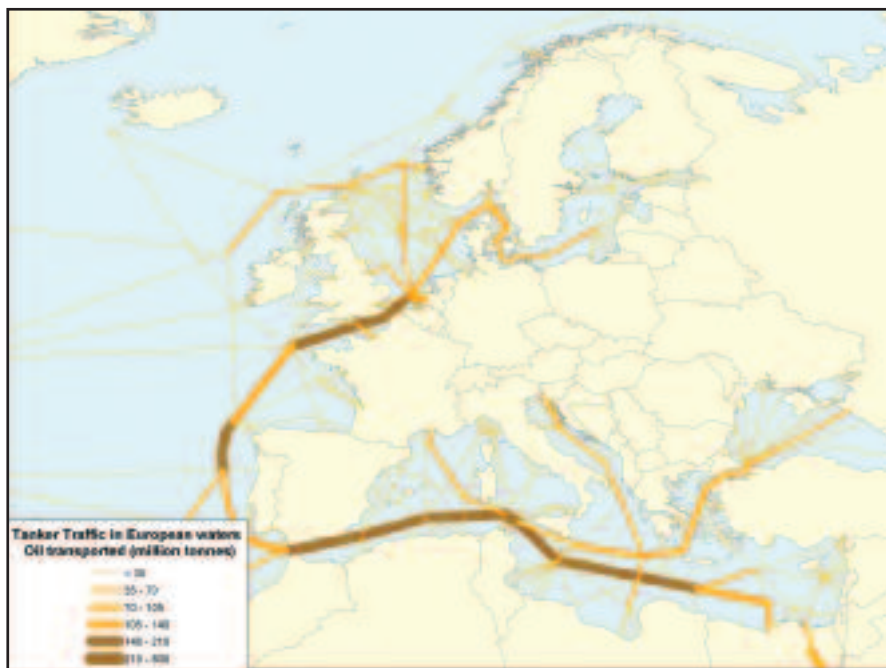


Figure 3: Tanker traffic in European waters

MOVING FORWARD IN SHIPPING

The Chairman of ITOPF, Dr Helmut Sohmen of World-Wide Shipping Group, delivered the Keynote Address – *Moving Forward In Shipping* – at the centenary celebrations of BIMCO in May. Dr Sohmen chose as his theme the need to raise standards in shipping and improve its image. He urged the industry to engage in effective dialogue with regulators and other stakeholders, and drew attention to positive developments by reference to the reduction in the number of major marine oil spills in recent years. The full text of Dr Sohmen’s address and a summary of ITOPF’s spill database can be found on our website, www.itopf.com.



Area of oiled mangroves in Mozambique being carefully cleared of bulk oil

ENVIRONMENTAL DAMAGE FOLLOWING OIL SPILLS

Recent oil spills have highlighted the need for guidance in the monitoring of environmental damage and the scope for restoration measures. Following an initiative by United Nations Environment Programme (UNEP), ITOPF have participated in a collaborative effort to prepare a draft guidance document for submission to the Marine Environment Protection Committee of IMO.

The intention of the document is to provide advice consistent with the application of the widely accepted Civil Liability and Fund Conventions. Such advice relates to the carrying out of studies to establish the nature and degree of environmental impairment, and the restoration measures available for accelerating recovery. The return to pre-spill conditions is a popular concept, but is not actually achievable in practice. The marine environment is highly dynamic and even in the absence of an event like an oil spill and its clean-up, the physical and biological conditions can change substantially from year to year or from season to season, and most habitats are in a constant state of flux.

Spills of sufficient magnitude to result in environmental damage are usually accidental and therefore unpredictable in nature and location. Frequently, the areas affected by the oil spill have not been surveyed and documented in depth prior to the

incident. Consequently, changes in what might be considered the norm may be difficult to attribute to the oil spill as opposed to other factors, such as chronic pollution, over-fishing, and climate change. For example, many oil spills happen close to ports, industrial or urbanised areas, where it becomes important to be able to separate spill effects from those of other pollutants. Taking this into account will require careful design of the sampling protocols and the layout of the sampling locations, as well as additional

analytical methodologies to measure other contaminants.

Following an oil spill, the most important first step to minimise environmental damage is an appropriate and efficient clean-up response, tailored to the pollution event and to the ecosystem affected. It is essential that clean-up operations are designed and managed by experienced professionals who are aware of the importance of the local environment and sensitive resources. Careful consideration will enable response options to be selected that minimise damage to the environment and promote natural recovery.

The next step in evaluating the risk, nature and degree of environmental damage is to determine both the geographical extent of the spill and identify the resources which are likely to fall within the area of the spill. The extent of the spill is probably the single most important aspect of damage assessment as it establishes the affected area. The location of resources sensitive to oil pollution in the path of drifting oil can usually be identified either from direct observations or on the basis of environmental sensitivity maps prepared as part of the development of contingency plans.

When environmental damage from a spill and from clean-up activity proves to be more prolonged, it may be feasible to speed up the natural recovery process. For some communities which are characterised by opportunistic species with high reproductive rates, a broad physiological tolerance and wide-ranging dispersal abilities, there is

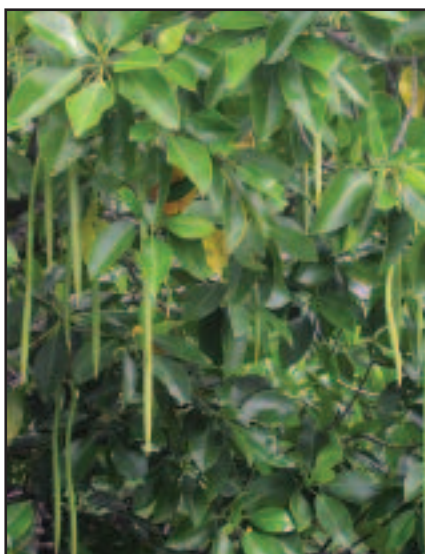


An area of mangrove created from planting individual seedlings in a grid pattern

usually a high degree of resilience and high potential for rapid natural recovery. This makes restoration unnecessary. However, more complex communities such as salt marsh, mangroves, sea grass beds and coral reefs are generally the slowest to recover and their resilience is low and restoration may be feasible. Restoration measures should enhance the natural recovery process leading to the re-establishment of a healthy biological community in which similar faunal and floral components coexist and interact normally.

Salt marshes and mangrove forests provide two clear examples of habitats with known potential for reinstatement after spill damage. Both are ecologically valuable coastal habitats, providing coastal defences, important nursery areas for commercial fish species and a considerable supply of organic material which provides nutrition for near-shore marine communities. Both are also sensitive to oil spills and the natural recovery process is likely to be slow after serious spill damage.

It is sometimes possible to speed up recovery by transplanting healthy individuals from nearby unaffected donor areas, by harvesting and distributing seed or propagules, or by collecting seed, growing them on in pots and then transplanting into the damaged area. Whilst it will take years to return to the original age structure of the community, reinstatement can reduce the risk of sediment erosion and accelerate natural recovery to the point where the ecosystem is functioning normally.



Propagules hanging from a mature mangrove tree



The involvement of volunteers is a feature of many oil spills

VOLUNTEERS IN OIL SPILL RESPONSE

An EU workshop, entitled "Minimisation of Environmental Damage in Case of Oil Pollution" was held in Bremen, Germany, in September. Participants included 24 delegates and 12 lecturers representing 14 nations. Lectures and discussions covered such general oil pollution topics as fate & effects and sensitivity mapping as well as country-specific experiences from Germany, Estonia and Greece. The workshop also covered the topic of treatment options for oily sediments, soils and water by way of site visits to three treatment plants in Bremen. ITOPF presented a paper entitled "The Role and Responsibilities of Volunteers in Oil Spills".

The involvement of volunteers is often a feature in cases during which a protracted shoreline clean-up is carried out. Thus, major spills and those involving persistent oils such as Heavy Fuel Oil or emulsified crude oil are the most likely to generate public interest and voluntary contributions. Of over 100 recent cases reviewed in 46 countries, about one quarter involved some form of volunteer effort, mainly directed towards wildlife rehabilitation and beach cleaning. The motivation of volunteers is generally one of compassion for stricken wildlife or a wish to personally contribute to speeding up the recovery of contaminated coastlines. However,

there have also been examples of volunteers attempting to make financial gains from re-selling collected oil.

The mere fact that oil spill clean-up is a complex activity requiring skill and practice demonstrates that volunteers can never replace a properly trained and exercised workforce. In addition there are health and safety issues which will prevent the involvement of volunteers on hazardous work sites such as offshore response vessels and rocky shores. Activities must be chosen to match the varying age and fitness levels of a volunteer group. Whilst the concept of voluntary work implies no financial remuneration for the time spent participating in clean-up or rehabilitation, there is a need for meals, tools, materials, protective clothing, sanitation, transportation and supervision to be provided. Thus, the value of a volunteer effort can be outweighed by the attendant cost and management requirements unless the possibility of volunteer participation in an oil spill is properly planned.

The subject of volunteers and voluntary business contribution is a subject worthy of further attention as part of contingency planning. A more detailed ITOPF paper on the topic is being considered for presentation at one of the upcoming international oil spill conferences.



Booms were deployed around the wreck of the VICUÑA

RECENT INCIDENTS

ITOPF's attendance at spills in the last 12 months has been equally split between tanker and non-tanker incidents. Although none of the incidents has been major, they have not been without their individual demands and complications. This issue of *Ocean Orbit* includes summaries of two of the more complex tanker spills - VICUÑA (Brazil) and ATHOS 1 (USA) – and a spill from the container vessel MSC ROBERTA (Turkey).

MT VICUÑA

MT VICUÑA (11,636 GT) suffered an explosion whilst discharging a cargo of methanol at Paranaguá Port, Brazil on the evening of 15th November. Structural damage was severe, causing the vessel to sink in shallow water alongside the berth. After the explosion, fuel oil contaminated areas of high environmental sensitivity to the north and east of the accident site. It is estimated that up to 400 tonnes of IFO 180 were spilled. Much of the 4,000 tonnes of methanol on board VICUÑA was consumed in the fire, evaporated or dissolved in the water upon release. ITOPF was mobilised by the vessel's insurer and arrived on site on 17th November.

Although Paranaguá is a busy port, the bay supports abundant wildlife and extensive mangroves and saltmarshes. It is home to significant numbers of sea turtles, dolphins and seabirds feeding on the large schools of pelagic fish. Subsistence fishing and aquaculture, including intertidal oyster cultivation, take place in the estuarine system that

links Paranaguá Bay with the bays of Antonina and Guaraqueçaba. There are also a number of tourist and conservation sites in the area and several national and state parks, including the island national park of Superagüi.

Initial wildlife casualties from the incident included several marine turtles as well as a number of sea birds. A mobile wildlife rehabilitation centre was set up in a disused port authority building and specialist personnel employed to undertake an assessment of the severity of impact. Field surveys revealed surprisingly few wildlife casualties and operations were discontinued at the end of November.

As a precautionary measure, a fishing ban was imposed in the entire estuary following the incident. The ban prohibited the harvesting of molluscs and finfish and also barred all water sport activities in the area. It was lifted after bulk oil had been removed from the water surface and shores and after the authorities were satisfied that no contamination was present in water and harvested marine organisms. A small fishing exclusion zone remained around

the accident site whilst the remainder of the wreck was being removed.

The oil spill response operation was led by the shipowner with direction and supervision of the activities provided by local and federal government agencies. To minimise leakage of oil from the wreck site, booms were deployed and maintained around the partially sunken wreck. Response efforts were hampered by strong currents, which made effective containment of spilled oil difficult.

The main types of habitat affected by oil were sandy beaches, mangroves and associated saltmarshes, rocky and manmade shores, including concrete quays and jetties. Areas sensitive to damage from active clean-up, such as the mangroves, were largely left to recover naturally. Where clean-up was necessary, the majority of the work was carried out manually with the assistance of local contractors utilising local villagers as an additional source of manpower. At the height of operations some 300 personnel were deployed. Most of the bulk oil had been removed by early January and secondary cleaning of rocky shores and beaches then followed.

Salvors were engaged to recover the bunker oil remaining on board after the explosion and later to remove the wreck from its position alongside the pier. Wreck removal was completed by May 2005.

ATHOS I

On 26th November 2004, the oil tanker ATHOS I (60,744 DWT) struck an uncharted object projecting above the bed of the Delaware River which pierced two of her tanks, causing the release of 850 tonnes of Venezuelan Bachaquero crude oil. The object was later identified as a discarded anchor which was in close proximity to other objects on the riverbed. The spilled oil spread along the Delaware River, and came ashore along river banks in Pennsylvania, Delaware and New Jersey.

The Delaware Bay River Basin is a heavily populated and industrialised area, but also an extensive and valuable ecosystem, providing stopover and wintering habitats for migrating birds.

The initial response was to deploy five skimming vessels from local oil spill cooperatives to recover oil on the water surface. Booms were put in place in attempts to protect the large numbers of tributary creeks, marinas, moored



A nuclear power station was closed as a precautionary measure following the ATHOS 1 spill

vessels and docks in the area that had not yet been oiled.

During this period, a nuclear power station downstream from the spill site was temporarily shut down as a precautionary measure due to concerns that oil would enter the facility's cooling water intakes. The station remained closed until the likelihood of oil impact had passed. Waterfowl hunters and anglers were also advised to refrain from hunting and boating in stretches of the Delaware River to protect wildfowl resources from potential oiling as a result of the spill.

Recovery operations at sea were stepped down in December, as very little oil remained on the river surface. The main focus of the response then shifted to shoreline clean-up as the majority of the spilled oil had stranded on riverbanks, affecting some 200km of shoreline in total. This involved a major operation, with a peak of 1,700 workers from federal, state and local government agencies, as well as the private sector.

Wildlife experts were brought in to retrieve and treat oiled wildlife. Some 400 birds were rehabilitated and released and a further 186 were reported dead. Some small mammals and reptiles were also reported as oiled.

ITOPF's involvement in the spill continued for nearly four months, with six site visits by three technical advisers, who provided guidance on the most effective allocation of clean-up resources as well as demobilisation of assets as they became ineffective or

inappropriate. Considerable effort was expended working with clean-up contractors to develop a reasonable approach towards dealing with oiled recreational boats and marina facilities.

The shipowner's liability limit under OPA '90 (US\$ 45.5 million) was reached in the early stages of clean-up, but the owners/insurers of the vessel continued to fund activities well beyond their financial obligations. Reimbursement for excess expenditure will be sought from the National Pollution Fund Centre which administers the Oil Spill Liability Trust Fund. On 21st March 2005 clean-up efforts and funding were officially federalised. With this, the shipowner's (and therefore ITOPF's) direct involvement ceased. By this date, the majority of the clean-up had been completed.

MSC ROBERTA

The container vessel, MSC ROBERTA (43,567 DWT), and the bulk carrier, AEGEAN WIND (39,915 DWT), laden with 37,000 tonnes of manganese ore, collided at the north end of the Dardanelles Strait, Turkey on the morning of Sunday 3rd April 2005. MSC ROBERTA received considerable damage to her starboard side, which resulted in a spill of an estimated 40 tonnes of fuel oil.

Oil stranded intermittently over a 50 kilometre length along the western shores of the Dardanelles (on the European side), including Gelibolu (Gallipoli). Approximately eight kilometres of

shoreline near Canakkale on the Asian side, were also reported as lightly oiled.

Three weeks after the spill some 30,000 visitors - including a number of foreign dignitaries - were expected in the area to commemorate the 90th Anniversary of the Gallipoli landings of World War I. The commemorative beaches had been heavily oiled by the spill, and were identified as a priority for cleaning.

The Straits are also an important local fishing ground, and the presence of oil on the sea resulted in many boats being unable to fish for a period of weeks. In the fishing ports of Gelibolu, Eceabat and Kilitbahir, about 100 vessels were reported as oiled. These were cleaned before they were allowed to return to the sea and begin fishing again.

ITOPF was mobilised by the vessel's insurer on 6th April. ITOPF worked with the P&I Club, its correspondent and legal representatives to arrange a contract for shoreline clean-up and waste disposal with a local company. Advice was also provided on cleaning fishing boats and claims related to the business interruption of the fishermen.

Much of the clean-up was of a manual nature, though some areas were washed with high pressure hot water. Attempts were made to minimise waste generation by employing 'remove, wash and return' techniques for cleaning some larger rocks and stones from shorelines. Efforts were initially concentrated on the commemorative beaches, and the majority were cleaned in time for ANZAC Day (25th April). All other tourist beaches were cleaned to the satisfaction of the authorities by the beginning of the summer holiday season.



Shoreline clean-up following the spill from MSC ROBERTA

CHARITY CYCLING

ITOPF is sponsoring a team to participate in next year's shipping industry charity bike ride, *Tour Pour La Mer*. The four riders from ITOPF will join several hundred others from the maritime industry and other sectors on a 200km route from the *Cutty Sark* in Greenwich, London to Le Touquet in France. The ride, to be held on 12-14 May 2006, has been set up with collaboration from V Ships, INTERTANKO and American Bureau of Shipping to raise money for the Mission to Seafarers and the Sea Alarm Foundation. Further information is available at www.tourpouurlamer.org.

One staff member has already established his cycling credentials by riding from Lhasa in Tibet to Kathmandu, Nepal via Everest Base Camp. Richard Johnson, a Senior Technical Adviser, undertook his epic 1,200 km journey in September in support of CancerBACUP, a charity which provides practical advice and support for cancer patients, their families and carers. The ride involved negotiating ten Himalayan passes and ascending 35,000 feet in total. Conditions were at times unrelentingly cold, wet and windy, but generally favourable and relieved by the most spectacular, and breathtaking, scenery. Richard was the only one in the group to complete the course by pedal power alone and thereby demonstrated great stamina, determination and commitment to his cause.

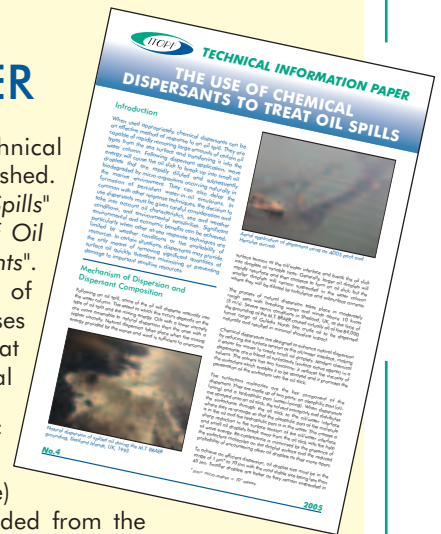


Richard Johnson at Everest Base Camp, Tibet

NEW TECHNICAL INFORMATION PAPER

The fourth of ITOPF's new series of Technical Information Papers (TIPs) has recently been published. "The Use of Chemical Dispersants to Treat Oil Spills" replaces two earlier TIPs "Aerial Application of Oil Spill Dispersants" and "Use of Oil Spill Dispersants". This new paper describes the mechanism of dispersion and dispersant composition; it discusses the limitations of dispersants, and looks at application methods and environmental considerations.

Single copies of the TIP are available free of charge from ITOPF; multiple copies are charged at £1.00, reducing to 0.75p (excluding postage) for bulk orders. Copies can also be downloaded from the Publications page of our website at www.itopf.com/publicat.html.



New staff: Grant Carter and Enya Elwood

ITOPF STAFF NEWS

Alexander Nicolau left ITOPF in September to pursue a new life in Japan. Alexander has been a Technical Adviser with ITOPF since January 2002, and attended 12 spills, including PRESTIGE and TRICOLOR. Dr Natalia Martini, another Technical Adviser, is currently on maternity leave. On the administration side, Grant Carter was recruited as IT Support Technician in January and Enya Elwood joined ITOPF at the beginning of October as Technical Team Secretary.

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