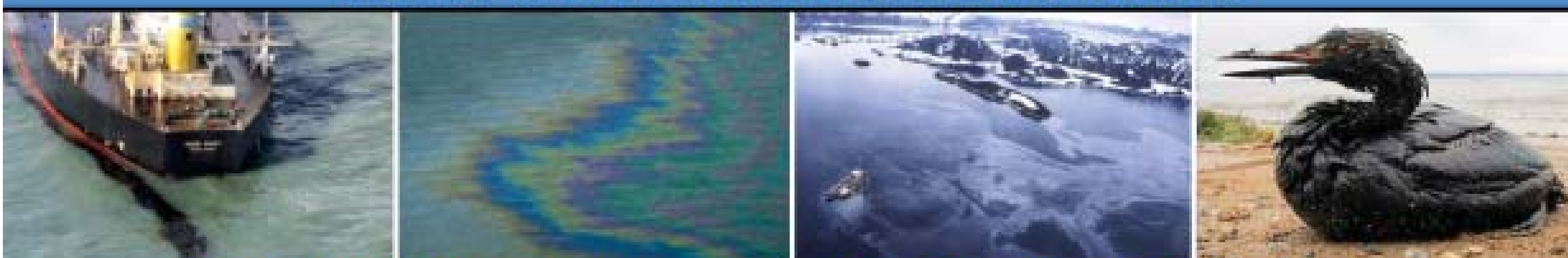
BLUE WATERS

Newsletter

On Marine Environment Security

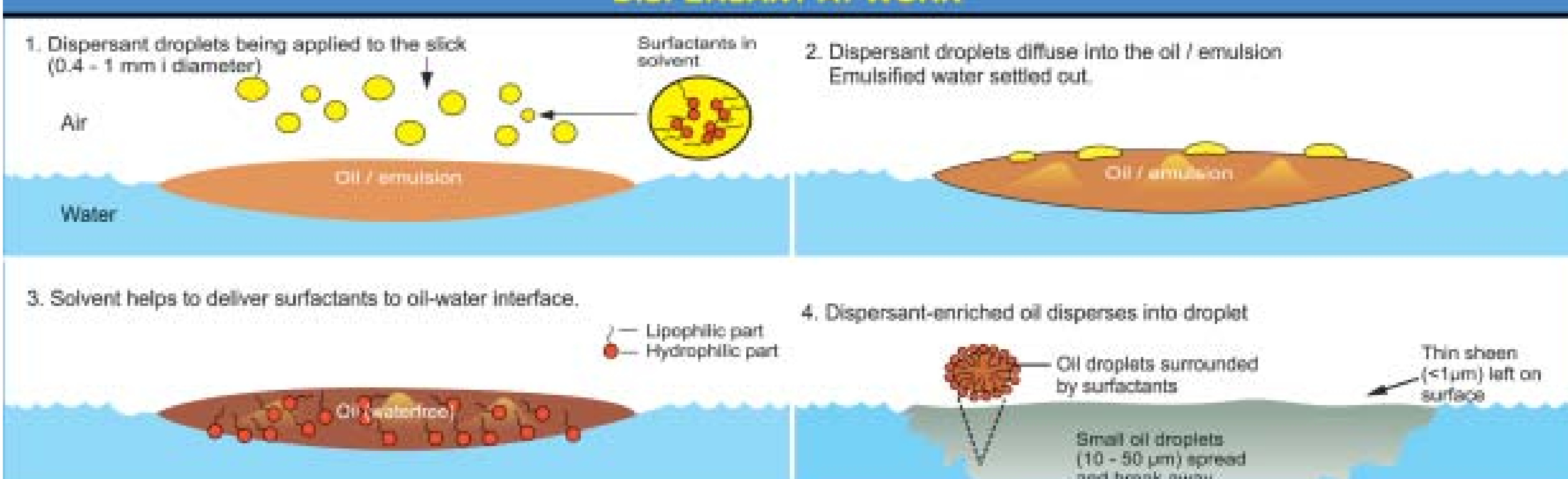
Biannual July 2009 Vol X Issue 2

THREAT OF OIL SPILL INCIDENT TO SENSITIVE SHORELINES

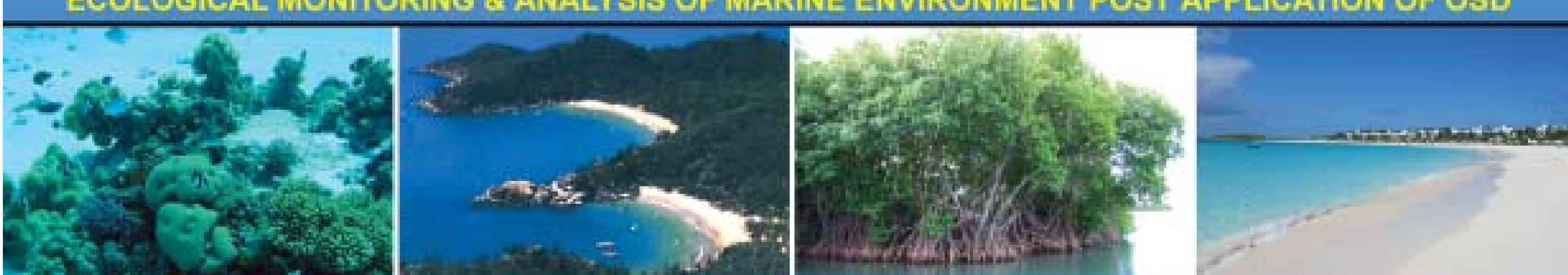


APPLICATION OF OSD TO PREVENT OIL AFFECTING THE SENSITIVE SHORELINES

DISPERSANT AT WORK



ECOLOGICAL MONITORING & ANALYSIS OF MARINE ENVIRONMENT POST APPLICATION OF OSD



A Publication of the Indian Coast Guard

From the Director General's Desk

Oil spill response has traditionally focused primarily on physical containment and recovery approaches. For marine oil spills, these approaches emphasize controlling and recovering spilled oil or petroleum products through the deployment of mechanical equipment, such as booms and skimmers. However, the effectiveness of mechanical response techniques is variable and highly influenced by the size, nature, and location of the spill, as well as the environmental conditions under which the response is carried out. Essentially, mechanical response works satisfactorily under a finite subset of all possible spill scenarios. To expand this suite of response capabilities, chemical dispersants have become a more accepted oil spill counter measure. As a result, there is an increased need to know when dispersants will likely be effective on different oil types to assist in the dispersant-use decision-making process.

It is therefore essential, to recognize the importance of basing decisions related to dispersant application. The Indian Coast Guard has constituted a study team comprising of experts from various agencies to formulate new policies, and update the Coast Guard Guidelines on application of OSD. I hope, that this effort will help us respond to oil spills in a more efficient manner.

This edition of Blue Waters accordingly deals with issues related to OSD, and is aimed at sharing information and knowledge with readers, to keep them abreast of the initiatives made for the OSD response methods, and also to provide other valuable tips on OSD, which might not get noticed in other guidelines or marine journals.

The unprecedented financial crisis that struck the world last year, has also affected the shipping industry worldwide. While the economic downturn triggered a crisis resembling a prolonged recession, some in the shipping and offshore sectors will find the temptation to make some cost savings by cutting corners. Further, many unscrupulous operators may embark upon lowering safety standards, reduction in manpower, essential onboard maintenance, replacement of faulty or obsolete equipment and training of crew, which may result in loss of life and damage to the marine environment. It is my humble request, that the ship operators adopt the best practices and maintain their ships in a state that the crew will find it safe to operate therby ensuring that the marine environment is protected at all times.

The National Level Pollution Response Exercises (NATPOLREX-I), conducted by the Coast Guard in April this year could not completely test the desired preparedness level for response to large oil spills, due to want of expected level of participation of the resources from the oil industry and other stakeholders. It has been decided to conduct a second National Level Exercise (NATPOLREX-II) off Mumbai, in the first week of November this year, so as to test the reliability, training level of the personnel and the overall response preparedness of the ICG and the resource agencies. I expect a wholesome participation by all resource agencies.

The South-West monsoon, though late in its arrival, has the capability to unleash its ferocity in the Western sea board in the coming months, and I request all concerned to prepare themselves accordingly, so as to launch any response measure expeditiously, and protect our marine environment from any threats.

Jai Hind.

(Anil Chopra)
Vice Admiral
Director General
Indian Coast Guard

New Delhi
31 Jul 09

Editorial

A variety of perspectives exist about the value and potential of dispersing surface slicks of spilled oil or refinery products. These perspectives reflect varying degree of knowledge and opinion about dispersants and the fate and effects of dispersed oil in the environment. The discussion of this position has enabled the Indian Coast Guard to form a study team for OSD and revise the 2002 OSD Guidelines. It is essential to recognise the importance of basing the decisions related to dispersant application on the most recent information and scientific understanding and towards this effort, two articles, 'Understanding the OSD' and the 'Facts to be borne on mind while applying OSD' are provided in this issue.

The past six months have seen a rise in adoption of many resolutions by IMO that impinges on the marine environment protection. The most important resolutions are that of the ship recycling, ballast water management, MARPOL Annex-IV, anti-fouling agents etc. It is imperative that the Maritime Administration of India takes all the necessary measures to keep abreast with the changing scenario and our country meets all the requirements based on the analysis of benefits accruing to the Indian shipping industry and protection of marine environment of India.

The Indian Coast Guard has recently published the guidelines for submission of application for Coast Guard Environment Awards – Major Ports category and is available on the ICG website. The major ports are requested to avail this opportunity to submit their application for the award in due time.

I take this opportunity to thank all the readers who have contributed articles on OSD for this edition of Blue Waters, and solicit your continued cooperation in providing articles and other information to enhance the Blue Waters commitment to marine environment protection.

(Donny Michael)
Commandant
Joint Director (Environment)

CONTENTS

ARTICLES

Oil Spill Dispersant 3

Facts to be considered prior application of Dispersants 8

IMO NEWS

Recycling of Ships 12

Draft MARPOL Amendments to protect Antarctic 12

REPORTS

World Watch

Oil Tanker Collision with Container vessel off Dubai 14

Huge Oil Slick from Russian Ship 14

Oil Spill Disaster on Australian Beaches 15

India Watch 15

Information on the Board for Revalidating OSD Guidelines 15

EVENTS

National Level Pollution Resonse Exercise (NATPOLREX) 16

13th NOS-DCP Meeting 17

INFORMATIONS

Minor and Major Oil Spills in Indian waters (since 1982) 18

ARTICLES

OIL SPILL DISPERSANT

B Venu Gopal (SE) 745 SQN (CG)

Introduction

Application of Oil Spill Dispersants for responding to oil spills have evoked considerable discussions than any other response methods due to the fact that the dispersants do not remove the oil spill but transfers it to the water column where it is thereafter rapidly diluted and then degraded naturally. Oil Spill in a localised area can cause temporary ecological damage, although natural recovery will eventually occur. The physical effects of the spilled oil, plus the less visible effects cause by high concentrations of toxic components released from the oil, will affect some marine resources in a localized area.

Effects of Oil Spills

When an oil spill has occurred, some sections of the general public and some environmental pressure groups might say that the only acceptable oil spill response strategy is the total removal of the oil and complete restoration of the environment to the pre-spill condition. Since this can never be achieved, these expectations can never be met and some people always consider that any oil spill response is only a partial success. Spilled oil has the potential to cause ecological effects, yet crude oil has been seeping into the sea for thousands of years at some locations around the world. These natural oil seeps have not caused major damage and the ecology of these areas has adapted to persistent and chronic oil pollution.

Dispersing spilled oil into the sea by the use of oil spill dispersants can be an environmentally acceptable method of oil spill response. A "net environmental benefit" will be achieved if the damage that might be caused to marine life by dispersed oil is less than the damage that would have been caused if the oil had come ashore or drifted near to particularly oil-sensitive resources. This justification for dispersant use cannot, however, be imported into every oil spill scenario. Dispersing spilled oil in some circumstances might have the potential to damage marine life that exists in the close vicinity of a dispersing oil slick. Dispersed oil droplets and the chemical components in oil that are transferred into the sea have the potential to exert toxic effects, but only if the oil is present at high enough concentration for prolonged periods. This will only occur if there is not sufficient dilution of the dispersed oil and oil components into the sea.

Oil Spill Response

The objective of all oil spill response strategies should be to minimise the damage, both ecological and economic, that could be caused by an oil spill. The most obvious way to do this is to prevent the spilled oil from coming into contact with oil-sensitive resources.

Most damage is done by spilled oil when it gets into shallow water or comes ashore. The objective of oil spill response actions at sea should be to prevent oil from reaching the shoreline or particularly sensitive resources at sea, such as fish spawning grounds. The response actions can include:

(i) Using booms to contain the oil near the spill source.

(ii) Using sorbents to soak up the oil near the spill source.

(iii) Using booms and skimmers to contain and recover the oil at sea, before the oil drifts too close to the shore.

(iv) Using booms to protect a shoreline resource and divert the spilled oil away from it.

(v) Using oil spill dispersants to disperse the oil into the water column before it approaches an oil-sensitive site.

All of these techniques have certain capabilities, but all suffer from limitations and some of these are major limitations. Booms to contain oil at sea will not be successful in rough weather; the oil will leak out of the boom. Sorbents can be used on small oil spills in calm conditions, but need to be recovered and disposed of. Using booms and skimmers to contain and recover oil at sea is only suitable for small oil spills in relatively calm conditions. Booming operations from ships to recover larger amounts of oil at sea are difficult. The ship deploying the boom

cannot 'sweep' the sea surface at relative velocity of more than about one knot.

Principles of Using Dispersants

The basic principles of dispersant use are :

(i) To remove the spilled oil from the surface of the sea and transfer it into the water column where it is rapidly diluted to below harmful concentrations and is then degraded.

(ii) To spray oil spill dispersants onto spilled oil while it is still at sea may be the most effective, rapid and maneuverable means of removing oil from the sea surface, particularly when mechanical recovery can only proceed slowly or is not possible.

(iii) To reduce the damage caused by floating oil to some resources, for example sea birds, and minimizes the damage that could be done to sensitive shorelines by dispersing the oil before it drifts ashore.

(iv) To use oil spill dispersants which has the potential to present a small risk of temporary and local exposure to dispersed oil for some marine organisms.

Oil spill dispersants are not capable of dispersing all oils in all conditions. Any decision to use dispersants involves a judgment that dispersant use will reduce the

overall impact of a particular spill, compared to not using dispersants. This requires a balancing of the advantages and disadvantages of dispersant use and a comparison with the consequences of other available response methods. This process is known as "Net Environmental Benefit Analysis" (NEBA) and it is important that it should consider all relevant environmental conditions and implications for resources needed is swept can be increased by using pairs of ships with a boom between them in various configurations, but very large numbers of ships would be needed to recover large oil spills. Some small areas of shoreline resources can be protected by protective booming, but it is not feasible to use huge lengths of boom, even if they are readily available and can be deployed in time. Oil spill dispersants do have real capabilities and limitations, but more than any other oil spill response technique there are misconceptions about their use and this can cause their use to be controversial.

How dispersants work

The action of waves on oil slicks can promote the natural dispersion of oil into small droplets. In order to accelerate, the process of eventual degradation of oil by micro organisms hence becomes more readily available for degradation by micro-organisms. In order to accelerate this process it is sometimes appropriate to use a chemical dispersant, especially when containment and recovery is impractical. The removal of oil from sea surface prevents the formation of persistent water-in-oil emulsions and residues, both of which can present a threat to coastlines and sea birds.

Natural dispersion of an oil slick occurs when waves cause all or part of the oil slick to be broken up. When a breaking wave (at > 5 m/s wind speed) passes through an oil slick at sea, the oil slick is temporarily broken

into a wide range of small and larger oil droplets. Most of the oil droplets are large (0.1 - several mm in diameter), and rise quickly back to the sea surface where they coalesce and re-form a thin oil film when the wave has passed, while the very smallest oil droplets will become dispersed into the water column. The addition of dispersants is intended to accelerate this natural process and rapidly convert a much larger proportion of the oil slick into very small oil droplets.

When the dispersant droplets containing the surfactants hit the oil surface, the surfactants (the active ingredients) diffuse into the spilled oil or emulsion. The emulsion-breaking properties of the surfactants can cause the water droplets in the emulsion to coalesce into larger water oil droplets that eventually will separate from the oil phase. The surfactants in the dispersant will gradually arrange or orientate themselves at the interface between oil and water. The resistance to mixing between the oil and water is dramatically lowered, making it easy very small oil droplets to be formed, even under low turbulence conditions. Small oil droplets like these will have a very low rise velocity, and will drift "passively" in the water column with near neutral buoyancy.

Experience from experimental field trials and dispersant operations at real spills have shown that dispersed oil will be rapidly diluted into the sea. Oil in water concentrations drop rapidly from a maximum of 30 - 50 ppm just below the surface shortly after treatment to concentrations of < 1 ppm total oil in the top 10-15 meters after few hours The formation of these small oil droplets enhances the biological degradation of the oil in the marine environment by increasing the oil surface area available to micro-organisms capable of biodegrading the oil. The dispersants themselves does not lead to increased biological activity. It is important to emphasise that the dispersants remove the oil from the surface, but do not make it sink to the bottom.

Dispersants are effective on the majority of crude oils, particularly if they are used as soon as possible after the oil has been spilled, but they have some limitations. The changes in oil composition and physical properties, caused by the loss of more volatile components from the oil by evaporation and the formation of emulsion (collectively known as oil "weathering"), may decrease the effectiveness of dispersants with time. These changes depends highly on oil composition and the prevailing temperature, wind speed and sea conditions. Since the 1980s, several well-documented field tests have been conducted in several countries, including Canada, France, Norway, USA and the UK. UVF (Ultra Violet Fluorometry) has been used to measure the dispersed oil concentrations in the water beneath and around test slicks sprayed with dispersant. These comprehensive measurements, combined with surface sampling and extensive use of remote sensing from aircraft, have allowed a quantitative estimate to be made of the amount of oil dispersed with time. These field trials have conclusively demonstrated that dispersants can be very effective, that is, they have been successful in rapidly removing the majority of the volume of some crude oils from the sea surface, even when the crude oils have been on the sea for several days.

Dispersants have been successfully used at real oil spills on many occasions. The action of dispersants is often visible as the formation of a light-brown or a grey plume or 'cloud', of dispersed oil in the water column. Such observations are best made from aircraft. Dispersant treated oil will rapidly disperse, leaving only a thin film of oil sheen on the surface. While it can be fairly easy to observe dispersants working on some occasions, the viewing conditions can make it more difficult on others. In poor visibility, it may not be possible to clearly observe dispersed oil in the water. Qualitative evidence of the dispersion of oil can be obtained by visual observation and laboratory tests shows that the oil properties, the weathering degree, type of dispersant, application strategy and the sea-state conditions are important.

Dispersant Effectiveness

Dispersants are capable of dispersing most liquid oils and liquid water-in-oil emulsions with less viscosity. Heavy fuel oil is less dispersible. They become resistant to dispersion because of increased viscosity due to weathering. The time taken for evaporation and emulsification to render a particular oil resistant to dispersant depends upon sea state and temperature. This means response teams deciding to apply dispersant must act quickly.

Dispersant type, application method and treatment rate Dispersants used today are of two types :

(i) Hydrocarbons or conventional dispersants are based on hydrocarbon solvents and contain between 15 and 20% surfactant.

(ii) Concentrate or self-mix dispersants have alcohol or glycol solvents and usually contain a higher concentration of surfactant components.

Although many dispersants may be capable of meeting the minimum level of performance specified in

different national approval procedures, not all dispersants are the same. It is particularly important to recognize the very large difference in performance between the older, 'conventional' or 'hydro-carbon-base' dispersants and the much more effective 'concentrate' dispersants available today. 'Hydrocarbon-base' dispersants are much less effective than 'concentrate' dispersants, even when used at ten times the treatment rate. Even amongst the most recently developed dispersants, there are significant differences in capability. Some dispersants are better at dispersing some oils than other dispersants. Specific testing will reveal the best dispersant for a particular oil and weathering state.

Conclusions

There is a great deal of scientific evidence to show that the use of dispersants can be an effective oil spill response method. There is little likelihood of dispersant use causing negative effects unless they are used in shallow water or very close to particularly sensitive species. Even in cases when dispersants might cause negative effects, the positive benefit obtained by their use might outweigh this to produce a Net Environmental Benefit. Nevertheless, any use of dispersants must be

carefully planned and explained to all those who might be affected by an oil spill. Some of the fears and concerns expressed about dispersant use are genuinely held, have their basis in fact and are rooted in an understandable concern for the marine environment. It is important that these concerns are addressed and that they are addressed openly and truthfully so that the real purpose of using dispersants is clear to everyone.

FACTS TO BE CONSIDERED PRIOR APPLICATION OF DISPERSANTS

Commandant Donny Michael
Joint Director (Environment),
Coast Guard Headquarters

Dispersants are liquid mixtures of solvents and surfactants. The surfactants to be found in dispersants concentrate at the oil-water interface and alter the existing equilibrium between natural dispersion and emulsification: they «**reduce**» the formation of a reverse emulsion sometimes called a «**chocolate mousse**» (which contains water droplets in oil) and enhance dispersion (by fragmenting the surface oil film into droplets that are suspended in the water column). In other words, the combined effect of spraying dispersants and the natural stirring process of sea contributes to reducing the formation of «chocolate mousse» and to increasing the extent to which oil is suspended in water: **This is the primary dispersion phase**. Subsequently, the action of currents and natural turbulence will disseminate or «**disperse**» oil droplets in a larger volume of water: **This is the secondary dispersion phase**.

Dispersant Window

When the viscosity of the pollutant at seawater temperature is not too high, a pollutant weathers at sea:

- because its light fractions evaporate;
- and also because it forms a water in oil emulsion called **«chocolate mousse»**.

When a pollutant weathers, its viscosity increases causing it to be far less amenable to dispersion. This is what we call a «**window of opportunity**» or «**dispersion window**» meaning the interval during which a pollutant is dispersible. **Treating without delay is therefore of the essence.**

Types of oil to be treated

Paraffinic (waxy) oil: oil that solidify very quickly below a given temperature (pour point) Dispersion is impossible when the temperature is 4 to 8 degrees below pour point.

Light product: petrol - diesel – kerosene; Treatment is possible, but to no avail more often than not (the pollutant disappears because it evaporates or disperses naturally).

Dispersion is impossible in sea state 0, and difficult in sea states 2 and 3.

Generally accepted viscosity limits

Pollutant viscosity < 500 cSt

Dispersion is generally easy with a concentrated dispersant, applied neat or prediluted in seawater

500 cSt < Pollutant viscosity < 5 000 cSt

Dispersion is usually possible with a concentrated dispersant applied neat

5 000 cSt < Pollutant viscosity < 10 000 cSt

Uncertainty as to the result: dispersion is sometimes possible with a concentrate applied neat but you had better check on part of the slick whether the dispersant is effective before extending the treatment to all of the slick

Viscosity > 10 000 cSt

Dispersion is generally impossible

Slicks characteristics

In order to optimise response, there is a need to appraise the thickness, the shape and the nature of the oil slick to be treated depending on what the slick looks like and how it behaves.

The Bonn Agreement Oil Appearance Code

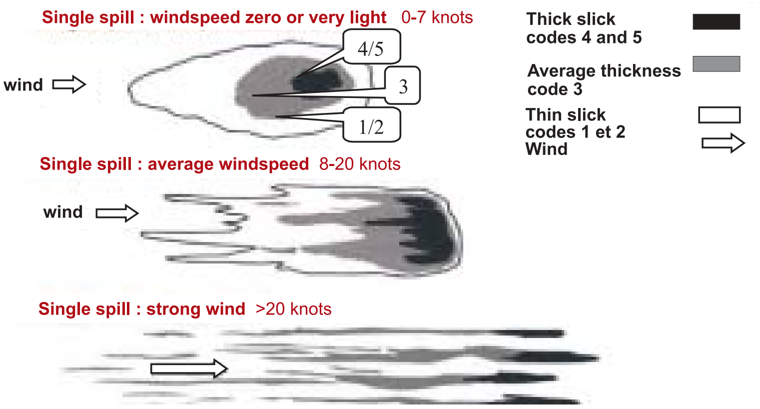
The Bonn Agreement is the mechanism by which the North Sea States, and the European Community, work together to help each other in combating pollution in the North Sea Area from maritime disasters and chronic pollution from ships and offshore installations and to carry out surveillance as an aid to detecting and combating pollution at sea. Research conducted by the Bonn Agreement has led to the adoption of an oil appearance code. This code is the result of scientific endeavour seeking to determine spilled oil quantities on the basis of aerial observation and should be used in preference to any other code.

Description/ Appearance	Layer Thickness Interval (Micro metre)	Litres/ Km^2
Sheen (silvery/grey)	0.04m-0.30	40-300
Rainbow	0.30-5.0	300-5000
Metallic	5.0-50	5000-50000
Discontinuous True Oil colour	50-200	50000-200 000
Continuous True Colour	200 to more than 200	200000 - More than 200000

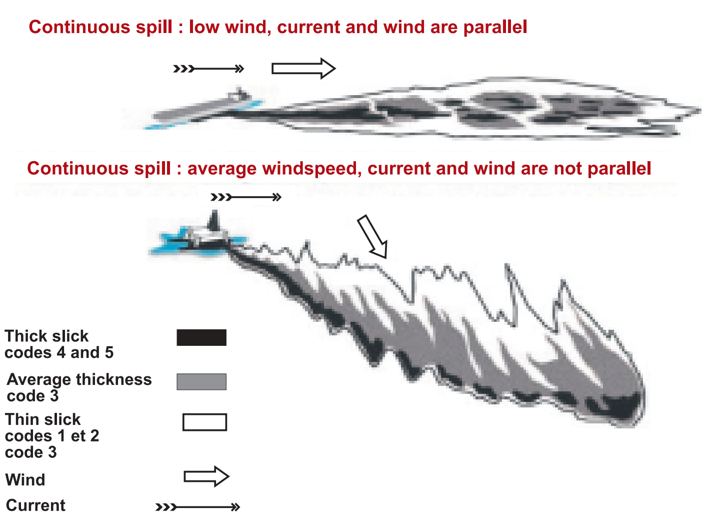
Topography of oil slicks

For relatively **fresh slicks**, (from a few hours to a few days) the shape and the thickness distribution (small, average, large) essentially depend on the wind which spreads and lengthens slicks and even cuts them up into parallel swathes and fragments them.

Large thicknesses (codes 4 and 5) will be found downwind. If the wind is very strong, sheen areas (silvery grey, rainbow and metallic: codes 1, 2 and 3) tend to disappear when slicks have had a chance to weather (for a week or more) the silvery grey, rainbow and metallic films (codes 1, 2 and 3) disappear. All that is left is very thick patches of oil that have a very hard time floating on the water surface (codes 4 and 5). In the event of a **heavy storm**, it can happen that slicks are impossible to spot



even if they are very thick. In some cases they are just below the surface and upwell when weather improves or when water temperatures increase. Breaking waves can also fragment the patches to such a degree that they end up as scattered tar balls that are much harder to spot because they are so small. Very weathered slicks are often found mixed with floating waste.



Slick drift

Slicks drift on the water surface at a rate of about 3 per cent of the wind speed and 100 per cent of the surface current speed. The itinerary followed by a slick or what is called its «**ground track**» can be worked out on a graph by vector addition hour after hour of the current speed and about 3 per cent of the wind speed.

	Current	Wind	Drift
1st hour	1.5 kn 340º	12 kn 298º	
2nd hour	1.5 kn 57º	30 kn 244º	
3rd hour	1 kn 117º	25 kn 185º	
4th hour	1 kn 193º	20 kn 125º	

Slick drift calculation over four hours
The black arrows indicate the successive effect of current speed (100%) and wind speed (3%) on the slick in steps of one hour
The blue and orange arrows show the resulting drift after 4 hours. The red arrow shows the overall resulting drift pattern
The table shows the bearing of the current (where it is going) and wind direction (where it is coming from)

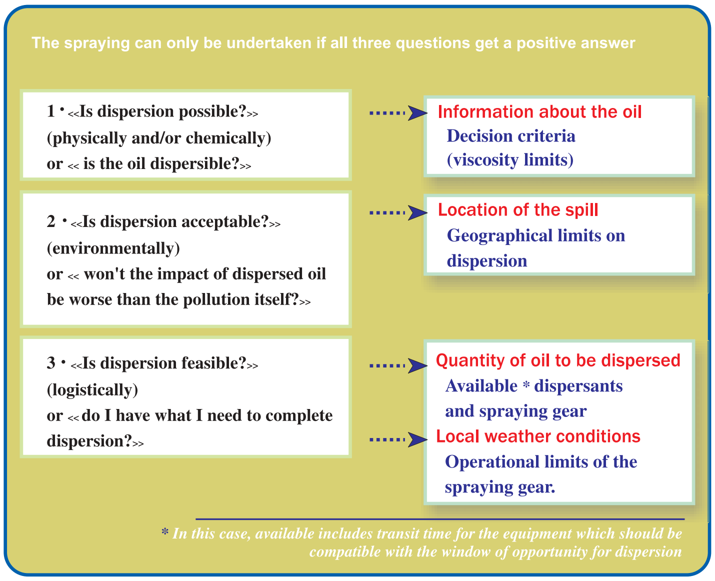
Net Environmental Benefit Analysis (NEBA)

Before deciding on which response strategy (applying OSD or other methods) to choose, it is often timely to see whether the response will mitigate the pollution and improve the situation or whether it is better to leave well alone and refrain from responding. This approach is called NEBA (Net Environmental Benefit Analysis).

The impact of the dispersed oil has to be less than that of non dispersed oil. Dispersed oil is more dangerous for the aquatic fauna and flora (corals, fish farm water intakes and industrial water intakes) than oil floating on the water surface. On the other hand, dispersed oil is less detrimental than free-floating surface oil for seabirds and some habitats such as mangrove swamps Depending on the situation, particularly dilution (current, water depths, distance from the coast) and local features (coastline, nature reserves, spawning grounds, fishing grounds, aquaculture, tourist amenities, industrial areas) spraying dispersant may or may not be desirable. Defining areas where it is possible to disperse is tantamount to doing a «net environmental benefit analysis» or an «ecological advantage analysis» of dispersant spraying for set scenarios.

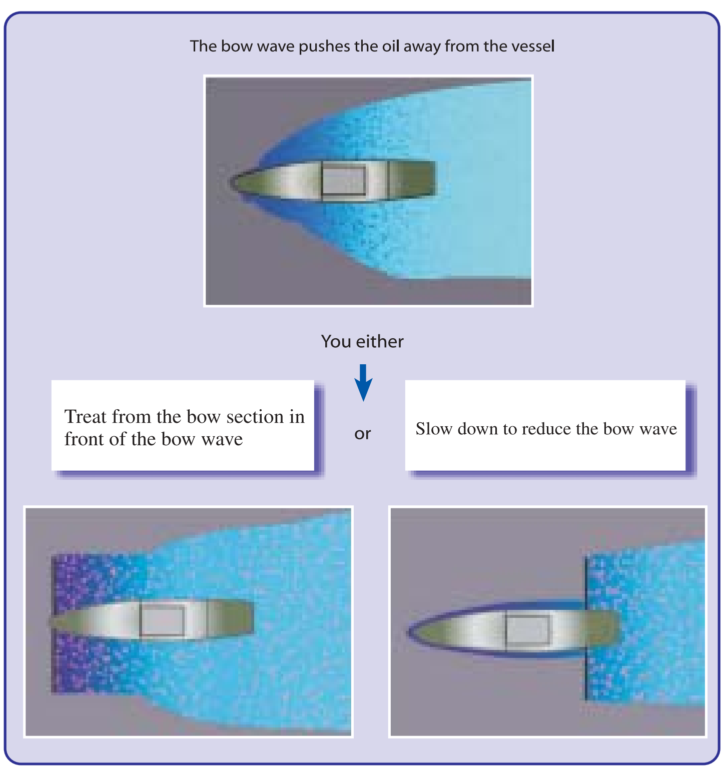
To spray or not to spray OSD?

The decision to spray or not has to be taken before the oil can weather and become no longer amenable to dispersion or before it can reach the coast. A well founded decision will require doing a NEBA. This isn't always simple and it can take time. The decision can be taken based on three simple questions (table below). All three can be answered by comparing the information on the spill itself (in red) and issues contained in the response plan (in blue).



Shipborne treatment

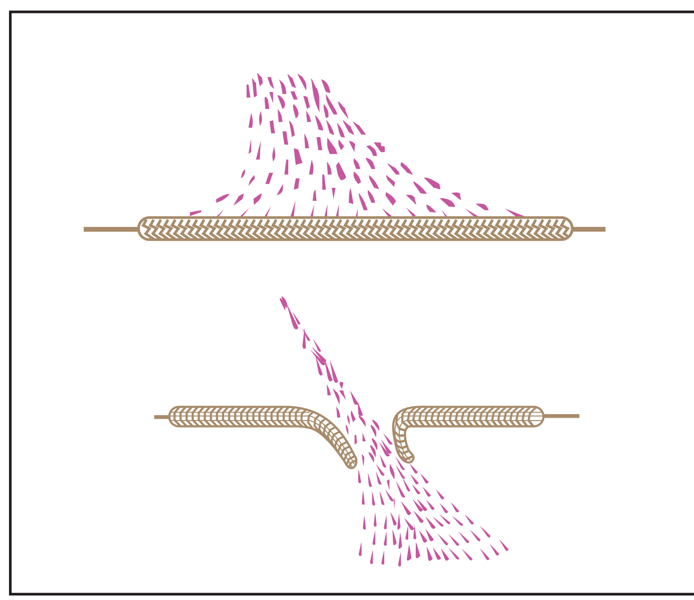
Dispersant has to come into physical contact with oil, otherwise the effect will be minimal.



Bow wave as well as ship pitch push the oil away from the vessel and out of reach of the spray booms. Furthermore, the bow wave must not herd the dispersant before it has had a chance of penetrating the oil. The more viscous the oil is, the longer it takes the dispersant to penetrate the oil. In this case one has to slow the vessel down.

Dispersant has to be sprayed on the oil

Dispersant droplets must not be too small or too big in order to settle gently onto the oil so that the surfactants of OSD diffuse easily into the spilled oil. If the OSD is sprayed with great force (like applying through a fire hose nozzle) then it will break the slick surface and penetrates the sea beneath without having any effect on the oil slick. Hence it is imperative the correct size nozzle is used and sprayed on the oil slicks.



Effect of wind upon application of OSD

As a rule, the preferred spraying direction is into the wind. However, if the wind is really far too strong to the extent that it compromises spraying operations and adequate droplet dispersion, an attempt can be made to spray downwind but contraction may occur all the same. The above materials are collated from various sources and the measures provided are not exhaustive. There are many other useful information available from USCG, AMSA, EMSA websites on OSD.

IMO NEWS

RECYCLING OF SHIPS

The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, was adopted at a diplomatic conference held in Hong Kong, China, from 11 to 15 May 2009, attended by delegates from 63 countries.

It is aimed at ensuring the ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment. The new Convention intends to address all the issues around ship recycling, including the fact that ships sold for scrapping may contain environmentally hazardous substances such as asbestos, heavy metals, hydrocarbons, ozone-depleting substances and others. It will address concerns raised about the working and environmental conditions at many of the world's ship recycling locations.

Regulations in the new Convention cover: the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

Ships to be sent for recycling will be required to carry an inventory of hazardous materials, which will be specific to each ship. An appendix to the Convention will provide a list of hazardous materials the installation or use of which is prohibited or restricted in shipyards, ship repair yards, and ships of parties to the Convention. Ships will be required to have an initial survey to verify the inventory of hazardous materials, additional surveys during the life of the ship, and a final survey prior to recycling.

Ship recycling yards will be required to provide a "Ship Recycling Plan", to specify the manner in which each ship will be recycled, depending on its particulars and its inventory. Parties will be required to take effective measures to ensure that ship recycling facilities under their jurisdiction comply with the Convention.

A series of guidelines are being developed to assist in the Convention's implementation.

DRAFT MARPOL AMENDMENTS TO PROTECT ANTARCTIC

Draft amendments to MARPOL Annex I providing for *Special requirements for the use or carriage of oils in the Antarctic area*, were agreed by the Sub-Committee on Bulk Liquids and Gases (BLG), when it met for its 13th session. The draft amendments will be submitted to the Marine Environment Protection Committee in July (MEPC 59), for approval with a view to adoption.

The draft amendments would add a new chapter 9 to MARPOL Annex I with a new regulation 43 which would prohibit the carriage in bulk as cargo, or carriage and use as fuel, of: crude oils having a density at 15°C higher than 900 kg/m^3; oils, other than crude oils, having a density at 15°C higher than 900 kg/m^3 or a kinematic viscosity at 50°C higher than 180 mm^2/s; or bitumen, tar and their emulsions. An exception is envisaged for vessels engaged in securing the safety of ships or in a search and rescue operation.

Guidelines for carriage of bio-fuels and bio-fuel blends

The BLG Sub-Committee agreed to extend the existing interim guidelines on the carriage of bio-fuel blends for a further 24 months, from 1 July 2009, to permit the continued carriage of blends with up to 15% bio-fuel on Annex I ships (applicable to blends using fatty acid methyl ester (FAME), ethanol (ethyl alcohol) and vegetable oil). The interim guidelines apply only to bio-fuel **blends**; bio fuels are carried under MARPOL Annex II regulations. It was agreed that, when carrying bio-fuel blends as Annex I cargoes under the extended interim guidelines, any residues and tank washings should be pumped ashore unless the oil discharge monitoring equipment is approved/ certified for the blend.

Guidelines on bio-fouling to minimize invasive species

The Sub-Committee of IMO agreed to develop *Guidelines for the control and management of ships' bio-fouling to minimize the transfer of invasive aquatic species* and requested an intersessional correspondence group on bio-fouling to work on them. The correspondence group is also tasked with further developing best practice measures for minimizing the harmful effects of bio fouling on the marine environment, human health, property and resources; and further considering the potential impact of current or proposed bio fouling regulations, including impact on the shipping industry and other industry sectors as well as on the environment.

There is currently no international measure in place to address the risks of introduction of invasive aquatic species through bio-fouling of ships - in other words, the adherence of sealife such as algae and molluscs to the ships' hulls. The International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, which entered into force on 17 September 2008, prohibits the use of harmful organotins in anti-fouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. However, it does not address the actual issue of bio-fouling and transfer of species. Other instruments such as MARPOL and the BWM Convention also do not directly address the issue.

Even with the application of anti-fouling systems, bio-fouling of properly maintained vessels can still occur to a biologically significant extent, particularly in so-called "niche areas", such as sea chests, dry docking support strips or bow thrusters, contributing to the potential for transfer of harmful aquatic organisms.

Research indicates that bio-fouling continues to be a significant mechanism for species transfer by vessels. A single fertile fouling organism has the potential to release many thousands of eggs, spores or larvae into the water with the capacity to found new populations of species such as crabs, fish, sea stars, molluscs and plankton. Minimizing bio-fouling will significantly reduce the risk of transfer.

Marine Environment Protection Committee Meeting

The fifty-ninth session of the Marine Environment Protection Committee will be held at IMO Headquarters, London from 13-17 July and the committee is likely to discuss on matter relating to ship recycling, prevention of air pollution from ships, implementation of the OPRC Convention and the OPRC-HNS Protocol, harmful anti-fouling systems for ships, development of a guidance document for minimizing the risk of ship strikes with Cetaceans and election of Chairman and Vice Chairman for the MEPC for the year 2010.

REPORTS

WORLD WATCH

OIL TANKER COLLISION WITH CONTAINER VESSEL OFF DUBAI

An oil tanker carrying around $9 million worth of petroleum products collided with a container vessel off the Dubai coast on 10 Feb 09, setting both vessels on fire and sending up a thick plume of black smoke.

The tanker, called the Kashmir, was built in 1988. The tanker was carrying about 30,000 tonnes of oil condensate, a liquid used to make plastic from Iran to the United Arab Emirates port of Jebel Ali. The second ship was a container vessel called Sima Buoy, which was leaving the port when the incident took place. The tanker's crew were rescued from the water after jumping overboard. No immediate information was available on if an oil slick had been formed as a result of the fire, or how and why the accident took place.

HUGE OIL SLICK FROM RUSSIAN SHIP

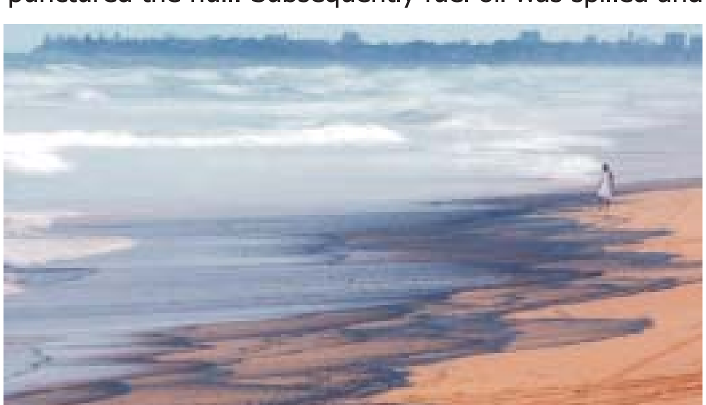
A Russian aircraft carrier spilt an estimated 1,000 tonnes of oil off the southern Irish coast ON 17 Feb 09. The spill, which happened as the *Admiral Kuznetsov* aircraft carrier was refuelling at sea, caused a slick that is more than three miles long and almost as wide. It is

the biggest oil spill in waters around the British Isles since the *Sea Empress* ran aground off Milford Haven in 1996, causing widespread damage to the Pembrokeshire coast. The spill took place in international waters but the oil has since floated into Irish territory. Surveillance flights by Britain's Maritime and Coastguard Agency (MCA) calculated that about 1,000 tonnes of oil were spilt. The aircraft carrier, a Russian refuelling ship and a Russian tug were, however, found amid the oil when the spill was detected by a satelite on Saturday. Four other Russian naval vessels were nearby. Samples of oil from aboard the ships have been requested by the Irish maritime authorities, who are leading the clear-up operation while the slick remains in their waters. The satelite that spotted and reported the spill was operated by the European Maritime Safety Agency (EMSA) in Lisbon, a European Union specialist agency.

OIL SPILL DISASTER ON AUSTRALIAN BEACHES

On the night of March 09 local time, Tropical Cyclone Hamish with sustained winds of 125 mph was about 270 miles to the north-northeast of Brisbane, Queensland, Australia. The vessel MV Pacific Adventurer, with 15 crew, that left Newcastle on March 10 was bound for Brisbane. The vessel was caught in tropical cyclone Hamish and on the early hours of 11 March 09, thirty one containers of ammonium nitrate from the deck of MV Pacific Adventurer fell into the sea.

Due to rough weather, the containers with 620 tonnes of ammonium nitrate hit the vessel and punctured the hull. Subsequently fuel oil was spilled and



the amount of oil spilled into the sea was approx 42.5 tonnes. The toxic mix of fuel and fertiliser creating a slick of 10 miles long, 2 miles wide has reached the shores of Moreton Island and on beaches along the Sunshine Coast. Moreton Bay on Moreton Island is a marine sanctuary for wide range of sea birds including turtles, dolphins and pelicans. It was estimated that the oil spill affected 60 Km of pristine beaches. The response agencies were quick in mobilizing the resources and the spill site was brought back to normalcy.

INDIA WATCH

No oil spill incident has occurred in Indian waters in the past six months commencing Jan 09.

INFORMATION ON THE BOARD FOR REVALIDATING OSD GUIDELINES

During the 12th NOSDCP meeting, ONGC representative brought out an issue on the quantity of OSD to be applied against per ton of spilled oil and also the quantity of OSD to be stocked by oil handling facility are not spelt clearly in the present guidelines. The Chairman NOSDCP made a decision that ICG and ONGC along with members from NIO to form a study team to carry out the stocking of OSD, application ratio and usage of Type II/III combination etc. Accordingly, a study has been constituted comprising members from ICG, ONGC and NIO. The study team is due to submit its report by end Jul 09. Upon the recommendation of the study team, the ICG-OSD 2002 Guidelines will be suitably amended to cover all the issues based on most recent information and scientific understanding.

NATIONAL LEVEL POLLUTION RESPONSE EXERCISE (NATPOLREX)

The Indian Coast Guard is the Central Coordinating Agency (CCA) for responding to all oil spills that occur in the Maritime Zones of India. To respond to any spills effectively the ICG has developed the National Oil Spill Disaster Contingency Plan (NOSDCP), which delineates the responsibilities of different national organisation and departments and other resource agencies. In accordance to the provisions of NOSDCP to validate the plan, a National Level Pollution Response exercise 'CLEAN SEA-I' was conducted by the Indian Coast Guard from 07 Apr to 09 Apr 09 off Mumbai. The aim of the exercise was to test the level of preparedness of the Coast Guard and other resource agencies in responding to a major oil spill by invoking the provisions of the NOSDCP.

The exercise was conducted in following four phases:-

(a) Phase I. Intervention, risk mitigation salvage and prevention of collision with production platform and activation of NOSDCP (simulated exercise only).

(b) Phase II. Oil spill assessment, mobilisation of resources, offshore oil spill response by application of OSD through CG ships, IN ships, OSVs, Tugs, Dornier and Helos.

(c) Phase III. Near shore oil spill removal operation by containment and recovery.

(d) Phase IV. Shoreline protection, shoreline cleanup by involving, coastal state authorities, Maharashtra Maritime Board, Ports, PCBs and other volunteers.

An oil pollution incident off Mumbai ODA area was simulated wherein, the resources from ICG and other agencies were mobilized and the readiness of the participants as resource agencies members were assessed through a Tabletop exercise at ICG Regional Headquarters (West), Mumbai on 07 Apr 09. The Phase II & III of the exercise was conducted on 08 Apr 09 with Chairman, NOSDCP witnessing the exercise at sea. The Phase IV of the exercise was conducted at Dadar Beach on 09 Apr 09.

Pollution response resources from Indian Navy, Indian Coast Guard, ONGC, SCI, Mumbai Port Trust and Jawaharlal Nehru Port Trust were utilized for the exercise.

13TH NATIONAL OIL SPILL DISATER CONTINGENCY PLAN (NOSDCP) AND PREPAREDNESS MEETING

The thirteenth National Oil Spill Disaster Contingency Plan (NOS-DCP) and Preparedness Meeting was held at Vigyan Bhavan, New Delhi on 15th Apr 09. Vice Admiral Anil Chopra, AVSM, Director General Indian Coast Guard, the Chairman NOSDCP chaired the meeting. A total of 56 delegates from various Govt Departments, Ports and Oil Companies attended the meeting.

The Chairman in his inaugural address welcomed all the delegates to the 13th NOSDCP meeting and reiterated that the purpose and objective of this meeting is to review preparedness and response capabilities, with a view to prepare all agencies to respond to any contingency which may arise out at sea. He stated that this meeting also accords all agencies, an opportunity to monitor the progress made, whilst shouldering their responsibilities as per the provisions of NOSDCP.

The Secretary, NOS-DCP & Director (Fisheries and Environment), CGHQ briefed the participants about the developments at the National level since last NOS-DCP meeting. The Director (F&E) gave a presentation on overview of NOSDCP. There were two presentations arranged for the benefit of the members during the meeting. The first presentation was on "**Oil Pollution Legislation and Compensation**" by Capt Deepak Kapoor, Nautical Surveyor, DG Shipping, Mumbai. The second presentation was on "**Oil Spill Risk Assessment and Contingency Planning Process and the Use of Information Technology**" by Dr SP Fondekar, Dy Director, NIO, Goa and Dr GS Reddy, MD, Environ Software, Bangalore. A presentation covering debrief on National Level Pollution Response Exercise (NATPOLREX) by Dy Commandant A Mehrothra, PRT(West)

The important issues which were discussed and deliberated upon during the meeting included the establishing Tier-I facilities, major oil spill exercise and training, role of State Pollution Control Boards, preparation of Local Contingency Plan, contingency plan for LNG, status report on joint inspection of Tier-I OSR facilities, procurement of pollution control vessels for ports, inclusion of new ports under NOSDCP, oil spill response centre at Gulf of Kutch region, revolving trophies for best port and best oil handling agency, Prevention of oil spillage in water, legislations etc.

The Chairman while summing up, thanked all stakeholders for attending this meeting and lauded the efforts put in by the representatives of DG Shipping, NIO and Environ Software for their informative presentations. The Chairman also formally declared the institution of two awards by the Indian Coast Guard for "**Best Port for environment protection efforts**" and "**Best oil handling Facility for environment protection**".

MINOR & MAJOR OIL SPILLS IN INDIAN WATERS (SINCE 1982)

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
01	1982	Not Assessed	West Coast	Sagar Vikas
02	24/10/88	1000	Bombay Harbour	Lajpat Rai
03	1989	Not Assessed	West Coast	SEDCO 252
04	1989	5500/Diesel Oil	795 nm SW of Bombay	MT Puppy
05	04/8/1989	Not Assessed	Bombay Harbour	ONGC Tanker
06	29/8/1989	Not Assessed	Saurashtra coast	Merchant ship
07	29/8/1989	Not Assessed	Bombay Harbour	Unknown
08	22/3/1990	Not Assessed	NW of Cochin	Merchant Ship
09	07/9/1991	692/FO	Gulf of Mannar	MT Jayabola
10	14/11/1991	40000/Crude	Bombay High	MT Zakir Hussain
11	22/2/1992	Tanker wash	40 NM S of New Moore Is	Unknown
12	2/4/1992	1000/Crude	54 NM west of Kochi	MT Homi Bhabha
13	16/8/1992	1060/SKO	Madras Harbour	MT Albert Ekka
14	17/11/1992	300/FO	Bombay Harbour	MV Moon River
15	21/1/1993	40000	Off Nicobar Islands	Maersk Navigator
16	28/3/1993	NK/Crude	Off Narsapur	ONGC shore rig at Kumarada
17	29/4/1993	110/Crude	Bombay Harbour	MT Nand Shivchand
18	10/5/1993	90/FO	Bhavnagar	MV Celelia
19	17/5/1993	6000/Crude	Bombay High	BHN Riser pipe rupture
20	02/8/1993	260/FO	Off New Mangalore	MV Challenge
21	01/10/1993	90/Crude	Cochin Harbour	MT Nand Shiv Chand
22	12/5/1994	1600/Crude	Off Sacromento Pt.	Innovative-1
23	12/5/1994	Not Assessed/FO	360 NM SW of Porbandar	MV Stolidi
24	05/6/1994	1025/Crude	Off Aguada Lt	MV Sea Transporter
25	20/7/1994	100/FO	Bombay Harbour	MV Maharshi Dayanand
26	27/11/1994	288/HO	Off Madras	MV Sagar
27	26/3/1995	200/Diesel	Off Vizag	Dredger Mandovi-2
28	24/9/1995	Not Assessed/FO	Off Dwaka	MC Pearl
29	13/11/1995	Tanker wash	Eliot beach,Madras	Unknown
30	21/5/1996	370 FO	Hooghly River	MV Prem Tista
31	16/6/1996	120 /FO	Off Prongs, Mumbai	MV Tupi Buzios
32	18/6/1996	132 /FO	Off Bandra, Mumbai	MV Zhen Don
33	18/6/1996	128 /FO	Off Karanja, Mumbai	MV Indian Prosperity
34	23/6/1996	110/FO	Off Worli, Mumbai	MV Romanska

S. No.	Date	Qty and Type of Spill (Tonnes)	Location	Spilled by
35	16/8/1996	124/FO	Malabar Coast	MV Al-Hadi
36	25/1/1997	Tank wash	Kakinada Coast	Unknown
37	19/6/1997	210/FO	Off Prongs Lt, Mumbai	MV Arcadia Pride
38	19/6/1997	Not Assessed	Hooghly river	MV Green Opal
39	14/9/1997	Naptha, DieselPetrol	Vizag	HPC refinery
40	02/8/1997	70/FO	Off Mumbai	MV Sea Empress
41	10/3/1998	Gas leak	Bombay High	Drill Rig Noble
42	12/5/1998	Gas Leak	Bombay High	Bombay High platform
43	01/6/1998	20/Crude	Off Vadinar	Vadinar,SBM
44	09/6/1998	Not Assessed	Off Porbandar	Ocean Barge
45	09/6/1998	Not Assessed	Off Veraval	Ocean Pacific
46	08/7/1999	500/FO	Mul Dwarka	MV Pacific Acadian
47	19/7/2000	Not Assessed	Off Sagar Island	MV Prime Value
48	8/9/2000	Not Assessed	Off Fort Aguada	MV River Princess
49	17/12/2000	1/FO	Bombay Harbour	MV STonnesewall Jackson
50	08/6/2001	Not Assessed	Vadinar Gulf of kutch	Not known
51	10/7/2001	1305/Diesel Oil	Hooghly river	MV Lucnam
52	23/09/2002	Not Assessed	Off Pt Calimare 220 NM	MV HIDERBAHY
53	29/04/2003	2000 Ltrs of Arab light crude oil	O5 miles off Kochi	MT BR AMBEDKAR
54	09/05/2003	2000/Naphtha	Mumbai harbour (sw of west Colaba Pt.)	MT UPCO_III
55	18/05/2003	145/FFO	Off Haldia	MV SEGITEGA BIRU
56	10/08/2003	300/Crude Oil	ONGC Rig (BHN)	URAN Pipe Line
57	28/02/2004	01/Crude Oil	36 inches ONGC pipe line at MPT Oil Jetty (Tata Jetty -OPL PIRPAU)	During Cruide oil trasfer from Jawahar Dweep to ONGC -Trombay through 36 ‵ pipe
58	01/10/2004	500 to 600 Ltrs	Berth – MPT – 8 Goa	During oil transfer
59	23/03/2005	110	Off Goa (Aguada Lt)	MV Maritime Wisdom off Aguada Lt.
60	27/07/2005	80	Fire taken place on oil platform off Bombay high	BHN Platform Bombay High
61	30/08/2005	08	Sunken Ship off Tuticorin	MV IIDA
62	21/04/2006	90	Sunken Ship off Goa	INS Prahar
63	06/05/2006	Minor spill (less than 100 ltrs)	Sunken Tug off Pt. Calimer Tamilnadu	DCI Tug-IV
64	30/05/2006	70 tons of Furnace Fuel Oil	Grounded off Karawar Port	MV Ocean Seraya
65	14/08/2006	4500	Outside Indian EEZ near A&N Islands	MV Bright Artemis & MV Amar
66	15/10/07	13.9/FO	Off Jakhau	MV Star Leikanger & barge Dhan Lakshmi due to collision
67	17/10/07	Not assessed	S Yanam Beach, Kakinada	Oil drifted to shore from oil rigs

... the updates will continue ...

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