

Oil Pollution - Oil Entering Sea Water And the Techniques of Combating

Presented by PESCo

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Introduction - Oil Pollution

Egypt has natural resources that are unique worldwide. Visitors flock from all corners of the globe to enjoy the wonders of Egypt providing a stable tourist industry with a favorable annual increase.

Maritime oil spills often have severe, adverse effects on fragile and sensitive natural resources. Many developing countries rely heavily upon the maintenance of a pristine marine environment for their economic and social development through the tourism and fishing industries. The extent of injuries resulting from oil pollution depends upon such factors as the circumstances of the accident and the prevailing environmental condition

As the oil trade and maritime transport increase, so does the need for limiting the risks of contamination of sea water and for conserving marine and coastal biodiversity

The general perception of the most common reason for oil pollution is probably that of accidental collisions or grounding of vessels leading to oil leaking from damaged tanks etc. This however, is not the reality. Although collisions and grounding account for a large volume in terms of actual oil spilled, it is estimated that in terms of frequency, over 70% of oil spills occur during routine operations either offshore or at reception facilities within ports / harbors and refineries.

Preventing the discharge of oil, or a threat of such a discharge, is the most logical means of avoiding problems associated with oil spills. However invariably accidents do occur.

Drilling and Production

The most typical causes of pollution offshore include equipment failure, personnel mistakes, and natural impacts (such as seismic activity etc).

Major Pollution accidents resulting from drilling is usually associated with unexpected blowouts of liquid and gaseous hydrocarbons from the well as a result of encountering zones with abnormally high pressure. These accidents usually can be controlled rather effectively by shutting in the well with the help of the blowout preventer's and by changing the density of the drilling fluid however when the pressure in the drilling zone is so high that usual technological methods of well muffling do not help. Lean holes have

to be drilled to stop the blowout. The abnormally high pressure is most often encountered during exploratory drilling in new fields. The need to drill lean holes emerges, on average, in 3% of accidental episodes.

The environmental consequences of such accidental episodes can be especially severe, sometimes dramatic, especially when they happen near the shore, in shallow waters, or sensitive areas.

Transportation

Substantial evidence shows that shipment of crude oil via pipeline is generally a superior alternative to shipment of crude oil via marine tankers with regard to environmental protection.

Tanker transportation

A large proportion of the world's annual volume of oil is transported through Egyptian waters. On some fields and refineries, the shuttle tankers are the main way of delivering hydrocarbons.

The main causes of tanker accidents that lead to large oil spills include running aground and into shore reefs, collisions with other vessels, fires and explosions of the cargo. The frequencies of such incidents around the world as well as the oil volumes released in large spills differ from year to year.

Analyzing the statistics and circumstances of such events indicates that they can hardly be avoided. Although the rate of tanker accidents has been declining over the past two decades, we should be prepared to deal with them in the future.

Economists state that everything is cost based (Risk against financial implications), look at the tanker Prestige, carrying 73000 tons of fuel which sank 133 miles off the Atlantic coast of Spain on Tuesday, November 19th 2002. About 8000 tons of oil was released and the toxic tide has affected more than 180 miles of coastline, including 25 miles of beaches and marshland. About 240 tons of fuel oil on shore and at sea has been collected. (What about the direct and indirect costs involved) Damage has spread from Spain to France, and the latest report estimates that cleaning up the coastline alone will cost E2.47 billion, or \$2.8 billion.

Pipelines.

Complex and extensive systems of overland and underwater pipelines have a total length of thousands of kilometers. They carry oil, gas, condensate, and their mixtures. The causes of pollution from pipelines can vary greatly and often can be a combination of factors. These factors range from human error during maintenance, material defects and pipe corrosion to ground erosion, tectonic movements on the bottom, and encountering ship anchors and bottom trawls.

Depending on the cause and nature of the damage (cracks, ruptures, and others), a pipeline can become either a source of small and long-term leakage or an abrupt (even explosive) blowout of hydrocarbons near the bottom of an underwater system.

Modern technology of pipeline construction and exploitation under different natural conditions, including the extreme ones, achieved indisputable successes. However, pipeline oil and gas transportation does not eliminate the possibility of serious accidents and consequences.

It is important to take into consideration that in a number of cases, the accidental oil spills and blowouts on the main pipelines can pose danger to the marine ecosystems. This can also happen when on land pipeline accidents take place near rivers or in locations of their crossing. Such a situation happened at the end of 1994 in the Usinsk area, Russia. An on land pipeline rupture led to the spill of more than 100,000 tons of oil.

Combating Oil Spills - Egypt

Mechanical containment or recovery is the preferred line of defense against oil spills in Egypt. Containment and recovery equipment includes a variety of booms, barriers, and skimmers, as well as natural and synthetic sorbent materials. Mechanical containment is used to capture and store the spilled oil until it can be disposed of properly.

Where this is not practical due to the elements then dispersant application may be considered. The application of dispersant is strictly controlled by EEAA and their authority must be sought prior to use.

EEAA have guidelines on the use of dispersant, these include a list of approved dispersants for use in Egyptian waters and a minimum depth of water in which they can be applied.

The central objective of all counter pollution activities is to minimize damage to human health, wildlife, fisheries, ecologically sensitive areas and amenity beaches.

A small spill may only involve a few people, while a bigger incident will require many people from different organizations and agencies to help.

It is crucial that industry works with governments to develop a clear, common interpretation of the national requirements and responsibilities of government agencies, industry and others.

For small tier 1 response (<100 tons) the local Port Authorities and Oil companies are responsible for at sea response. While the coastal Governorates would provide on shore response. EEAA to be informed in all cases, response co-ordination may be

Handed over to (EGPC) Egyptian General Petroleum Corporation and only in exceptional circumstances will EGPC assume control of operations themselves?

Government

EEAA have a sub regional response centre at Sharm El Sheik. This new multi million dollar state of the art centre has significant stocks of specialized response equipment. Manned with internationally trained responders on call 24 hours a day throughout the year. To support the centres marine activities there is a dedicated pollution response/patrol vessel. The vessel is equipped to the highest standard.

Industry

Individual oil industry companies are responsible to maintain their own equipment resources for dealing with spills resulting from their own activities.

The port authorities are required to possess stocks of response equipment in order to provide a response to spills from various sources in the harbors.

The Suez Canal authority also possesses an equipment stockpile, including containment and recovery equipment, dispersant, lightering barges and tugs.

EGPC maintains four industry-funded stockpiles of equipment as part of its Tier 2 response capability at Alexandria, Suez, Ras Gharib and Hurghada. Each containing booms, skimming equipment, dispersant application units, storage tanks, beach cleaners, landing craft and workboats.

Response Organization

PESCO "Petro Environmental Services Company" a public and private sector joint venture between Briggs Egypt and Petrosafe. The Joint venture is afforded all the resources of BESL (Briggs Environmental Services Limited - UK) World leaders in Environmental Protection and Marine Support.

Pesco is the specialist company managing EGPC and EEA response centres and resources. The company has a nucleus of Egyptian and British experts working side by side to produce the required international approach to global issues over environmental concerns such as pollution preparedness and response.

The company has 190 international trained Egyptian responders placed throughout the centres and operational sites supported from the main hub in Cairo which boast a fully dedicated "Pollution Incident Centre"

How do we ensure that it is all working? Current legislation requires governments and industries to have contingency plans in place. These plans will detail actions to be taken in the event of a pollution incident. Regular testing of response capabilities from government and industry is a statutory requirement.

PESCO on behalf of current clients staged a major exercise RA Atum II on May 8th and 9th of 2003. To test response capabilities utilizing the National oil spill contingency plan NOSCP contingency plan and the Oil sector contingency plan (OSCP). We formed an exercise steering committee that allowed government and industry to participate actively in the development and implementation stages of the exercise. The lessons learned along with other documentation is on our web site www.pescoeg.com

Egypt is now the focus of the region; however Industry and Government need to continually support not only our efforts but the efforts of others involved in environmental protection and preservation.

Preventing Egypt becoming another statistic on the environmental disaster scoreboard.

Thanking you for your time

Yours sincerely

Captain Richard Byrnes