

# MARITIME POLLUTION FROM INTERNATIONAL AND PAKISTANI LAW PERSPECTIVE



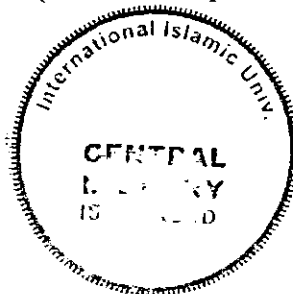
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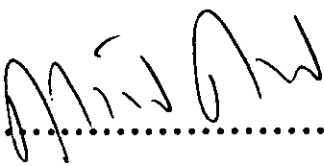
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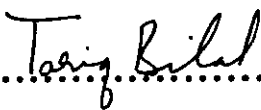
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## **DEDICATION**

**I dedicate to my mother as she is not only my mother but my father as well**

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## Glossary of Abbreviations

AMSA	Australian Maritime Safety Authority
CLC	Civil liability convention
D.D.T	Dichlorodiphenyltrichloroethane
EEZ	Exclusive Economic Zone
EPA	Environmental protection Act
EPA	Environmental protection Agency
FPCCI	Federation of Pakistan Chambers of Commerce and Industry
IAEA	International Atomic Energy Agency
IMCO	Inter-governmental maritime consultative organization
IMF	International Monetary Fund
IMO	International Maritime Organization
IOPP	International oil pollution prevention certificate
ITOPF	International Tanker Owners Pollution Federation
KCCI	Karachi Chamber of Commerce and Industry
KIA	Korangi Industrial Area
KPT	Karachi port trust
LITE	Landhi Industrial Trading Estate
OSRL	Oil Spill Response limited
OPRC	Oil Pollution Preparedness, Response and Cooperation
MARPOL	International convention for the prevention of pollution from ships
MPCD	Marine Pollution Control Board
MSA	Maritime Security Agency
MoUs	Memorandum of Understandings
NRC	National research council
NEQS	National Environmental Quality Standards
P.E.P.A.	Pakistan environmental protection agency
PCBs	Polychlorinated biphenyls
PMSO	Pakistan Merchant shipping Ordinance
PNSC	Pakistan National Shipping Corporation
POPs	Persistent organic pollutants
RSPB	Royal Society for the protection of the Birds
RSPCA	Royal Society for the prevention of cruelty of Animals
SCAT	Shoreline Cleanup Assessment Teams
SDR	Special Drawing Rights
SITE	Sindh Industrial Trading Estate
SOLAS	Safety of life at sea convention
UNCLOS	Untied convention on law of sea
UNEP	United Nations Environment Program
WTO	World trade organization

## **Abstract**

Environmental law is the most developing branch of law, which within about five decades has attained global recognition. Environment is the heritage of mankind and is guiding factor in international relations, be it political, financial, industrial or cultural. The twenty first century will be the century dominated and guided by environmental laws, conventions and ethics. The environmental legislation is the need of present time and environmental jurisprudence is a new but rapidly growing field, and a comprehensive requirement.

The environmental pollution is our real problem both in urban and rural areas; we are required to be very cautious in respect of maritime pollution, as we know that this pollution is as old as the earth itself. We must appreciate this principle that polluter should pay to abate pollution so as to internalize external cost.

The aim of this study has been to contribute to the acknowledge by providing appropriate literature to know the legal frame work related to maritime pollution and its new legislation and its solutions in Pakistan comparing to international legislation, as this work is combination of international and Pakistani legislation.

If we compare Pakistani laws from international perspective than we will come to know that we have laws but lack of implementation and laws are very old, by observing we can say that we have no effective laws and mechanism to reduce the pollution from sea and all the agencies have lack of facilities and equipments to implement these laws, and lack of importance, responsibility, Pakistan is still not party in international conventions and protocols that's why suffering a lot. This study is expected to make a meaningful contribution in this connection.

The structure of my thesis, chapter one describes the Introduction and historical developments of Maritime pollution and maritime law are two branches of international law on maritime issues dealt under separate convention that why I have discussed both in introduction so that it will clarify to both, this thesis describe the definition of pollution and it types and effects but it concentrate on sources of marine pollution. This will make clear that which type of pollution

cause the sea pollution more dangerously, as given mainly two types and oil pollution as it is very much common and dangerous.

Chapter two is the study of early and local laws and historical background of international laws their emergence and existing international laws, first part is describing the local and national laws and how these local and national laws were leading to international laws. Its second part is emphasizing on existing international laws and protocols which are mostly recent legislation and shows the importance in this regime that how much it is important field for human life to survive on earth. And in last the procedure and penalties for damages are given under CLC and 1992 fund convention.

Chapter three attempts to describe the sources of marine pollution and legislation in Pakistan, also emphasize on the existing international laws in which Pakistan is party of these convention, it will make clear that how long Pakistan is following and legislating on the steps of international laws it shows also the deficiencies in Pakistan laws.

Chapter four I have discussed the cases about the accidental pollution which causes high level pollution in the sea which is called mostly the oil pollution firstly two cases from the international history and two cases from the Pakistan history, by these cases we easily know the effects of oil pollution and steps for cleanup oil from the surface of sea, steps shows their effective measures and disclose their preparedness for such incidents, as in Pakistan after MT Tasman spirit Pakistani administration came to know that they don't have even trained and experts team to deal with this big incident and with procedure for cleanup and no any equipments for the cleanup.

Chapter five is conclusion of this thesis. This chapter summarizes the thesis and concludes by attempting to discussion on the protection of sea from marine pollution. Firstly I have attempted to discuss the effects of pollution on human life, marine life and socio and economic effects and secondly I haven suggested two ways to protect the sea from oil pollution first by taking precautionary measures and other by effective legislation. And in last I have given suggestion for Pakistan to protect the maritime pollution for effective legislation and implementation.

# **Chapter 1**

## **Introduction**

### **1.1 Introduction and Historical developments**

In an age when man is turning towards agri-to-qua-culture for food, the pollution can cause serious blow to man's expectations of greater harvest from the sea. 5 June is observed as 'Worlds Environmental Day' to increase the importance of controlling pollution which is spreading fast at countless places and affectation a grave danger to mankind. The norms which accord the coastal stage sovereignty over internal waters and the territorial sea cannot be construed to mean that states can pursue an unbridled policy of exploration and utilization in these regions, whatever may be the impact on the environment of the oceans. Nor does the so-called freedom of the seas guarantee states the right to use and utilize the vast region in a environmental laws of the Oceans will, therefore, have to take into nature, sources and the impact of the particular pollutants<sup>1</sup>.

After the assessing the complexity of the problem, one can imagine of a variety of legal measures to control, regulate and eliminate marine pollution, i.e. international, national, local, etc, some problems are strange to a particular region, some are global in effect, some are purely local. For the Assessment of the legal measures which the world community has jointly or severely designed we are to follow the classification of sources of pollution<sup>2</sup>.

More difficult than the identification of the major pollutants is the question of how to decide that pollution has occurred, that it is getting worse, or that has reached a degree unacceptable to society.

In the past it was common to approach the question of pollution through the legal concept of nuisance, which was often determined by reference to the value criteria of human health

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<sup>1</sup> Gunter Handle, Territorial sovereignty and the problems of transitional pollution [www.imo.org](http://www.imo.org) visited on 28<sup>th</sup> March 2007

<sup>2</sup>PROF. PARAS DIWAN Environment Administration, law and judicial attitude. Publisher, Deep & Deep. Pg, 355, 356

and welfare, property rights, and commercial interests. In the New York v. New Jersey 1921 the court was asked to go further and consider the right of the United States to protect public property and the welfare of its employees. Following current trends in political philosophy, we are more likely to consider these criteria as obligatory, falling within the powers of governments and public agencies as matter of social responsibility.

This question of governments privilege and responsibility for environmental control has arisen first not in international law but in constitutional law, with which this volume is only imaginatively concerned, but it is interesting to note that in Georgia v. Tennessee Copper (1906), the state of Georgia was awarded an injunction to prevent the defendant from polluting Georgian territory from the state of Tennessee. In writing the Supreme Court's opinion, Mr. Justice Holmes declared: 'it is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale by sulphurous acid gas, that the forests on its mountains, be they better or worse, and whatever domestic destruction they have suffered, should not be further destroyed or threatened by the acts of persons beyond its control<sup>3</sup>.

Oil, has been dealt with at length in the context of marine pollution and has been the subject of several agreements. Other agreements not limited to one specific material that are regarded as primarily responsible for the pollution problem in question, for example, studies of the general treaty responsibilities of the international joint commission between Canada and the U.S.

A picture of growing scientific agreements on the identification of pollutants is present in the U.S.- Canadian agreement on lakes Water Quality from ships and aircraft, and to the London Convention on the Prevention of Marine Pollution by dumping of wastes and other oil material<sup>4</sup>.

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<sup>3</sup> James Barros and Douglas M, Johnston The international law of pollution [www.itopf.com](http://www.itopf.com) visited on 6<sup>th</sup> April 2007

<sup>4</sup> Ibid

## 1.2 What is Maritime?

Maritime literally means of sea relating to the sea, shipping, sailing in ships, or living and working at sea or close to sea situated or living close to the sea *the maritime region or METEOROLOGY* influenced by sea describes a climate influenced by the sea, and therefore generally temperate and with relatively small variations in seasonal temperatures<sup>5</sup>

## 1.3 What is Maritime law?

Maritime Law, branch of law relating to commerce and navigation on the high seas and on other navigable waters. Specifically, the term refers to the body of customs, legislation, international treaties, and court decisions pertaining to ownership and operation of vessels, transportation of passengers and cargo on them, and rights and obligations of their crews while in transit.

## 1.4 History of maritime law

The origins of maritime law go back to ancient times, because no country has jurisdiction over the seas, it has been necessary for nations to reach agreements regarding ways of dealing with ships, crews, and cargoes when disputes arise. The earliest agreements were probably based on a body of ancient customs that had developed as practical solutions to common problems. Many of these customs became part of Roman civil law. After the fall of the Roman Empire, maritime commerce was disrupted for about 500 years<sup>6</sup>.

After maritime activity was resumed in the Middle Ages, various disputes arose and laws were formulated to deal with them. Gradually the laws of the sea were compiled; among the best-known collections of early maritime law are the *Laws of Oleron* and the *Black*

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<sup>5</sup> Microsoft ® Encarta Dictionary Edition 2006

<sup>6</sup> Gunter Handle, Territorial sovereignty and the problems of transitional pollution, [www.imo.org](http://www.imo.org) visited on 28<sup>th</sup> March 2007

*Book of the Admiralty*, an English compilation prepared during the 14th and 15th centuries. Special courts to administer sea laws were set up in some countries. In Britain today, maritime law is administered by courts of the admiralty<sup>7</sup>.

According to provisions in the U.S. Constitution, U.S. maritime law is administered by federal courts that have jurisdiction over all maritime contracts, injuries, offenses, and torts. Maritime causes are deemed to be those directly affecting commerce on navigable waters that form a continuous highway to foreign countries. In any dispute the fact that commerce is practiced only on waters within a single state does not necessarily affect the jurisdiction of the federal courts. Many aspects of maritime law are now governed by federal statutes and thus are no longer dependent upon the constitutional power of Congress to regulate commerce<sup>8</sup>.

### **1.5 Scope of maritime law**

Liability for common-law wrongs is enforced by the maritime law of the United States and the United Kingdom ( Common Law; Tort). Maritime torts include all illegal acts or direct injuries arising in connection with commerce and navigation occurring on navigable waters, including negligence and the wrongful taking of property. The law permits recovery only for actual damages. Maritime law also recognizes and enforces contracts and awards damages for failure to fulfill them.

The adjustment of the rights of the parties to a maritime venture in accordance with the principles of general average, which pertain to the apportioning of loss of cargo, is also an important function of maritime courts, and the doctrines pertaining to general average are among the most important of the maritime law. The British admiralty courts have acquired jurisdiction by statute over crimes committed on the high seas outside the territorial waters of the United Kingdom. Similar jurisdiction has been conferred by Congress on the U.S.

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<sup>7</sup> Microsoft ® Encarta Encyclopedia edition 2006 visited on 28<sup>th</sup> March 2007

<sup>8</sup> Ibid

federal district courts. International agreements have been made to handle the problems of safety at sea, pollution control, salvage, rules for preventing collisions, and coordination of shipping regulations<sup>9</sup>.

## 1.6 What is pollution?

Pollution, contamination of Earth's environment with materials that interfere with human health, the quality of life, or the natural functioning of *ecosystems* (living organisms and their physical surroundings). Although some environmental pollution is a result of natural causes such as volcanic eruptions, most is caused by human activities.

**Pollutants.** Biodegradable pollutants are materials, such as sewage, that rapidly decompose by natural processes. These pollutants become a problem when added to the environment faster than they can decompose.. Non degradable pollutants are materials that either do not decompose or decompose slowly in the natural environment. Once contamination occurs, it is difficult or impossible to remove these pollutants from the environment.

Non degradable compounds such as dichlorodiphenyltrichloroethane (DDT), dioxins, polychlorinated biphenyls (PCBs), and radioactive materials can reach dangerous levels of accumulation as they are passed up the food chain into the bodies of progressively larger animals. For example, molecules of toxic compounds may collect on the surface of aquatic plants without doing much damage to the plants. A small fish that grazes on these plants accumulates a high concentration of the toxin. Larger fish or other carnivores that eat the small fish will accumulate even greater, and possibly life-threatening, concentrations of the compound. This process is known as bioaccumulation<sup>10</sup>.

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<sup>9</sup>Gunter Handle Territorial sovereignty and the problems of transitional pollution [www.imo.org](http://www.imo.org) visited on 28<sup>th</sup> March 2007

<sup>10</sup> M' Gonigle and Zacher Pollution, politics, and international law, [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 5<sup>th</sup> April 2007



## 1.7 Type of pollution and their effects

- |                     |                          |
|---------------------|--------------------------|
| 1. Air Pollution    | 2. Water Pollution       |
| 3. Marine Pollution | 4. Solid Waste pollution |
| 5. Soil Pollution   | 6. Hazardous Waste       |
| 7. Noise Pollution  | 8. Sewage Pollution      |

Pollution exists in many forms and affects many different aspects of Earth's environment. *Point-source* pollution comes from specific, localized, and identifiable sources, such as sewage pipelines or industrial smokestacks. *No point-source* pollution comes from dispersed or uncontained sources, such as contaminated water runoff from urban areas or automobile emissions<sup>11</sup>.

The effects of these pollutants may be immediate or delayed. Primary effects of pollution occur immediately after contamination occurs, such as the death of marine plants and wildlife after an oil spill at sea. Secondary effects may be delayed or may persist in the environment into the future, perhaps going unnoticed for many years. DDT, a non degradable compound, seldom poisons birds immediately, but gradually accumulates in their bodies. Birds with high concentrations of this pesticide lay thin-shelled eggs that fail to hatch or produce deformed offspring. These secondary effects<sup>12</sup> in her 1962 book, , threatened the survival of species such as the bald eagle and peregrine falcon, and aroused public concern over the hidden effects of non degradable chemical compounds.

Human contamination of Earth's atmosphere can take many forms and has existed since humans first began to use fire for agriculture, heating, and cooking. During the Industrial Revolution of the 18th and 19th centuries, however, air pollution became a major problem.

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<sup>11</sup> Microsoft ® Encarta Encyclopedia edition 2006 visited on 28<sup>th</sup> March 2007

<sup>12</sup> Ibid

As early as 1661 British author and founding member of the British Royal Society John Evelyn reported of London in his treatise *Fumifugium*, “the weary Traveler, at many Miles distance, sooner smells, than sees the City to which he repairs. This is that pernicious Smoke which fillies all her Glory, super inducing a sooty Crust or Furr upon all that it lights<sup>13</sup>

Urban air pollution is commonly known as smog. The dark London smog that Evelyn wrote of is generally a smoky mixture of carbon monoxide and organic compounds from incomplete combustion (burning) of fossil fuels such as coal, and sulfur dioxide from impurities in the fuels. As the smog ages and reacts with oxygen, organic and sulfuric acids condense as droplets, increasing the haze. Smog developed into a major health hazard by the 20th century. In 1948, 19 people died and thousands were sickened by smog in the small U.S. steel-mill town of Donora, Pennsylvania. In 1952, about 4,000 Londoners died of its effects<sup>14</sup>.

Expanding recycling programs worldwide can help reduce solid waste pollution, but the key to solving severe solid waste problems lies in reducing the amount of waste generated. Waste prevention, or source reduction, such as altering the way products are designed or manufactured to make them easier to reuse, reduces the high costs associated with environmental pollution.

Hazardous wastes are solid, liquid, or gas wastes that may be deadly or harmful to people or the environment and tend to be persistent or non-degradable in nature. Such wastes include toxic chemicals and flammable or radioactive substances, including industrial wastes from chemical plants or nuclear reactors, agricultural wastes such as pesticides and

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<sup>13</sup> Ibid

<sup>14</sup> Ibid

fertilizers, medical wastes, and household hazardous wastes such as toxic paints and solvents<sup>15</sup>.

About 400 million metric tons of hazardous wastes are generated each year. The United States alone produces about 250 million metric tons—70 percent from the chemical industry. The use, storage, transportation, and disposal of these substances pose serious environmental and health risks. Even brief exposure to some of these materials can cause cancer, birth defects, nervous system disorders, and death. Large-scale releases of hazardous materials may cause thousands of deaths and contaminate air, water, and soil for many years. The world's worst nuclear reactor accident took place near Chernobyl', Ukraine, in 1986. The accident killed at least 31 people, forced the evacuation and relocation of more than 200,000 more, and sent a plume of radioactive material into the atmosphere that contaminated areas as far away as Norway and the United Kingdom<sup>16</sup>.

Until the Minamata Bay contamination was discovered in Japan in the 1960s and 1970s, most hazardous wastes were legally dumped in solid waste landfills, buried, or dumped into lakes, rivers, and oceans. Legal regulations now restrict how such materials may be used or disposed, but such laws are difficult to enforce and often contested by industry. It is not uncommon for industrial firms in developed countries to pay poorer countries to accept shipments of solid and hazardous wastes, a practice that has become known as the waste trade. Moreover, cleaning up the careless dumping of the mid-20th century is costing billions of dollars and progressing very slowly, if at all. The United States has an estimated 217,000 hazardous waste dumps that need immediate action. Cleaning them up could take more than 30 years and cost \$187 billion.

Hazardous wastes of particular concern are the radioactive wastes from the nuclear power and weapons industries. To date there is no safe method for permanent disposal of old fuel elements from nuclear reactors. Most are kept in storage facilities at the original reactor

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<sup>15</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg. 156.

<sup>16</sup>*Ibid*

sites where they were generated. With the end of the Cold War, nuclear warheads that are decommissioned, or no longer in use, also pose storage and disposal problems.<sup>17</sup>

Unwanted sound, or noise, such as that produced by airplanes, traffic, or industrial machinery, is considered a form of pollution. Noise pollution is at its worst in densely populated areas. It can cause hearing loss, stress, high blood pressure, sleep loss, distraction, and lost productivity.

## **1.8 Sources of Marine Pollution**

**Maritime pollution can be mainly classified on these two ways<sup>18</sup>,**

- 1. Oil pollution**
- 2. Wastes disposal pollution**

### **1.8.1 Oil pollution**

Oil which is a sea based, it is probably worst of the several pollutants of the marine environment. Oil in the marine environment come from a variety of sources, these include natural submarine seepage, natural decay of marine plant and animal life, shore based industries and transport activities, off-shore drilling, wrecked oil tankers and other ships, and discharges from ships which pump out cargo and ballast tanks with sea water<sup>19</sup>.

Many techniques have been tried for reducing the volume and effects of oil pollution<sup>20</sup>. The most effective techniques have, so far, been straight forward, very expensive. They involve

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<sup>17</sup> Ronal B. Mitchel. International Oil Pollution at Sea, Environmental Policy and Treaty Compliance. Publ, The MIT Press Cambridge, Massachusetts London, England. Pg.15

<sup>18</sup> PROF. PARAS DIWAN Environment Administration law and Judicial Attitude. Publisher, Deep & Deep. Pg, 67,68

<sup>19</sup> Spills from oil transportation itself are estimated at one million metric tones of crude oil every year. In addition, through various human activities the seas receive ten times more oil. A further 1.5 million tones are contributed annually by discharges from offshore wells and similar sources from U.N. Doc.

<sup>20</sup> PROF. PARAS DIWAN Environment Administration law and Judicial Attitude, Deep & Deep, Pg,359

mechanical removal of oil from polluted beaches, from the surface beaches is labor-intensive, but with enough efforts significant amount of oil can be removed. The warren spring Laboratory of the UK ministry of Technology has experimented with four methods, i.e. (1) burning; (2) leaving the deposits in situ and rendering them innocuous by coating them with various materials; (3) emulsifying the oil and then dispersing the emulsion by the action of the tide and waves, or (4) by hosing down with water. The soviet union is stated to be experimenting with the skimming method. The soviet union reports that it now has available a specially equipped ship which can skim 7 tones of oil per hour from the surface. The United States is experimenting with a system of rubber bladders capable of removing large quantities of oil from wrecked tankers<sup>21</sup>.

### 1.8.2 Wastes Disposal

There are numerous pollutant included in this category. The term wastes is a broad one covering materials of different chemical compositions from many different sources. Wastes are often divided into two major categories, i.e. domestic and industrial wastes. For our purpose domestic wastes include domestic sewage. Wastes from food processing, detergents and run off from agricultural areas, industrial wastes include heavy metals, radioactive nuclides, inorganic chemicals and heated water. The extent and variety of wastes spewed out by industry is tremendous. To take the American example, every year the US discards 7 million automobiles, 20 million tones of paper, 48 billion cans, 26 billion bottles and jars. Much of this material is made of aluminum and plastics. The mining industry discards more than 3 billion tones of waste rock and mill tailing. According to an official estimate every year the American lakes, rivers and estuaries received some 50 trillion gallons of hot water used for cooling by the power industry, and unknown million of tones of organic and chemical pollutants from cities, plants and industrial plants<sup>22</sup>.

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<sup>21</sup>PROF. PARAS DIWAN Environment Administration law and Judicial Attitude, Deep & Deep, Pg, 359,360

<sup>22</sup> Ibid

Whatever be the state of knowledge of the effect of dumping wastes in the sea on the entire eco-system, one thing is very clear and that is, this form of marine pollution is quantitatively greater than oil discharges on the sea. And consequently it appears to be more harmful, because, ocean dumping takes place in and around a region which is vital for the marine eco-system, that is, the Neritic Epipelagic province. Plankton, the microscopic form of animal and plant life which are the basic food upon which all higher forms depend, thrive in this very province and damage done to the marine eco-system by the wastes disposed is too much<sup>23</sup>.

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<sup>23</sup>PROF. PARAS DIWAN Environment Administration law and Judicial Attitude, Deep & Deep, Pg, 359,360

### **2.2.1 Britain Pioneers National Legislation on Oil Pollution**

The more fertile field for national as opposed to local legislation on oil pollution lay in British. Following their then acknowledged lead in maritime legislation, officials of the British Board of Trade's Mercantile Marine Department initiated discussion on a bill for Parliament. In January 1921<sup>26</sup>, Charles Hipwood, Head of Marine Department, presided over a series of informal conferences between oil and shipping industry representative and dock and harbor officials. Port officials went to the talks with the support of two notable British environmental groups namely, the Royal Society for the protection of the Birds (RSPB) and the Royal Society for the prevention of cruelty of Animals (RSPCA). But the Board considered it, unnecessary and perhaps divisive to invite or include members of these animals' protection groups and coastal town councils who were agitating for the strongest possible measures against oil pollution<sup>27</sup>.

The discussion brought out their differences on two matters first on the necessity for a new law on oil pollution and other was the scope of such proposed legislation. Significantly the discussion held at the Board of Trade on January 19-21, 1921 was only the first indications of a continual dichotomy in environment legislation negotiations.

On the principals of new legislation, port interests maintained that only a bill by parliament could effectively prevent oil pollution by ships. Their representative pointed out that the present by-laws were very unsatisfactory, and in any case the maximum penalty which could be levied was quiet inadequate. From the confidential records of the discussion it appears that Hipwood's personal initiatives and determination paved the way towards the new legislation on oil pollution.

In an attempt to break the deadlock about the zone system, British interests settled the zone system as a compromise, they agreed to revive the practice urged upon them by the Admiralty during the first world war, to pump oil wastes only outside the three-mile limit

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<sup>26</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 4.5.

<sup>27</sup> Ibid.

from shore. This zone system regarded during the war as a precaution against port fires, was to be imposed on shipping but this time under statutory penalty<sup>28</sup>.

However, oil and shipping interest maintained that the best method of preventing oil pollution was to deposit oily wastes in the port. They were prepared to consider port reception of oily wastes as part of their normal operations and to pay for the use. Dock authorities, who could have provided such reception facilities, unfortunately refused to be under any legal obligation whatsoever to do so. Instead they issued a collateral facilities undertaking to examine the question of providing such facilities in large ports, an assurance deemed acceptable to the maritime interests at the time.

Thus, after having settled the question of port reception facilities, the main technical bone of contention in any oil pollution discussion, the parties agreed to remain within the four corners of the new law than for them to consider new vessel design and construction.

The oil in Navigable Waters Act of 1922 which took effect from 1<sup>st</sup> January 1923, became the first national law against oil pollution. It brought temporary relief of pollution in ports and harbors by prohibiting, under maximum fine of 100£, a ship or land installation from causing oil or oily wastes to escape into British territorial waters.

Indirectly, the 1922 Act had the effect of directing oil pollution away from ports onto coastal areas in vicinity of ports. Evidently, oily discharge from ships outside of the three-mile limit yet drifted to coastal areas even where no ports existed. This Novel problem was manifested in complaints made after the 1922 Act. It most also be noted that the 1922 British Act carried little penalty for violators. By 1931, it was found that only 43 out of 54 cases had successfully been prosecuted<sup>29</sup>.

### **2.2.2 The United States Stirs up International interest**

American officials also realized that they had relatively little protection against oil pollution. The United States was then the chief source of oil, a position presently taken by

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<sup>28</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 6.

<sup>29</sup> Ibid.



the Middle Eastern countries. To world markets at the time, the United States supplied 60% of all oil and oil products. American attitude towards any oil policy was critical.

Strong lobbies of private and commercial groups urged oil pollution legislation in the United States. From 1922 to 1924, six major bills were presented to Congress after the passage of a joint Congressional resolution urging the president to summon an international Conference on Oil pollution.<sup>30</sup>

On the 7<sup>th</sup> June 1924, at the height of the summer season when pollution complaints usually increased, congress passed the oil pollution Act of 1924 as compared to 1922 British Act, the 1924 U.S. Act has more onerous provisions and was more vigorously enforced; as such it became more effective than the British Legislation. In the first place, the U.S Coast Guard, apart from port officials was given legal enforcement powers, Secondly, the definition of oil was broader than in the British Act. And finally, aside from a maximum fine of 2000 \$, which was a stiffer deterrent than in British Act, the 1924 U.S. Act also made oil pollution a penal offence.

In the other ways, the 1924 U.S. Act also adopted the zone system of banishing oil pollution to outside territorial waters, and only its stricter enforcement contributed to some improvement on the problem in American waters. The situation was not yet deemed entirely satisfactory to both British and American policymakers, and they encouraged similar national legislation elsewhere and also the possibility of an international agreement.

### **2.2.3 Leading towards international legislation**

Following the 1922 joint congressional resolution, President Warren G. Harding authorized U.S. Secretary of State Charles E. Hughes to begin the preparations for an international conference on oil pollution. Secretary Hughes appointed an ad hoc interdepartmental Committee on oil pollution, with the state department's economic advisor, Dr Arthur N. Young as chairman. The committee was tasked with collection of information on the effects and the control of oil pollution, and it was authorized to call an international

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<sup>30</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg. 7.

conference only after it had determined ways to control oil pollution that were both practical and economically viable<sup>31</sup>.

### **2.3 THE 1926 WASHINGTON CONFERENCE ON OIL POLLUTION**

In the April 1926, the United States government issued invitation for major maritime states to attend the first international conference on oil pollution control<sup>32</sup>. Care was taken to specify that the delegates should be experts, rather than diplomats, since the proposed conference was technical and would proceed a full-dress diplomatic negotiation for a new treaty on oil pollution. Eventually the preliminary conference became involved in drafting treaty.

At the invitation of the United States government, twenty seven delegates representing thirteen major maritime nations met from 8 to 16 June 1926 in Washington, to discuss the adoption of effective measures against oil pollution of the sea. The delegates indicated the growing international importance of the problem, but the question was whether they could agree on control measures against oil pollution by ships.

Although it was not agreed at the start to frame a draft treaty on oil pollution, the delegates recommended that they should put their recommendation into a draft treaty. On the next to the last day, Dr. Young and Hipwood drafted the oil pollution convention

#### **2.4 Draft of Washington Convention**

The 1926 draft Washington convention on oil pollution envisaged both a short-term and a long-term answer to the problem of oil by ships. In the first place, the convention provided the possibility of establishing zones on the high seas into which prohibited oil or oily mixtures may not be discharged. The demarcation of these zones was left entirely at the discretion of the coastal state, provided only that they must be no more than 50 miles from

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<sup>31</sup> Ibid.

<sup>32</sup> Ibid, pg, 15,16

the nearest coast, and 150 miles in exceptional circumstances<sup>33</sup>. The coastal state had no authority over foreign vessels in these zones, except a prohibited discharge within the zone<sup>34</sup>.

There was no provision for adjudicating conflicting claims. Secondly, the draft convention tried to reach beyond the zone system as a solution to oil pollution by removing obstacles to the retention by ships of oily waste onboard, even if it did not explicitly required them to do so. The system of zones was difficult issue on which to achieve an agreement or to base one that wanted to control oil pollution by ships. Various countries maintained suspicion that such zones would be used for the purposes other than oil pollution control. The most telling fault in the zone system, however, was its recognized fallibility in prevention oily discharges from causing coastal pollution. As Hipwood said, “we know the difficulties of getting evidence within our own three-mile limit. A fortiori what are the difficulties going to be in enforcing it when it comes to a matter of 50 to 150 miles?”<sup>35</sup>

Lesser known and appreciated was the fact that the Washington draft convention also encouraged governments to remove every possible obstacle e.g. customs dues and canal tolls, tonnage measurement, cargo space rules, standing in the way of ships retaining and separating oily wastes onboard.

## **2.5 The LEAGUE OF NATIONS AND OIL POLLUTION, GENEVA 1933-34**

Before elevating the problem to the League of Nations, Britain faced three obstacles which had to be cleared. These were as follows: firstly, the question of selecting the best possible measure to control oil pollution; secondly, how to present government policy to achieve maximum success with all affected interests, and finally, whether the government wanted to take up this problem yet again, knowing the attendant difficulties involved.

When environmental agitation in Britain reached a new height in 1933-1934, the foreign office briefly toyed with the idea of rushing the question to the League of Nations at the

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<sup>33</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 22

<sup>34</sup> Ibid

<sup>35</sup> Ibid,25

earliest possible moment, even without the express support of the four maritime nations they had asked.

Delegates from six countries (Britain, Denmark, France, Italy, Japan, and the United States) comprising the newly appointed League of Nations Committee of experts on oil pollution, met for the first time at Geneva from 19 to 23 November 1934 with Charles H. Grimshaw as Chairman. Since they believed that the problem was less severe than a decade ago. However, a few important maritime states were persuaded to the idea of resolving the matter once and for all<sup>36</sup>,

The committee also prepared a questionnaire for various countries to render their reports on the extent of pollution and their adoption of various anti-pollution measures. The interpretational survey was expected to show that the zone system was the only measure which is present conditions would meet international support<sup>37</sup>.

On 23 January 1935 the League Secretary-General circulated the international questionnaire on oil pollution to seventy countries, and the latter were asked to submit their replies in six months time<sup>38</sup>. The questionnaire was about the information on the effects of oil pollution; opinions on the compulsory fitting of separators on new and existing ships; types of separators used and supply of port reception at sea; and any other comments by government. In many ways, this survey was more extensive than the one made by the American interdepartmental Committee in 1925.

Thirty-four countries responded to the league questionnaire and about 60% said there was little or no harmful consequences from oil pollution in their area, or otherwise they gave no evaluations. Slightly over 10% of the respondents described moderate to serious damage, especially to birds and these countries had extensive coastal and shipping interests. The rest 30% gave no particular information on the damage of pollution. Twelve important trading countries ascribed serious damage resulting from the pollution. While twenty-two countries

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<sup>36</sup>. Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg. 45

<sup>37</sup> Ibid, 46

<sup>38</sup> Ibid, 48

reported it to be only an occasional or negligible problem. However the British officials were already preparing a draft convention based principally on the zone system.

## **2.6 The League Convention Draft 1935**

In September 1935 the League Council passed a resolution paving the way for the preparation of a draft convention and an international conference on oil pollution.

Grimshaw presented the committee with a second British draft text mainly the work of the Assistant legal advisor W. Eric Beckett, and this draft was altered by the League Committee in only a few parts<sup>39</sup>. The 1935 draft League Convention on oil pollution was legally superior to the 1926 draft Washington convention, having been the result of years of refinement by legal minds in the British government. The main system of control for pollution was a system of zones in the high seas wherein oil or oily mixtures could not be discharged by ships belonging to the states which adhere to the treaty. Each contracting state was dully authorized to designate areas of their costs, the maximum width being 50 nautical miles in normal circumstances and 150 nautical miles for special coastal configurations<sup>40</sup>. A clear method of fixing zones between state-parties was also incorporated in the draft treaty.

During the drafting of the League treaty, and subsequent negotiations for its approval, questionnaire became the method of jurisdiction over the zones and over the ships of state-parties. Three types of legal jurisdiction were considered namely, modified dual or shared jurisdiction, coastal state jurisdiction or flag state authority over their vessels. Each system presented a of problem which have always plagued the acceptability and ultimately the effectiveness, of oil pollution agreements.

When the committee of experts had finished their work the draft League Convention and draft final Act were circulated to the governments on 27 November 1935 with the request that replies be returned to the League by 1 April 1936. in effect the league of Nations work

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<sup>39</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 54,55,57.

<sup>40</sup> Ibid.

on oil pollution terminated soon after. Despite the overwhelmingly favorable replies to an oil pollution agreement, the draft conference never summoned and the diplomatic negotiations drifted aimlessly.

## **2.7 The 1954 International Convention On Prevention Of Pollution Of The Sea, London**

First international convention to prevent pollution of the sea by oil from tankers by setting limits on the scale and location of operational discharges. International action against oil pollution by ships was finally achieved by means of the 1954 international convention for prevention of pollution of the sea by oil, the product of an international conference in London sponsored by the British Government, the 1954 convention was drafted, signed, and adopted as the worlds first working treaty on oil pollution control<sup>41</sup>.

### **2.7.1 Policy during and after the Second World War**

Oil pollution control policy during the Second World War was an important function of strategy and defense. War time shipping had to observe strict methods of reducing discharges from ships and tankers, in order to avoid detection of oil slicks by enemy submarines at sea<sup>42</sup>.

In Britain, chemicals were used to separate and recover dried oil from oil tank during the war years. In effect putting into wider practice what the Admiralty had discovered for naval ships since 1929. for a decade after the war, chemical treatment of oily wastes was regarded as a promising means of reducing pollution; one such chemical, fomes-col became widely marketed from the late 1950. Refineries, however, found that chemical additives interfered with the refining process of oil products, and they refused further chemical treatment of oily cargoes. Later apologists for these companies pointed out that the wider use of chemical on oily wastes would have led eventually to secondary pollution

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<sup>41</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 71

<sup>42</sup> Ibid.

of ports and waterways. By 1961 it was established that research in western countries would take a non-chemical turn<sup>43</sup>.

The soviet Union continued to adapt and improve upon chemical treatment of oily wastes onboard ships as a routine procedure. With some irony, western companies presently market oil-based chemical solvents to clean oiled beaches and oil spills at sea after these had been polluted by oil released from ships.

### **2.7.2 British initiatives**

After the Geneva maritime conference in 1948, the establishment of a United Nations specialized agency on maritime affairs seemed imminent. The convention of the inter-governmental maritime consultative organization (IMCO) was ready for signature and states could join the new maritime Agency. Although IMCO did not in fact come into operation until 1958, British officials had to decide whether the UN body should be used as the forum for Securing an oil pollution convention in much the same way as they had gone through the League of Nations before the war.

The troubled start of the U.N. maritime agency, however gave pause to such plans. Even had IMCO started earlier British officials did not accept immediately filing the problem of oil pollution before the new organization. As advised: ' it would be better to wait and see how IMCO got along before placing the subject of oil pollution before it'<sup>44</sup>,

The international conference on pollution of the sea, which was held in London from 26 April to May 1954, marked the first diplomatic conference on the problem, with all delegations (except the United States) having full powers to frame and sign an international convention. At the opening ceremonies, the British Transport Minister, Alan Lennox-Boyd, gave prominence to the fact that thirty-one countries or 95% of world shipping were represented at the conference.

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<sup>43</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 72

<sup>44</sup> Ibid.

The 1954 conference delegates elected their officer Sir Gilmour Jenkins, permanent secretary of the Ministry of Transport and head of the British delegation, became President. In his opening statement as president, described the main tasks of the conference as follows (1) the formulation of an international convention on oil pollution;(2) consideration of the types of oils which cause pollution; (3) practical restriction on tankers and other types of ships would solve the problem; and (4) definition of the terms of enforcement for the agreement. A communication from the international union of official Travel Organization, representing 21 countries, was also read to impress the delegates with the need for a effective end to oil pollution.

A few days after the conference had settled down, the General Committee (chaired by Faulkner) discussed the preparation of an international convention to embody the recommendations of the conference. It was then that the U.S. delegation tried to convince the rest that a treaty was premature. As an alternative to an immediate treaty, they proposed the creation of national committees to study the problem and its solution and the establishment on an interim international secretariat to review the possibility of convention until IMCO had started to function. But the other delegates felt otherwise D.C. Haselgrove (UK) summed up general opinion thus; 'A convention is the customary and most satisfactory means of settling an international problem on this kind. With the sole opposition of the United States the conference agreed to draft an international convention'<sup>45</sup>. The conference easily accepted that the oil to which future prohibitions would apply should be only those of the persistent category ( crude oil, fuel oil, heavy diesel oil, and lubricating oil)<sup>46</sup>.

### **2.7.3 The zone system**

The 1954 convention has specified another control system, the establishment of zones throughout the world. These zones consisted of belts of water off the coasts of all countries, being 50 nautical miles in normal width and varying in width for special areas. Certain exceptions were attached to the zone system. Dry cargo, passenger liners and other non-

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<sup>45</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 87

<sup>46</sup> *Ibid.*



tankers were allowed, if they found it necessary, to wash out as far as practicable from land during a transition period, and three years after the operation of treaty, they were required to observe the same zones as tankers when sailing to a port without reception facilities<sup>47</sup>.

#### **2.7.4 Flag state jurisdiction**

Convention ships were technically bound to observe the requirements but were subject to the final authority of their flag state. Flag state jurisdiction opened the door to a number of abuses and anomalies regarding violation of the zones. These problems, Fueled by the fact that aggrieved coastal states had no power of redress directly against foreign ships outside territorial waters. And illegal acts of pollution were difficult to detect and to prove to the satisfaction of flag authorities<sup>48</sup>.

#### **2.7.5 Conclusion on the 1954 convention**

This convention entered into force on 29 July 1958, some four years after it was drafted by the 1954 conference. Due to what some argue may have been the conditional ratification procedure's delay<sup>49</sup>, by the time of the 1962 amending conference, only seventeen states had ratified the 1954 convention, a few of which were at least as interested in entering the treaty in order to exert political leverage at the amending conference. Their number seemed a poor contrast to those who were happy to take part in preparing the convention in the first place.

#### **2.8 Aftermath of the Torrey canyon disaster**

Due to the proliferation of tanker disaster resulting in massive coastal pollution in the 1960's and 1970's governments and private interests became more inclined to face problems which had been ignored before the problem of preventing accidental pollution by ships and of compensation and remedial measures for oil pollution damage. The Torrey canyon disaster made pollution a highly topical problem, with subsequent tanker accidents

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<sup>47</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 106

<sup>48</sup> Ibid, 111

<sup>49</sup> Ibid, 115

sustaining public interest in control measures that the history of pollution control turned into a series of attempts to deal with pollution disaster.

In the early morning of Saturday, 18 March 1967, Torrey Canyon, then the thirteenth largest merchant vessel, was steering a dangerous course on automatic pilot off the southern coast of Britain, between the seven stones reef and the isles of scilly. In the oil transport trade, Torrey Canyon was considered a prime asset. But in years to come such types of tankers would appear as modern pirates to coastal residents or visitors who have shared memories in the wake of tanker pollution.

The Torrey Canyon incident would involve many states, while originally built in the United States in 1959, the tanker was jumboised in Japan in 1964, it was registered in Monrovia and flew the Liberian flag, although it had never been to Liberia. It was owned by the Barracuda Tanker Company which maintained filling cabinet officers in Hamilton<sup>50</sup>.

## **2.9 THE 1973 MARINE POLLUTION CONVENTION LONDON**

Our study of oil pollution control ends with the current treaty on the problem, the 1973 international convention marine pollution and its 1978 protocol. The Convention for the Prevention of Pollution from Ships, 1973, which was amended by a Protocol in 1978 (the “1973/78 MARPOL Convention” We shall examine some of the major issues at the 1973 London conference and convention and 1978 protocol represent what most experts today agree to be the best possible solution to meet the problem of marine pollution. Whilst some may argue that the measures yet fall short of the desired goal of having appropriate conservation techniques to accompany technological progress, most others believe that full implementation of the legal framework would result in the satisfactory prevention of pollution by ships. Yet there are some serious flaws in the 1973 convention and 1978

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<sup>50</sup> Sonia Zaide Pritchard, Oil Pollution Control, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 153

protocol that, even with implementation of their provisions, the legal framework may not meet the very purpose for which it was intended<sup>51</sup>.

Over 600 delegates from 71 countries met at London's church house from 8 October to November 1973 to attend the international conference on Marine Pollution sponsored by IMCO. In view of the growing concern for maritime pollution, not only by oil but other noxious or hazardous substances and the urgency of resolving technical approaches to the problem, the 1973 diplomatic discussions acquired great importance<sup>52</sup>.

Among the high objectives of the conference were (1) to draft a comprehensive new convention that would completely eliminate the willful and international discharge into the seas by ships and other marine craft of oil and noxious or accidental spills by all types of ships at sea; (2) to achieve by 1975 if possible, but certainly by the end of the decade, the complete elimination of pollution by normal operations of ships (3) to expand the 1969 Brussels Intervention Convention to cover other types of substances causing pollution incident at sea.

Thus in 1978 a special Tanker Safety and pollution prevention conference was held again in London to draft amendments to the oil pollution Annex of the 1973 convention. The protocol arising from this special conference became an integral part of the 1973 convention. And acceptance of the 1973 treaty by states would have to include acceptance of the 1978 protocol as well<sup>53</sup>.

- ▶ State parties are obliged to apply the provisions of the Convention to ships flying their flag and to ships within their jurisdiction

- ▶ A major thrust of this Convention is towards the technical requirements of tanker safety: all tankers built after 1975 have been built to meet MARPOL requirements; all new tankers ordered after July 1993 must be fitted with double bottoms and double hulls and tankers which were built before 1970 also require the fitting of double hulls or equivalent design

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<sup>51</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg. 169,171.

<sup>52</sup> Ibid, 173.

<sup>53</sup> Ibid.

- ▶ Implementation of the Convention involves the right of inspection by port states and state parties are obliged to co-operate with each other in the detection of violations and the enforcement of the Convention
- ▶ Ships in the port or offshore terminals of acceding parties are required to hold certificates pursuant to the Convention whereas states party to the Convention are required to provide oil reception facilities
- ▶ The Convention is not confined to oil pollution but also regulates other forms of pollution by ships including noxious liquids, sewage and garbage
- ▶ Under Article 17 of the Convention, states are obliged to provide, in collaboration with IMO and UNEP, support to other parties who are in need of and request technical and scientific assistance and supply of equipment and facilities for reception and monitoring<sup>54</sup>

## **2.10 The 1973-1978 Marine Pollution Convention**

The 1973-1978 Marine Pollution Convention is the world's first treaty to regulate all forms of marine pollution by ships, with the exception of the licensed dumping at sea of land generated wastes under the 1972 London Dumping Convention. The 1973 Convention itself consists of twenty Articles, and two protocols dealing with the obligation to report incidents and with arbitration and five Annexes, those containing the regulations for oil pollution; chemical pollution, pollution by harmful substance carried in packages portable tanks, freight containers, or road and rail tank wagon, etc are optional for state parties. The 1978 protocol, which is an integral part of the 1973 convention, strengthened and expanded the requirements of the parent convention<sup>55</sup>.

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<sup>54</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 25 April, 2007.

<sup>55</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg. 78.

- ▶ State parties are obliged to apply the provisions of the Convention to ships flying their flag and to ships within their jurisdiction
- ▶ A major thrust of this Convention is towards the technical requirements of tanker safety: all tankers built after 1975 have been built to meet MARPOL requirements; all new tankers ordered after July 1993 must be fitted with double bottoms and double hulls and tankers which were built before 1970 also require the fitting of double hulls or equivalent design
- ▶ Implementation of the Convention involves the right of inspection by port states and state parties are obliged to co-operate with each other in the detection of violations and the enforcement of the Convention
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## 2.11 INTERNATIONAL CONVENTION ON CIVIL LIABILITY (CLC), BRUSSELS 1969

The Convention places the liability for such damage on the owner of the ship from which the polluting oil escaped or was discharged. Subject to a number of specific exceptions, this liability is strict; it is the duty of the owner to prove in each case that any of the exceptions

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<sup>56</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 25th April, 2007.

should in fact operate. However, except where the owner has been guilty of actual fault, they may limit liability in respect of any one incident to 133 Special Drawing Rights (SDR) for each ton of the ship's gross tonnage, with a maximum liability of 14 million SDR (around US\$18 million) for each incident. (1 SDR is approximately US\$1.28 - exchange rates fluctuate daily). The second convention adopted by the 1969 Brussels conference dealt with a similarly this concept that of establishing financial liability and compensation for oil pollution damage caused by maritime incidents. The 1969 intervention convention on civil liability for oil pollution damage<sup>57</sup> (also known as the 1969 private law convention, or the Civil Liability Convention) provided for the liability of the owner of a ship which causes any damage by oil pollution, except for casualties due to war, natural phenomenon, or the negligence or act of a third party. If the incidents were not the fault of the ship owner, he may limit his liability for the incident to 2,000 Poincare francs (about \$140) per ton but not exceeding 210,000 pioncare francs (\$14 million). However, if the incident was due to the owners fault, then he shall not be able to limit his liability. In order the 1969 protocol to the 1969 convention, the unit of account was changed to the special Drawing Rights (SDRs) of the international Monetary Fund<sup>58</sup>.

The Convention requires ships covered by it to maintain insurance or other financial security in sums equivalent to the owner's total liability for one incident. The Convention applies to all seagoing vessels actually carrying oil in bulk as cargo, but only ships carrying more than 2,000 tons of oil are required to maintain insurance in respect of oil pollution damage<sup>59</sup>.

This does not apply to warships or other vessels owned or operated by a State and used for the time being for Government non-commercial service. The Convention, however, applies in respect of the liability and jurisdiction provisions, to ships owned by a State and used for commercial purposes. The only exception as regards such ships is that they are not

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<sup>57</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) last visited on 1st May, 2007.

<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

required to carry insurance. Instead they must carry a certificate issued by the appropriate authority of the State of their registry stating that the ship's liability under the Convention is covered.

The Convention covers pollution damage resulting from spills of persistent oils suffered in the territory (including the territorial sea) of a State Party to the Convention. It is applicable to ships which actually carry oil in bulk as cargo, i.e. generally laden tankers. Spills from tankers in ballast or bunker spills from ships other than other than tankers are not covered, nor is it possible to recover costs when preventive measures are so successful that no actual spill occurs. The shipowner cannot limit liability if the incident occurred as a result of the owner's personal fault<sup>60</sup>.

- ▶ The shipowner is strictly liable for oil pollution damage without need to prove negligence or fault, except in certain circumstances, notably war and insurrection.
- ▶ Persons who suffer damage from oil pollution have recourse directly against the owner of the vessel without involving states
- ▶ The owner's liability is limited according to a formula related to the tonnage of the ship unless the incident arose out of his own fault
- ▶ The maximum liability is for ships over 140,000 gross tonnage for whom liability is limited to United States Dollars one hundred and fifteen million (US\$ 115,000,000)

The 1969 Convention is being replaced by its 1992 Protocol as amended in 2000. The Civil Liability Convention was adopted to ensure that adequate compensation is available to persons who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships<sup>61</sup>.

### 2.11.1 The Protocol of 1976

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<sup>60</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 1st May, 2007.

<sup>61</sup> Ibid.

The 1969 Civil Liability Convention used the "Poincaré franc", based on the "official" value of gold, as the applicable unit of account. However, experience showed that the conversion of this gold-franc into national currencies was becoming increasingly difficult. The 1976 Protocol therefore provides for a new unit of account, based on the Special Drawing Rights (SDR) as used by the International Monetary Fund (IMF). The exchange rate for currencies versus the SDR fluctuates daily. However, in order to cater for those countries which are not members of the IMF and whose laws do not permit the use of the SDR, the Protocol provides for an alternate monetary unit - based, as before, on gold<sup>62</sup>.

#### **2.11.2 The Protocol of 1984**

While the compensation system established by the 1969 CLC and 1971 Fund Convention had proved very useful, by the mid-1980s it was generally agreed that the limits of liability were too low to provide adequate compensation in the event of a major pollution incident.

The 1984 Protocol set increased limits of liability, but it gradually became clear that the Protocol would never secure the acceptance required for entry into force and it was superseded by the 1992 version.

A major factor in the 1984 Protocol not entering into force was the reluctance of the United States, a major oil importer, to accept the Protocol. The United States preferred a system of unlimited liability, introduced in its Oil Pollution Act of 1990. As a result, the 1992 Protocol was drawn up in such a way that the ratification of the United States was not needed in order to secure entry into force conditions<sup>63</sup>.

#### **2.11.3 The Protocol of 1992**

The Protocol changed the entry into force requirements by reducing from six to four the

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<sup>62</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 1st May, 2007.

<sup>63</sup> *Ibid.*



number of large tanker-owning countries that are needed. The compensation limits are those originally agreed in 1984:

- For a ship not exceeding 5,000 gross tonnage, liability is limited to 3 million SDR (about US\$3.8 million)
- For a ship 5,000 to 140,000 gross tonnage: liability is limited to 3 million SDR plus 420 SDR (about US\$538) for each additional unit of tonnage
- For a ship over 140,000 gross tonnage: liability is limited to 59.7 million SDR (about US\$76.5 million)<sup>64</sup>

The 1992 protocol also widened the scope of the Convention to cover pollution damage caused in the exclusive economic zone (EEZ) or equivalent area of a State Party. The Protocol covers pollution damage as before but environmental damage compensation is limited to costs incurred for reasonable measures to reinstate the contaminated environment. It also allows expenses incurred for preventive measures to be recovered even when no spill of oil occurs, provided there was grave and imminent threat of pollution damage.

The Protocol also extended the Convention to cover spills from sea-going vessels constructed or adapted to carry oil in bulk as cargo so that it applies to both laden and Unladen tankers, including spills of bunker oil from such ships.

Under the 1992 Protocol, a ship owner cannot limit liability if it is proved that the pollution damage resulted from the ship owner's personal act or omission, committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result<sup>65</sup>.

From 16 May 1998, Parties to the 1992 Protocol ceased to be Parties to the 1969 CLC due to a mechanism for compulsory denunciation of the "old" regime established in the 1992

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<sup>64</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 1st May, 2007.

<sup>65</sup> Ibid.

Protocol. However, for the time being, the two regimes are co-existing, since there are a number of States which are Party to the 1969 CLC and have not yet ratified the 1992 regime - which is intended to eventually replace the 1969 CLC.

The 1992 Protocol allows for States Party to the 1992 Protocol to issue certificates to ships registered in States which are not Party to the 1992 Protocol, so that a shipowner can obtain certificates to both the 1969 and 1992 CLC, even when the ship is registered in a country which has not yet ratified the 1992 Protocol. This is important because a ship which has only a 1969 CLC may find it difficult to trade to a country which has ratified the 1992 Protocol, since it establishes higher limits of liability<sup>66</sup>.

#### **2.11.4 The 2000 Amendments**

The amendments raised the compensation limits by 50 percent compared to the limits set in the 1992 Protocol, as follows:

- For a ship not exceeding 5,000 gross tonnage, liability is limited to 4.51 million SDR (US\$5.78 million)

(Under the 1992 Protocol, the limit was 3 million SDR (US\$3.8 million))

- For a ship 5,000 to 140,000 gross tonnage: liability is limited to 4.51 million SDR (US\$5.78 million) plus 631 SDR (US\$807) for each additional gross tonne over 5,000

(Under the 1992 Protocol, the limit was 3 million SDR (US\$3.8 million) plus 420 SDR (US\$537.6) for each additional gross tonne)

- For a ship over 140,000 gross tonnage: liability is limited to 89.77 million SDR (US\$115 million)

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<sup>66</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 1st May, 2007.

(Under the 1992 Protocol, the limit was 59.7 million SDR (US\$76.5 million)<sup>67</sup>

## 2.12 CIVIL LIABILITY IN THE NUCLEAR CONVENTIONS

In the field of nuclear energy liability is generally changed to the operator. The earliest example in that of 1960 Paris convention on Third Party Liability in the field of Nuclear Energy. This convention provides non-fault civil liability of the operator in Article 3. this Liability was covered by insurance, but due to limited capacity of the insurance market for the anticipating high risk the West European States agreed in the Brussels Supplementary convention on the introduction of more Layers of Compensation. In the first layer, the licensing state of nuclear installation causing harm assumes a limited subsidiary liability<sup>68</sup>. The acceptance of the subsidiary liability by the states is, however, to promote a new technology and not for the benefit of the potential victims. The second Layer, an insurance-like pool, is jointly financed by all contracting state<sup>69</sup>s.

The rule on liability of the 1960 convention on Third Party Liability the field of Nuclear Energy is closely in the 1962 Brussels Convention on the liability of Operator of Nuclear Ships<sup>70</sup>.

Another example of making the operator liable is found in the 1963 Vienna Convention on Civil Liability for Nuclear Damage of 21 May 1963. the last example in this field is that of the 1971 convention Relating to Civil Liability in the field of Maritime Carriage of Nuclear Material which makes the carrier liable. On the other hand, state liability is not mentioned in convention on Early Notification of a Nuclear Accident and convention on Assistance in the case of Nuclear Accidents or Radiological emergency, both adopted in Vienna in the

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<sup>67</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 1st May, 2007.

<sup>68</sup> Muhammad Munir, The Polluter Pays Principle in International Policy and Law, Islamabad Institute of Legal Studies, 2003, pg, 98, 99.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

aftermath of Chernobyl accident, on 26 September 1986, under the auspices of the IAEA. However, the working Group of Governments Experts Established by IAEA in 1989 and the Standing Committee operating within the system of the Vienna Convention of 1963, have been suggesting the claims of individual in case of nuclear accidents should be dealt with exclusively under a civil liability regime<sup>71</sup>.

### **2.13 Pollution by radio-active materials**

The 1955 Geneva Convention had to deal with two possible sources of pollution by radiation, the dumping of radio-active waste, whether from nuclear powered ships or from shore installations using nuclear power, and the radioactive material left from the testing of nuclear weapons<sup>72</sup>. Understandably, the first source of potential pollution proved more amendable to compromise than did the second. As a result, while under the first part of Article 25 of the High Seas Convention, all states 'shall take active measure to prevent pollution of seas from the dumping of radio-active waste' the second part is drafted in more general terms. States are only required to 'co-operate' in taking measures for the prevention of pollution of the seas or air-space above, resulting from any activities with radio-active materials or other harmful agents. In this with the liability of operators have been negotiated, in 1962 dealing with the liability of operators of Nuclear Ships, and in 1971 in the field of maritime carriage of Nuclear Material.<sup>73</sup>

The claim of states to make exclusive use of large tracts of ocean for nuclear tests are most open to criticism on the question of pollution. States have frequently made use of areas of high seas for naval as rocket ranges, and reasonable claim to exclusive use for such purposes are generally recognized as reasonable. It be recalled that the Article 2 of high

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<sup>71</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 15<sup>th</sup> June, 2007.

<sup>72</sup> Ibid.

<sup>73</sup> Ibid

seas Convention emphasizes that the various ‘freedom’ of the high seas specified or ‘recognized by the general principle of international law’ must be exercised with reasonable regard to the interest of other states’ claim to the use of the high seas are generally accepted and are exercised with reasonable regard to the rights of other states, so that the vital issue is that of reasonableness. The test will only cease to be reasonable if it causes harm to another state, its property, or its nationals. In view of the second part of Article 25 of the convention which only requires states to co-operate in preventing pollution of the high seas from “activities with radio-active materials” it would seem possible to argue that pollution of the high seas in itself would not constitute a failure to pay reasonable regard to the rights of other states<sup>74</sup>

## **2.14 SCOPE OF LIABILITY IN CLC & 1992 FUND CONVENTION**

THE 1992 CLC covers pollution damage suffered in the territory or territorial sea or exclusive economic zones (EEZ) or equaling area of a state party to the convention. The flag state of the tanker and the nationality of the owner are irrelevant for determining the scope of application. As the 1992 CLC covers spills of persistent cargo and fuel (bunker) oil from sea going tankers, it can apply to both laden and unladen tankers (but not to dry cargo ships)

### **2.14.1 Strict liability**

The 1992 CLC is based on the principle of strict liability. This means that the owner of the tanker which spills the oil is liable regardless of whether or not he was actually at fault, subject to very few exceptions (e.g. if the damage resulted from an act of war or grave natural disaster, was wholly caused by sabotage by a third party, or was wholly caused by the negligence of public authorities in maintaining lights or other navigational aids). As a

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<sup>74</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about international civil liability convention 1992.

result, claimants can receive compensation promptly, without the need for the lengthy and costly litigation<sup>75</sup>.

## **2.14.2 CLAIMS PRESENTATION**

### **2.14.3 Who is entitled to compensation under the 1992 Conventions?**

Anyone may make a claim who has suffered pollution damage (including the taking of preventive measures) in a state which is party to the 1992 CLC and/ or 1992 fund convention. Claim may be private individuals, partnerships, companies (including ship owners, charterers and terminal operators) or public bodies (including central and local government authorities and agencies)

### **2.14.4 Within what period must a claim be made?**

Claimants should be aware that claims under the 1992 CLC and Fund Convention are subject to time limits and so they should submit their claims as soon as possible after the damage has occurred. If a formal claim cannot be made shortly after an incident, the P&I club and 1992 fund should be notified as soon as possible of a claimant's intention to present a claim at a later stage.

Claimants will ultimately lose their right to compensation unless they bring a court action against the tanker and his P&I Club or against the 1992 fund within three years of the date on which the damage occurred. Although damage may occur some time after an incident takes place, court action must in any case be brought within six years of the date of the incident. Claimants are recommended to seek legal advice on the formal requirements of court actions, to avoid their claims becoming time barred. Formal legal action to enforce a

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<sup>75</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about international civil liability convention 1992.

claim will usually be the last resort since P&I Clubs and the 1992 fund always endeavor to settle claims out of court. However, claimants are advised to present their claims well in advance of the expiry of the periods mentioned above. This allows time for claims to be examined and settled out of court, but also ensures that claimants will be able to prevent their claims from being time barred, if they and the P&I Club/1992 fund are unable to agree on amicable settlements<sup>76</sup>.

Formal legal action to enforce a claim will usually be the last resort since P&I Clubs and the 1992 fund always Endeavour to settle claims out of court. However, claimants are advised to present their claims well in advance of the expiry of the periods mentioned above. This allows time for claims to be examined and settled out of court, but also ensures that claimants will be able to prevent their claims from being time barred, if they and the P&I Club and 1992 fund are unable to agree on amicable settlements<sup>77</sup>.

#### **2.14.5 How should a claim be presented?**

Claims should be presented clearly and in sufficient detail so that the amounts claimed can be assessed on the basis of the facts and the documentation presented. Each item of claim must be supported by an invoice or other relevant documentation, such as work sheets or explanatory notes, photographs or videos can be helpful to explain the extent and nature of the contamination and the problems which had to be confronted. If there is any doubt as to the source of the pollution, chemical analysis of correctly preserved samples may be necessary. Claimants would be well advised to contact the relevant P&I Club, 1992 fund or ITOPF early on in an incident to seek advice on the preparation and submission of claims.

#### **2.14.6 Compensation in states that are not party to the conventions**

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<sup>76</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about International Civil Liability Convention 1992.

<sup>77</sup>Ibid.

Such states which have not ratified the international compensation convention have their own domestic legislation for compensating those affected by oil spills from tankers within their territory, such as the oil pollution act of 1990 in the USA, and are beyond the scope of this code<sup>78</sup>.

In other countries that have not acceded to the international compensation conventions reliance in the event of an oil spill may have to be placed on broader laws originally developed for other purposes. In such cases there can be considerable uncertainty in the event of a tanker spill as to the legal, operational and financial responsibilities of the main parties involved ( e.g. tanker owner, cargo owner, P&I Club) as well as the amount of compensation that will be available to pay for clean up and damage. This is not always conducive to the rapid implementation of required response measures or to the prompt and complete settlement of valid claims. This can result in significant financial and political problems for the companies, even if they do not have a direct involvement in the incident. These problems can be overcome if governments accede to the 1992 CLC and 1992 fund convention.

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<sup>78</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about International Civil Liability Convention 1992.



would seem to lie with the Federal Government. It could be the pacesetter of national policies and laws which orientation can be integrated in provincial laws on specific objects. The Federation is thus enabled to provide leadership while leaving, matters of detail, if appropriate, to the provinces. In this manner, the philosophy enunciated at the federal level can be synthesized with the resource management and the implementation ability of a province<sup>81</sup>.

It was in the final days of 1983 that Pakistan promulgated the Pakistan Environmental Protection Ordinance, 1983 (the "Environment Ordinance"). Much work and effort had preceded this Ordinance. Earlier, a more ambitious draft Ordinance was prepared and released in 1977 but the events in that year relegated environmental protection to a secondary position. Fortunately, the priority was retrieved in 1983 in the shape of the less comprehensive but yet welcome legislation at that time, but unfortunately it was repealed in 1996. Section 21 of the Ports Act, 1908 bars discharge of ballast or rubbish into a port but generally to enable safety of shipping only and after Environmental Protection Act 1997 and other legislation started.

In addition to the Environment Ordinance there is a host of legislation--both federal and provincial--dealing with environmental matters. These include specific laws on factories, forest conservation, parks and wildlife. Many of these predate the Environment Ordinance and, therefore, lack the specific environmental thrust of our recent priorities. Each of these will be noted in the following review of the specific issues of environmental protection. but before going to concentrate on the legislation I will explain the classification and sources of pollution in Pakistan.

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<sup>81</sup> Dr Pervez Hassan, Legislation For Environmental Protection: Trends In The Region And National Legislation, Article from [www.pakistanlawsite.com](http://www.pakistanlawsite.com) visited on 20<sup>th</sup> July, 2007.

### **3.2 Sources of marine pollution in Pakistan**

#### **3.2.1 Introduction**

1. The marine pollution is primarily restricted to the areas which receive more waste from the municipal, industrial, agriculture and oil spill sources? The waste receiving areas are from the industrial sites of Karachi city and from a few locations from the Hub industrial area of Balochistan. Most coastal inshore and off shore areas are relatively free from adverse impact of sparsely populated than the coastal industrial city of Karachi.

2. The general sources in Pakistan are as follows<sup>82</sup>,

**3.2.2 Pollution from domestic sources.** There are number of environmental issues in the coastal city of Karachi, amongst these the disposal of domestic wastes and industrial effluent causing marine pollution problems along the urban centers are the most significant. The pollution problems have arisen mainly due to the indiscriminate discharge of effluent from the industrial and agriculture sources and disposal of untreated liquid and solid wastes generated from domestic sources into the coastal environment have also accelerated the impacts of pollution leading to the deterioration of coastal environmental quality<sup>83</sup>.

**3.2.3 Pollution from industrial sources.** Pollution from industrial sources are restricted to the city of Karachi. The industrial area of Karachi has approximately 6000 small and large industrial units. This can be grouped into different industrial zones. These include Sindh Industrial Trading Estate (SITE) in the north. Landhi Industrial Trading Estate (LITE) in the East. Korangi Industrial Area (KIA) in the south. In addition to the domestic and industrial waste disposal there are some other equally important sources of pollution in the coastal waters. These include reclamation dredging of the navigational channels of the ports and harbors and land of providing landfill material. Dredging looseness and re-suspended solids in the coastal sulfide-laden upper layers of sediments forcibly mixing and dissolving hydrogen sulfide toxic substances in seawater<sup>84</sup>.

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<sup>82</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

<sup>83</sup> Ibid

<sup>84</sup> Ibid.

**3.2.4 Pollution from agrochemicals.** The use of agro-based chemicals and chlorinated pesticides and insecticides has been considerably reduced compared with their use about three decades ago. The residues from these compounds reach the coastal waters through agriculture drainage, rivers, and run-off. The preliminary survey values, however, do not show an appreciable concentration of pollution control Boards (PCBs) in the coastal and marine sediments of Pakistan.

**3.2.5 Oil pollution.** Sources of oil pollution in Pakistan include effluent discharges, mechanized fishing boats and the relating of bilges and tank washing by the large numbers of merchant vessels as well as oil tankers that pass through the EEZ of Pakistan. It has been reported that approximately 2500 oil tankers carry 33 million tons of crude are commonly found on beaches. The case of oil spill by MV Tasman Sprit 2003. and from RV Yashica on 4<sup>th</sup> June 1998, abandoned about 304 km south-west of Karachi. It was observed that the movements of offshore oil slick under the influence of wind, waves, current etc. is likely to end up on the coast of Pakistan<sup>85</sup>.

**3.2.6 Microbial pollution.** A large quantity of nutrients are supplied to the coastal areas by Indus river, Hub River and seasonal rivers such as Malir River, Lyari River, Windar River, Porall River, Hingrol River, Shadi khor and Dasht River. Nutrient from the urban wastes and land run-off also reach the coastal waters, however, the sewage from the urban wastes bring a sizable amount of nutrients from Karachi city<sup>86</sup>.

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<sup>85</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

<sup>86</sup> Ibid.

### **3.3 LEGISLATION IN PAKISTAN**

#### **3.3.1 INTRODUCTION**

Pakistan is a new developing countries and have a very great importance because of coastline about 990 km along with adjacent coastal zone of 240,000 square km in the northern Arabian Sea, and as Pakistan get independence in 1947, so adopted so many laws from the British and because of its social problems faced many difficulties regarding the legislation and as about the legislation in marine pollution, the international legislation started very late after the knowing of importance of marine pollution and facing so much problems during the war time and trade relations, oil pollution very much importance because of ships moving with the oil for the trade purposes and industrial revolution in the world waste and garbage pollution.

Pakistan firstly adopted the British laws, as Karachi Port Trust Act 1994, fisheries Act, The Port Act 1908. but these were not significant whenever Pakistan was having a great coastal area and was facing lot of problems of marine pollution but infect we can say that awareness in Pakistan regarding legislation in marine pollution started after accidental pollution from RV Yashica on 4<sup>th</sup> June 1998 and Tasman Sprit 2003. but due to international pressure and ratification of different convention Pakistan started legislation. We will concentrate only on the relevant section in these Acts<sup>87</sup>.

#### **3.3.2 Karachi Port Trust Act.**

Karachi Port Trust Board is responsible for maintaining clean marine environment in the port area of KPT and ensuring that there is no discharge of wastes or oily or noxious substances. Under the KPT Act, section 90 penalty of up to Rs. 10 million can be imposed on any polluter in the harbor area. Other legal instruments which are also applicable in Karachi include Port Act 1908, P.E.P.A. 1997, MAPROL 73/78, PMSO 2001 and CLC-92.

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<sup>87</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

All ships calling Karachi are inspected by MPCD of KPT in accordance with International Convention MAPROL 73/78. Through this inspection it is ensured that the ship does not cause any pollution in the Harbor<sup>88</sup>.

### **3.3.3 Fisheries Act, 1897**

Section 5 of the Act stipulates that if any person puts any poison, lime or obnoxious material into any water with intent thereby to catch or destroy any fish, he shall be punishable with imprisonment for a term which may extend to two months or with fine which may extend to two hundred rupees<sup>89</sup>.

### **4.3.4 The Port Act, 1908**

Section 54 of chapter vii of the Act stipulates that if any person disobeys any rule or order which a Government has made in pursuance of the Act and for the punishment of disobedience to which express provision has not been made elsewhere in the Act, he shall be punishable for every such offence with fine which may extend to fifty thousand rupees. The implementing authority would be Director General, Ministry of Ports & Shipping<sup>90</sup>. Section 21 of the Ports Act, 1908 bars discharge of ballast or rubbish into a port but generally to enable safety of shipping only.

### **3.3.5 Pakistan Territorial Waters and Maritime Zones Act, 1976**

Section 14 gives the power to the Federal Government to make Rules on:

Preservation and protection of marine environment and prevention and control of marine

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<sup>88</sup> Karachi Port Trust Act, quoted in, Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

<sup>89</sup> Fisheries Act, 1897, quoted in, Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

<sup>90</sup> The Port Act, 1908, quoted in, Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

pollution; section 14(2)(e). Regulation of the exploration, development, exploitation conservation and management of the resources in Pakistan's Exclusive Economic Zone and Continental Shelf, sections 14(2)(b) and 14(2)(c)

### **3.3.6 Maritime Security Agency Act 1994**

Section 3 of the Act constitutes the Maritime Security Agency for carrying out the purpose of this Act.

Section 10; lay out the powers and functions of the Agency. It stipulates that the Agency is responsible for the regulation and protection of the maritime interests of Pakistan and to assert and enforce national jurisdiction and sovereignty in maritime zones<sup>91</sup>.

The functions of the Agency pertaining to pollution of the marine environment include:

- a. Enforcement the international laws, agreements and conventions on and under the water in maritime zones.
- b. Assist other departments and agencies of the Governments to maintain and preserve the quality of marine life and to prevent and control the effects of marine disasters including marine pollution in and around the ports, harbors, coastal areas, estuaries, and other areas of marine zones.
- c. Assist other departments and agencies of the Governments in safe-guarding and protecting artificial islands, offshore terminals, installations and other structure and devices in marine zones.

According to section 12 of the Act, in exercise of powers and performance of their functions under this Act, the officers and members of the staff may make inquiries, examinations, inspections, investigation, searches, seizures and arrests for prevention, detention, and suppression of contravention of any law for the time being in force within

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<sup>91</sup> Maritime Security Agency Act 1994, quoted in, Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

a. Administer and implement the provisions of this Act and rules and regulation made there under;

b. Take all necessary measures for the implementation of the national quality environmental policies approved by the council;

The federal Environmental protection Agency is established under section 5 of the Act. It is responsible for the administration and implementation of the Act and the enforcement of the National Quality Standards section 16 of the Act lays out the actions the agency can take against those who violate the environmental regulations laid down in the Act and the National Quality Standards<sup>95</sup>.

Section 16 stipulates that (1) where the Federal Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the discharge of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring or has occurred in violation of the provisions of this act, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Federal Agency or, as the case may be, the Provincial Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Federal Agency or Provincial Agency may consider necessary within such period as may be specified in the order.

(2) in particular and without prejudice to the generality of the forgoing power, such measures may include,

a. immediate stoppage, preventing, lessening or controlling the discharge, emission, disposal, handling, act or omission, or to minimize or remedy the adverse environment effect.

b. installations, replacement or alteration of any equipment or thing to eliminate or control or abate on a permanent or temporary basis, such discharge, emission, disposal, handling, act or omission;

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<sup>95</sup> Ibid.

c. action to remove or otherwise dispose of the effluent, waste, air pollutant, noise, or hazardous substances and

d. action to restore the environment to the condition existing prior to such discharge, disposal, handling, act or omission, or as close condition as may be reasonable in the circumstances, to the satisfaction of the Federal Agency or Provincial Agency.

(3) where the person, to whom directions under sub-section (1) are given, does not comply therewith, the Federal Agency or provincial Agency may, in addition to the proceedings initiated against him under this Act or the rules and regulations, itself take or cause to be taken such measures specified in the order as it may deems necessary, and may recover the costs of taking such measures from such person as arrears of land revenue<sup>96</sup>.

### **3.3.8. A Violations by Government Agencies**

Section 19 of the Act lays down the consequences of violations of environmental regulations by Governments Agencies, local authorities or local councils:

Section 19 stipulates that, where any contravention of this Act has been committed with the consent or connivance of, or is attributable to any negligence on the part of the Head or any other officer of the Government Agency, local authority or local council, such Head or other officer shall also be deemed guilty of such contravention along with the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly<sup>97</sup>.

### **3.3.8.B ENVIRONMENTAL TRIBUANLS**

Section 20 directs the Federal Government to establish multiple Environmental Tribunals with specific territorial jurisdictions. Section 21 stipulates that violations of Environmental regulations are exclusively trial able by an Environmental Tribunal. It can only take cognizance of an offence on the complaint of the Federal Environmental Protection Agency

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<sup>96</sup> Ibid.

<sup>97</sup> Ibid.



or any Government Agency or Local council, or any aggrieved person who has given notice of not less than thirty days to the Federal or Provincial EPA detailing the alleged contravention and of his intention to make a complaint to the Environmental Tribunal. In exercise of its criminal jurisdiction, the Environmental Tribunal shall have the same powers as are vested in the Court of Session under the code of criminal procedure, 1898. in exercise of the appellate jurisdiction under section 22 the Environmental Tribunal shall have the same powers and shall follow the same procedure as an appellate court in the Code of Civil Procedure, 1908. in all matters with respect to which no procedure has been provided for in the Act, the Environmental Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908<sup>98</sup>.

### **3.4 National Environmental Quality Standards 2001**

As per NEQS 2001, all installations are required to emit liquid effluents into the public sewers only in conformance with NEQS standards. Consequently, industrial and other locations generating toxic-aggressive effluents have to provide special in-house treatment before dumping into the public sewer. This practice is virtually non-existent (except for some multi-nationals).

Additionally, NEQS 2001 prohibits discharge of any kind of effluent (even if it is in accordance with NEQS standards for the sea) into the sea within 10 miles of mangroves or important estuaries (like china Greek or korangi creek, etc). Consequently, the discharge of all kind effluent from treatment plant into the sea within 10 miles of Karachi is unlawful. The simple implementation of this rule would save all defense installations in Karachi harbor<sup>99</sup>.

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<sup>98</sup> Ibid.

<sup>99</sup> National Environmental Quality Standards 2001, quoted in, Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

### **3.5 Existing international laws in Pakistan.**

#### **3.5.1 MAPROL 73/78**

The international convention for the prevention of pollution from ships makes it mandatory for all ships to be in possession of three certificates to confirm their pollution prevention measures. The first one is oil pollution prevention certificate (IOPP) the second is the international pollution certificates for the carriage of noxious liquid substances in Bulk; and the third is the international sewage pollution prevention certificate (1973). In Pakistan, the MAPROL 73/78 Convention has gone into effect from 22 February 1995. The Government has also provided checklists to the Mercantile Marine Department and the Shipping Companies to ensure effective implementation of this convention<sup>100</sup>.

#### **35.2 Summary of MAPROL 73/78:**

- a.** Prevention of pollution by oil (Annex 1). Tankers above 150 tones and other ships above 400 gross tones are subject to survey and certification. Discharge of oil or oily mixtures from the machinery spaces of ships of greater than 400 gross tones is prohibited under certain conditions.
- b.** Ships carrying dangerous liquid (Annex II), its regulations apply to ships carrying dangerous liquid chemicals in bulk. The regulations contain requirements for ships design and for equipments fitted on board chemical tankers. The chemical carried on board these ships are classified in four categories of pollution hazard. Those ships carrying chemicals with the greatest hazard are subject to the most significant design controls and equipments requirements.
- c.** Harmful substances carried by Sea (Annex III). These regulations contain mandatory requirements for preventing pollution by harmful substances carried by Sea in packaged

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<sup>100</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

form. These provisions demand minimum standards for the packaging, labeling, documentation, quantities, stowage and reporting.

**d. Discharge of sewage from ships (Annex IV).** This Annex is not yet internationally approved, although a number of countries have agreed to implement these regulations. The regulations introduce controls on the discharge of sewage from ships at sea and ensure that sewage treatment plants fitted onboard ships and adequately treat the sewage before it is discharged to the sea.

**e. Prevention of Air pollution from ships (Annex V)** a new provision is introduced in MAPROL 73/78 has been proposed to address the problems of air pollution from ships.

### **3.6 United Nations Convention on Law of Sea**

Part XII of the convention deals with protection and preservation of the Marine Environment.

Article 194 of the convention enumerates measures to prevent, control, and reduce pollution in a marine environment.

Article 195 of the convention stipulates that in order to reduce or control pollution of the marine environment, states shall not act so as to transfer damage or hazard from one area to another or transform one type of pollution into other areas.

Article 207 to 212 of the convention stipulates that states shall promulgate and adopt laws and regulations to prevent, reduce and control pollution caused by land-based, atmospheric, seabed, dumping activities adopted under section 6.

Article 6 of part XII of the convention deals with enforcement.

Article 213 through 216 of the convention stipulated states shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards adopted in accordance with this convention for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation. Flag states shall provide for the effective enforcement of such rules, standards, laws and regulation, irrespective of where a violation occurs.

According to section 4 of Article 217 of the convention, if a vessel commits a violation of rules and standards established through the competent international organization or general diplomatic conference, the flag state, without prejudice to Article 218, 229 and 228, shall provide for immediate investigation and where appropriate institute proceedings in respect of the alleged violation irrespective of where the violation occurred or where the pollution caused by such violation has occurred or has been spotted.

Article 218 stipulates that when a vessel is voluntarily within a port or at an off-shore terminal of a state, that state may undertake investigations and where the evidence so warrants, institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that state in violation of applicable international rules and standards established through the competent international organization or general diplomatic conference<sup>101</sup>.

### **3.7 Convention on Civil Liability for Oil Pollution Damage (CLC).**

As of January 31, 2005, 104 states have ratified CLC-92. Ratification of CLC-92 provides an easy recourse, without lengthy litigation, to financial compensation to persons who may suffer losses due to oil pollution by an oil tanker. There are well laid down international standards for assessing the oil pollution damage and the compensation to be paid, the official sources said.

CLC deals with the liability of tanker owners. International Convention for establishment of an international Fund for Compensation for Oil Pollution Damage called Fund for which contributions are made by the oil importers. The tanker owners are strictly liable for the costs of reasonable clean up operations. The tanker owners may escape liability only if they can prove that one of a limited number of exceptional circumstances caused the damage. Exceptional circumstances means and includes; war or acts of God ; pollution wholly

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<sup>101</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

caused by act or omission of third party with the intention to cause damage and wholly or partially caused by the negligence or other wrongful act of the Government or other authority responsible for the maintenance of lights or navigational aids<sup>102</sup>

### **3.8 International Convention on oil Pollution Preparedness, Response and Cooperation 1990 (OPRC).**

The basic purpose of OPRC is to preserve the human environment in general and the marine environment in particular. It recognizes the serious threat posed to the marine environment by all oil pollution incidents involving ships, offshore units, seaports and oil handling facilities. It is mindful of the importance of precautionary measures and prevention in avoiding oil pollution in the first instance, and the need for strict application of existing international instruments dealing with maritime safety and marine pollution prevention, particularly the International Convention for the Safety of Life at Sea, 1974, as amended, and the International Convention for the prevention of Pollution from ships, 1974, as modified by the protocol of 1978 relating thereto, as amended, and also the speedy development of enhanced standards for the design, operation and maintenance of ships carrying oil, and of offshore units. It also recognizes the importance of mutual assistance and international cooperation<sup>103</sup>.

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<sup>102</sup> Ibid.

<sup>103</sup> Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

## **CHAPTER 4**

### **History of case regarding maritime pollution in Pakistan and international level**

#### **4.1 INTRODUCTION**

In recent years, a number of accidents involving oil tankers, storage tanks and pipelines have resulted in the introduction of relatively large quantities of oil into our environment. Incidents of this type, together with the growing use and transportation of petroleum products throughout the world, have created an almost global awareness of risks and damage associated with oil spill. Nevertheless, consumption of vast quantities of oil is one of the necessities of our modern industrial society. Prevention of oil spill is clearly the most logical method of reducing the problem of oil pollution. Through training programs, properly maintained equipments, adequate alarm system, and strict adherence to industry and government codes all makes essential contribution to the prevention of oil spill. Experience in the last century has shown that these unfortunate catastrophic events are likely to occur, based on the aging, single hull tanker theory. Witness the following litany of calamities: The *Torrey Canyon*, off the coast of Cornwall, 1967; the *Argo Merchant*, off the coast of Massachusetts, 1976;<sup>104</sup> the *Amoco Cadiz*, off the northern coast of France, 1978; the *Burmah Agate*, Texas, 1979; the *Puerto Rican*, San Francisco, 1984, the *Avenus*, Louisiana, 1984; the *Exxon Valdez*, 1989;<sup>105</sup> the *Erica*, 1999; and now the *Prestige*, Spain, 2002. An intensifying factor to the likelihood of another spill is the flag-of-convenience issue, the practice of ship owners assigning to their vessels the nationality of a state with the least safety regulations. Statistics show that vessels registered in “flag-of-convenience” states have some of the worst accident records.<sup>106</sup> The problem is described succinctly by Goldie:

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<sup>104</sup> <http://www.itopf.com> visited on 8<sup>th</sup> July, 2007

<sup>105</sup> Ibid.

<sup>106</sup> Ibid.

The sea also brings pollution shipping lanes in the Arabian sea considered to be amongst the busiest in the World all vessels visiting the oil rich Persian gulf pass through the area. It is estimated that approximately 11,000 ships, totaling 12,000 million dead-weight tonnage, cross the Arabian sea annually. There are about 2,500 oil tankers carrying 33 million tones of oil. The patterns of surface winds and currents expose the coast to the threat of oil pollution<sup>107</sup>.

#### **4.2 International cases**

At the present there are more than thirty conventions and other types of international agreements relating to maritime safety and the prevention of by ships. But even though there is lot of accidental cases of ships and worst case is Torrey Canyon, so prevention of pollution is more desirable because of these incidents, the following improvements have since been made to international regulations on maritime safety and pollution control, better design and construction of tankers, the entry into force of international lordliness regulations<sup>108</sup>.

Groundings and collisions are the main reasons causing ship accidents. During 11 years, 251 accidents occurred in the Baltic Sea and every fifth caused oil pollution. In 2000-2001, there were all together 119 ship accidents in the Baltic Sea of which 9 caused oil pollution in to the Sea. Oil tanker accidents occurred 19 times in Baltic Sea region in 2000-2001.

The total amount of oil spilled in 2000 and 2001 was 2756, 41 m<sup>3</sup>, of which 2500 m<sup>3</sup> was caused by one accident. Risk for oil accident is highly dependent on the type of the vessel. In 2000 and 2001 a single hull tanker accident resulted in oil pollution in one of four cases.

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<sup>107</sup> Ibid

<sup>108</sup> Sonia Zaide Pritchard, Oil Pollution Control, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 158.

The same ratio for double hull tankers was 1 to 6. A great share of the oil tankers operating in the Baltic Sea is still provided only with a single hull<sup>109</sup>.

#### **4.2.1 Torrey canyon disaster**

Due to the proliferation of tanker disaster resulting in massive coastal pollution in the 1960's and 1970's governments and private interests became more inclined to face problems which had been ignored before the problem of preventing accidental pollution by ships and of compensation and remedial measures for oil pollution damage. The Torrey canyon disaster made pollution a highly topical problem, with subsequent tanker accidents sustaining public interest in control measures that the history of pollution control turned into a series of attempts to deal with pollution disaster.

In the early morning of Saturday, 18 March 1967, Torrey Canyon, then the thirteenth largest merchant vessel was steering a dangerous course on automatic pilot off the southern coast of Britain, between the seven stones reef and the isles of scilly. In the oil transport trade, Torrey Canyon was considered a prime asset. But in years to come such types of tankers would appear as modern pirates to coastal residents or visitors who have shared memories in the wake of tanker pollution<sup>110</sup>.

The Torrey Canyon incident would involve many states, while originally built in the United States in 1959, the tanker was jumbos in Japan in 1964, and it was registered in Monrovia and flew the Liberian flag, although it had never been to Liberia. It was owned by the

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<sup>109</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 162

<sup>110</sup> Ibid.



Barracuda Tanker Company which maintained filling cabinet officers in Hamilton<sup>111</sup>. Bermuda, and in Monrovia, Liberia, but was essentially a transport arm of the Union Oil company of California. The officers and crew were Italian. On this fateful voyage, the tanker had been chartered from Union Oil by British Petroleum, laden with over 100.000 tons of Kuwait crude oil and bound for their refinery. Torrey Canyon was considered the highest seaworthiness rating Lloyd's register of shipping<sup>112</sup>.

It was only in the ensuing disaster that a more searching scrutiny would show that, despite the best crew and the best designed and equipped ship, accidents do happen. Captain Pastrengo Rugitati had received instructions from the demi-charterers to catch the high tide at Milford Haven to allow his over 50 feet draught tanker to clear the harbour. During the last critical moments, captain Rugiati desperately tried to control the steering but he could not turn the tanker easily, and Torrey Canyon, at full speed and in broad daylight, rammed Pollard Rock, part of the seven stones. The grounding took place approximately eleven miles off Britain's toe which was then outside British territorial waters. Immediately, a large breach in the hull of the tanker resulted in massive leakage of oil to the sea. The action of wind, tide and currents eventually brought the oil, and its ugly consequences, to Britain and, nearly a hundred miles away, to France.

The British and French governments faced their first major oil pollution crisis with little or no preparation at all. In this instance, remedial action was determined largely by events rather than by policy. Emergency measures were put in hand to cope with the oil and the wounded tanker. Royal Navy tugs began to spray detergent in an effort to dispense the oil at sea. A private salvage tug of the Dutch Bureau Wijsmuller garnered the contract of trying to salvage the tanker on the basis of Lloyd's 'no cure no pay' salvage contract. Although immediately at risk, Britain had no powers to deal with the ship until or unless the owners and their appointed salvors had decided to abandon the vessel<sup>113</sup>.

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<sup>111</sup>Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg.165,166

<sup>112</sup> Ibid.

<sup>113</sup> Ibid.

Meanwhile, in Whitehall, emergency cabinet meetings discussed the requirements of the situation as they arose. Various ministers were assigned emergency duties, and local authorities in the endangered areas were assured of government assistance and partial subsidy in their efforts to prevent and to mitigate the pollution. The British governments had three options to hope for the salvages of the tanker; to save the cargo; or to burn the oil in the tanker where it lay. It has since been recognized that the best course at once might have been the second alternate to recover the oil before it caused more damage, since the first course, though grounded in tradition and law of the sea, was not necessarily the best means of reducing the pollution from a large tanker casualty, and the third bombing a tanker was regarded as ‘ the very last method of despair; in view of the novelty and difficulties of the situation, however, the British government was forced to take calculated risks. Interestingly enough, they had refused an earlier offer from the salvage company to enter as sub-coordinator in the salvage effort<sup>114</sup>.

The difficulties of salvage the tanker were compounded by the death of the salvor leader on March 21, the breaking apart of the tanker on 27 March, and the separate decisions of the British and Dutch governments to deny the salvage company access to one of their ports in case salvage had been successful. On 25 March, the first slicks of oil arrived at Comish beaches, and the Labour government of Prime Minister Harold Wilson met the biggest home-front emergency since it took office.

When salvage efforts were finally abandoned, the British government decided that the time had come to burn the remaining oil in the tanker in order to control pollution. On 28 to 30 March, Royal Navy planes repeatedly bombed the tanker with incendiaries and explosive, and the Torrey Canyon became a flaming mass which sunk into the sea, at the time the most expensive maritime casualty. The loss of the ship itself cost insurers \$16.5 million and nearly another \$1 million for the loss of the oil cargo. British and French clean-up costs amounted to between \$14-16 million total<sup>115</sup>.

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<sup>114</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg,

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<sup>115</sup> Ibid.

Rarely has a maritime incident had such widespread and immediate effects. These followed a great deal of speculation, inquiries, courts action and litigation to determine the cause of tragedy and to apportion the blame. The British government took their fair share of criticism for the hesitancy of the action which was finally taken to set fire to the oil reaming in tanker. The Liberian government, smarting from innuendoes that Torrey Canyon was of inferior quality, being a flag of convenience ship, conducted their own inquiry at Genoa, Italy, where the crew had been hired and a summary of the Liberian investigation in May 1967 placed the entire blame for the disaster on the shipmaster rather than to deficiencies of the vessel or its owner<sup>116</sup>.

#### **4.2.2 Exxon Valdez Oil Spill**

##### **4.2.2.A INTRODUCTION**

on March 24, 1989 just past midnight, the tanker Exxon Valdez deviated from the shipping lane in Prince William Sound (PWS), Alaska to avoid icebergs and grounded on Bligh Reef resulting in the release of 37,000 tons (10.9 million gallons) of Alaska North Slope (ANS) crude oil. This was about 20% of the 180,000 tons of crude oil the vessel was carrying when it struck the reef. The salvage effort that took place immediately after the grounding saved the vessel from sinking, thus prevents a far larger oil spill from happening. Figure 1 shows the remaining cargo being off-loaded from the stricken vessel during the salvage operation. While the largest oil spill from a vessel in US history, Figure 2 shows that the Exxon Valdez oil spill is an "average" large oil spill in world terms. Other spills have been much larger, often involving the complete loss of a vessel and cargo. Examples include the Ixtoc-1 blowout off the coast of Mexico in 1978 (about 400 million gallons), the tanker Amoco Cadiz off Brittany, France in 1978 (69 million gallons), the tanker Torrey Canyon off the English coast in 1967 (38 million gallons) and the tanker Metula in the Straits of

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<sup>116</sup> Sonia Zaide Pritchard, *Oil Pollution Control*, Biddles Ltd. Guildford and Kings Lynn, 1987, pg, 167.

Magellan in 1973 (16 million gallons)<sup>117</sup>. As a result of these oil spills and others, there has been a considerable effort by government, academic and industry scientists to understand the fate and effects of petroleum in the marine environment. A key review of this work is the 1985 National Research Council (NRC) report "Oil in the Sea: Inputs, Fate and Effects". The NRC review found no evidence that the oceans' ecosystems are seriously threatened by oil spills. Petroleum inputs from accidental oil spills were found to be less important contributors to the annual input of petroleum to the marine environment than chronic discharges from urban runoff, industrial waste, and transportation activities. It is also important to keep in mind that petroleum is a natural product and is released into the marine environment in significant amounts naturally at many oil seeps around the world. The literature indicates that, while initial impacts of oil spills can be severe, there are very effective natural mechanisms that produce rapid recovery in most spills<sup>118</sup>.

#### **4.2.B The Cleanup**

A massive cleanup effort was undertaken right after the spill. Directed by the Federal On-Scene Coordinator, in consultation with state agencies, Exxon engaged in cleanup operations in PWS and the Gulf of Alaska, during the summers of 1989, 1990 and 1991 and the spring of 1992. In 1992, State and Federal agencies responsible for the cleanup decided that further activities would do more harm than good and the cleanup activities were terminated, leaving natural processes to finish the job. At the height of the cleanup effort in 1989, over 11,000 people were involved. A key element of the cleanup program was the shoreline survey program carried out by Shoreline Cleanup Assessment Teams (SCAT). These shoreline surveys were conducted by teams of experienced professionals that included a marine ecologist, an oil spill geomorphologist, an archaeologist and other representatives of government agencies, landowners, and Exxon. These surveys, begun in April of 1989 provided data on shoreline physical characteristics and oiling conditions on

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<sup>117</sup> <http://itopf.com> visited on 8<sup>th</sup> August, 2007

<sup>118</sup> *Ibid.*

and were used to set priorities and methods for shoreline cleanup and to protect sensitive natural and cultural resources. The SCAT program provided data that not only supported the cleanup efforts, but also produced a database of shoreline oiling information that supported scientific efforts<sup>119</sup>.

Initially, the goal of the cleanup was to remove as much oil from affected shorelines as possible, with some locations being treated several times in 1989. Cleanup methods used in 1989 included the manual removal of oil with sorbent pads, low- and moderate-pressure cold and warm water washing coupled with near shore oil skimmers, mechanical removal of oiled sediments and tilling of shoreline material and bioremediation. Most of the cleanup effort was directed to the upper and middle intertidal shoreline zones that received most of the oil. Lower inertial areas, which are biologically much more productive, were generally not oiled. The physical removal of oil in 1989 and the natural cleaning of oiled shores during storms in the winter of 1989/90 brought about a dramatic reduction in oil remaining in PWS in the spring of 1990 and allowed less intrusive cleanup techniques to be used in subsequent years. These included tilling, physical removal of tar mats and the spreading of oil-soluble fertilizer to promote microbial degradation of petroleum residues (bioremediation). These measures coupled with natural oil degradation processes were very successful in reducing the amount of remaining residues of the spill and in June of 1992, representatives of the federal and state governments determined that no additional cleanup of shoreline was warranted, and the cleanup program ended. Figure 12 illustrates the dramatic recovery of the oiled shorelines for a boulder beach that was heavily oiled in 1989<sup>120</sup>.

### **4.3 Cases relating to Maritime pollution in Pakistan**

#### **4.3.1 Oil spill from MT Tasman Sprit**

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<sup>119</sup> <http://itopf.com> visited on 8<sup>th</sup> August, 2007

<sup>120</sup> [www.wcl.american.edu/enviroment/iel](http://www.wcl.american.edu/enviroment/iel) visited on 15th August, 2007

On 27<sup>th</sup> of July, 2003 an oil tanker, MT Tasman Sprit, grounded while cruising in the curve port entry channel. A combination of factors including strong tidal wind, rough weather, and weak ship's engine may be the prime reasons for the unfortunate incident. MT Tasman Sprit is a Greek registered ship and was chartered by Pakistan National Shipping Corporation (PNSC) to carry around 67,000 metric tons of crude oil, the consignment of the Ministry of Petroleum for Pakistan Refinery Limited, from an Iranian port to Karachi port. The ship is around 24 years old and it was informed by the KPT authorities that ships holding a valid certification from a recognized certification agency are allowed to enter the port. It was further informed that it comes under the obligations of the Agents to provide this certification to the port authorities<sup>121</sup>.

Immediately after the ship ran aground, the KPT tried all possible measures to pull it using six tugs. However, none were fruitful and the ship remained grounded at the periphery of the channel, just outside the port entrance, at a distance of around 1.5 nautical miles from the shore. During all these activities some oil started oozing out of the ship. However, efforts were made to plug in the leaking sources but it could not be controlled totally. The advisor to the Chief Minister and alternate Energy immediately called a meeting of the EPA officials to assess the situation and to interact with all the relevant agencies to minimize the possible environmental impacts. A detail visit of the affected area was also conducted and the media was briefed about the issue<sup>122</sup>.

The agent and owner of the ship were contacted and help was solicited, nationally and internationally, for securing the cargo. All oil spill combating equipments available with the port Qasim and Maritime Security Agency (MSA) was pooled and handed over to the KPT to utilize as and when required. An organization, International Tanker Owners Pollution Federation (ITOPF) responded swiftly and through their agents, the P&I club action was initiated to empty the cargo of the ship. Two ships viz. MT Endeavour –II and

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<sup>121</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about the Incident of Tasman Sprit 2003 Brief Reports of the Agency.

<sup>122</sup> Ibid.

Fair Jolly, were brought in for this purpose. The larger oil tanker, MT Endeavour –II was berthed at the oil pier whereas the smaller vessel, Fair Jolly, having the capacity of around 7000 tons was taken closed to the MT Tasman Spirit to pump out its cargo, the crude oil. Although sluggish, but under the circumstances was the only process of getting the oil out of the grounded ship. EPA Sindh advised to the KPT authorities to adopt all possible measures to protect the leakages and oil spill, as the ship was too close to the shore and any spillage would certainly cause coastal pollution. Operation of oil transfer was carried out vigilantly in coordination with salvaging expert team dispatched by the ITOPF. Experts of a UK based organization called Oil Spill Response limited (OSRL) were also flown in along with a huge consignment carrying necessary spill control equipment and dispersant arrived pm 13<sup>th</sup> August from UK via a chartered plane. Unfortunately, the Fair Jolly could make only three trips, securing 19,000 tons of crude oil from MT Tasman Spirit, when a crack appeared in the middle portion of the ship. It was an indication of the commencement of breaking of the ship into two parts. Due to heavy leakage of oil from crack, excessive fumes which could catch fire and fear of breaking of the ship, it was immediately abundant and all salvaging operations were suspended, the phenomenon of high and low tide which happens four times in a day could be the cause for the buckling of the ship structure leading to its split into two pieces at around mid night of August 13, 2003<sup>123</sup>.

The relief sought before Karachi High Court can be granted by the Supreme Court in Public Interest Litigation.

K. Lessons from the Tasman Spirit Disaster and the Way Forward:

Turning a Tragedy into an Opportunity

1. A prudent and wise nation will not wilt after a tragedy but will use the feedback to strengthen itself in all affected areas
2. The following goals challenge the country and this Court:
  - (1) immediate short-term response:

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<sup>123</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about the incident the incident of Tasman Spirit 2003 brief reports by the Agency.

- (a) to mitigate *and reverse* the ecological damage
  - (b) to provide financial compensation to the worst victims
  - (2) a broader long-term response:
    - (a) to prepare a national contingency plan to effectively deal with oil pollution through inter-agency co-ordination
    - (b) to integrate domestic marine environmental law with global instruments and ensure that the domestic laws are kept updated
    - (c) to seek international collaboration for adequate marine administration consisting of trained manpower competent to fulfill international conventions and domestic laws
3. Vessel oil pollution only approximately ten percent of marine pollution world-wide this Court is presented with a historic opportunity to bring about a whole-scale structural and systematic improvement to Pakistan's marine law and administration<sup>124</sup>.

#### 4.3.2 R. V. YASHICA 1998

A spill occurred in June 1998 from the R. V. YASHICA, The leaking vessel, carrying 1,500 tones of furnace oil, was abandoned approximately 112 kilometers south of Pasni. Fortunately, the oil dispersed naturally, but under the influence of wind, waves and currents, a large slick of crude oil could end up on the coast of Balochistan. Oil pollution already appears to be of some concern along the Pasni coast., Sources of oil pollution include fishing boats and the large number of merchant vessels and oil tankers that clean bilge and tanks as they pass through the EEZ of Pakistan,. As a consequence, tar balls (residues of weathered oil) are found on beaches. There is little in the way of sewage disposal in human settlements and industrial areas<sup>125</sup>.

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<sup>124</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about the incident the incident of Tasman Sprit 2003 brief reports by the Agency.

<sup>125</sup> Ibid.



### **4.3.3 Dumping nuclear wastes in Pakistan Sea**

In Pakistan there has been clandestine dumping of nuclear wastes in the coastal waters of Balochistan. Balochistan is Pakistan's largest province, located in the southwest corner of the country sharing a border with Iran. The highest court in Pakistan has been informed that a European ship "Eastern Line" had dumped about 150 drums of highly toxic nuclear waste in the open sea near the town of Gadani, about 30 miles northwest of Karachi. In this case justice Saleem Akbar decided that it is violation of Article 9, of the constitution, and ordered the office to inquire from chief secretary of Balochistan, whether coastal and land of Balochistan or any area within the territorial waters of Pakistan had been or was being allotted to any person and if any allotment had been made or applicants had applied for allotment, their full particulars be supplied, plots having been allotted by Balochistan Development Authority, supreme court ordered that no one will apply for allotment of plot for dumping nuclear or industrial waste, supreme court further gave the guidelines for allotment of plots in the area<sup>126</sup>.

### **4.4 Liability and compensation**

International law raised, as one of its most important techniques for inducing good behavior, on the concept of state responsibility, based on the principle that violation of an international obligation gives rise to a right on the part of the victim to compensation and reparation for damage. However, there are serious difficulties with the effective application of state responsibility in the field of environmental law. There is a lack of refinement and specification of the concept in customary law; the customary doctrine of state responsibility requires a breach of a clearly established specific obligation before responsibility is enjoined, and has failed to clarify whether the breach of the obligation per se is sufficient to give rise to liability to compensate without need for proof of negligence. Few treaties, and those often have limited scope and membership, have provided the necessary specification of, for example, the nature of the violation giving rise to liability or the nature of the liability, strict or absolute. Some of those that do, moreover, such as the 1969 IMO

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<sup>126</sup> PLD 1994 supreme court 102.

convention on Civil Liability for Oil Pollution Damage (CLC), in return for accepting strict liability<sup>127</sup>, channel liability to particular private operators (in this case the ship owner), limit the definition of damage, and set a limit to the maximum amount of compensation payable. Although the principle of state responsibility is necessary, since compensation or reparation should be made if obligations are not observed, for purposes of controlling behavior it is a much weaker technique than positive regulation by means of treaty or established custom. Indeed, it is often forgotten that Canada and the USA were well aware of this point, and asked the tribunal in the Trial Smelter case to lay down regulation for the future control of the emission from the Smelter, as well as to determine liability for the damage that they were already agreed had occurred, none of the conventions relating to environment protection, whether concerning pollution or species conservation, does more than state that principles of liability should be developed. This includes the UNCLOS; although it does specify that states are responsible for fulfillment of their international obligations concerning preservation and protection of the marine environment and those they should be liable in accordance with international law<sup>128</sup>;

The question now is how far further to expand the application of the principles, especially concerning the means and extent of reparation for injury to the environment: does willingness to apply the view of the permanent court of international justice. United States appeal Court, faced with the decision of courts in Puerto Rico that a ship owner should pay the full cost of replacing a mangrove swamp damaged by a massive oil spill and compensation for damage to all the organisms, down to the smallest diatoms that formerly existed there, decided on appeal that only reasonable actions need be taken and that costs of the damage should be estimated on a reasonable basis, although the local court had found that the ship owner should pay all costs since Puerto Rico was in a *parens patriae* relation to its environment<sup>129</sup>.

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<sup>127</sup> International convention on Civil Liability for Oil Pollution Damage 1969 concluded at Brussels 1969

<sup>128</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) about the international civil liability convention 1992.

<sup>129</sup> *Ibid.*

#### 4.5 Dispute settlement

Most conventions either do not provide at all for dispute settlement, or refer to the choices set out in Article 33 of the UN Charter, or provide an article or Protocol giving the option of resorting to arbitration, if the parties so agree, in any particular dispute. The ICJ, the UN's organ of judicial settlement, has no compulsory jurisdiction. In any case, no *environmental treaty*, other than the UNCLOS and the Antarctic Environmental Protocol, requires that its parties resort to binding settlement. Given the cultural, economic, social, scientific and development issues that are involved in environmental issues, this is not surprising. Such disputes are more appropriate to political settlement by the protagonists, either in the forum provided by the meeting of the organizations, or by postponing the conflict or transferring it to other forums, or by resorting to the soft settlement technique of resolutions and codes, or directly, through bilateral or other negotiations. No pollution or wildlife cases have been decided by the ICJ other than indirectly in the *Anglo-Icelandic fisheries case*; in the light of the ICJ Chambers dismissive treatment of environmental factors in the *Gulf of Maine case*, this may be a matter of some relief to that court. It is however, now considering the case brought by Nauru against Australia concerning mineral exploitation, and cases concerning a right to an environment of quality may be brought before the European Court of Human Rights in Strasbourg, if that right is ever added to the European Convention on Human Rights. At present that convention does not secure such a right; nor does the UN covenant on Civil and Political Rights; thus alleged breaches of such a right cannot be subject to either set of complaints procedures' Rights both include such a right, though this has not been activated through dispute settlement procedures<sup>130</sup>.

It should be noted that developing states have been suspicious of the ICJ, alleging Western bias in its composition; they also lack experts and funds to take cases to court. However, much has been done to meet these objections. The membership of the court has broadened and a legal aid scheme for developing states has been introduced<sup>131</sup>.

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<sup>130</sup> Material and Notes Provided by the DG, SEPA (Sindh Environmental Pollution Agency) ) about the international civil liability convention 1992.

<sup>131</sup> *Ibid.*

#### 4.6 JURISDICTION

Admiralty jurisdiction is an essential aspect of judicial sovereignty which under the Constitution and the laws is exercised by the High Court as a Supreme Court of record administering justice in relation to persons and things within its jurisdiction<sup>132</sup>.

Not every High Court is vested with admiralty jurisdiction. In Pakistan for instance this jurisdiction is extended to the High Courts under the provisions of "Admiralty Jurisdiction of High Courts Ordinance, 1980 (Ordinance XLII of 1980) ('the Ordinance'

Admiralty jurisdiction is exercised by the High courts, but in case where there is bilateral agreement between states that they will refer the case to Arbitrator, than jurisdiction will be with the ICJ, but mostly it remain with the High courts as in case of Pakistan the jurisdiction will be with the either High court of Sindh or Balochistan High Courts as respective territorial jurisdiction<sup>133</sup>.

#### 4.7 Admiralty Jurisdiction of High Courts Ordinance, 1980.

(1) The Sindh High Court and the High Court of Balochistan shall have the exercise, within their respective territorial jurisdiction, Admiralty jurisdiction as is in this Ordinance provided and the Lahore High Court and the Peshawar High Court shall, within their respective territorial jurisdiction, have and exercise the said jurisdiction in cases in which any question or claim relating to aircraft is to be determined<sup>134</sup>.

(2) The Admiralty jurisdiction of the High Court shall be as follows, that is to say, jurisdiction to hear and determine any of the following causes, questions or claims-

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<sup>132</sup> Muhammad Shamim Article In Rem Action In The Admiralty Jurisdiction In Pakistan, [www.pakistanlawsite.com](http://www.pakistanlawsite.com) visited on 15<sup>th</sup> August, 2007.

<sup>133</sup> Ibid.

<sup>134</sup> Admiralty Jurisdiction of High Courts Ordinance, 1980 Pakistan [www.pakistanlawsite.com](http://www.pakistanlawsite.com) visited on 15<sup>th</sup> August, 2007

- (a) Any claim to the possession or ownership of a ship or to the ownership of any share therein or for recovery of documents of title and ownership of a ship, including registration certificate, log book and such certificates as may be necessary for the operation or navigation of the ship;
- (b) Any question arising between the co-owners of a ship as to possession, employment or earnings of that ship;
- (c) Any claim in respect of a mortgage of or charge on a ship or any share therein;
- (d) Any claim for damage done by a ship;
- (e) Any claim for damage received by a ship;
- (f) Any claim for loss of life or personal injury sustained in consequence of any defect in a ship or in her apparel or equipment, or of the wrongful act, neglect or default of the owners, charterers or persons in possession or control of a ship or of the master or crew thereof or of any other person for which wrongful acts, neglects or defaults, the owners, charterers or persons in possession or control of a ship are responsible, being an act, neglect or default in the navigation or management of the ship, in the loading, carriage or discharge of goods on, in or from the ship or in the embarkation, carriage or disembarkation of persons on, in or from the ship;
- (g) Any claim for loss of or damage to goods carried in a ship;
- (h) Any claim arising out of any agreement relating to the carriage of goods in a ship or to the use or hire of a ship<sup>135</sup>;

"In the case of any such claims mentioned in clauses (e) to (h) and (i) to (q) of subsection (1) of section 3, being a claim arising in connection with a ship, where the person who would be liable on the claim in an action in personam was, when the cause of action arose, the owner or charterer of, or in possession or in control of, the ship, the Admiralty Jurisdiction of the High Court may, whether the claim gives rise to a maritime lien on the ship or not, be invoked by an action in rem against

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<sup>135</sup> Admiralty Jurisdiction of High Courts Ordinance, 1980 Pakistan [www.pakistanlawsite.com](http://www.pakistanlawsite.com) visited on 15<sup>th</sup> August, 2007

- (a) that ship, if at time when the action is brought it is beneficially owned as respects majority share therein by the person;
- (b) any other ship which, at the time when the action is brought is beneficially owned as aforesaid."

In the case of V.N.Lakhani Company v. m.v. Lakatoi Express and 2 others (PLD 1994 SC 894). The Supreme Court has observed<sup>136</sup>:

"In applying section 4(4) of the Admiralty Jurisdiction of High Courts Ordinance, 1980 one has to take into consideration the existing facts at the time when cause of action arose in connection with the offending ship. In order to invoke the jurisdiction, the plaintiff has to establish that:

- (1) The claim falls in any of the clauses as mentioned in clauses (e) to (h) and (j) to (q) of subsection (2) of section 3 and arises in connection with a ship<sup>137</sup>.
- (2) When the cause of action for action in personam arose.
- (3) The person liable in an action in personam at the time when cause of action arose was owner or charterer of or in possession or in control of the offending ship.
- (4) The offending ship or any other ship which is sought to be arrested at the time action is brought is beneficially owned as respect majority shares by the person liable on the claim in an action in personam.

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<sup>136</sup> Muhammad Shamim Article In Rem Action In The Admiralty Jurisdiction In Pakistan, [www.pakistanlawsite.com](http://www.pakistanlawsite.com) visited on 15<sup>th</sup> August, 2007.

<sup>137</sup> Ibid.

## **Chapter 5**

### **CONCLUSION**

#### **5.1 Protection of Marine and Human life from the Maritime Pollution**

Firstly before discussion on how to protect the marine and human life from maritime pollution we should know how much dangerous effects of maritime pollution are. It will show how much significant to protect the sea from pollution is.

##### **5.1.1 Effects of maritime pollution**

Pollution exists in many forms and affects many different aspects of Earth's environment. *Point-source* pollution comes from specific, localized, and identifiable sources, such as sewage pipelines or industrial smokestacks. *Non point-source* pollution comes from dispersed or uncontained sources, such as contaminated water runoff from urban areas or automobile emissions, ships emissions..

The effects of these pollutants may be immediate or delayed. Primary effects of pollution occur immediately after pollution occurs, such as the death of marine plants and wildlife after an oil spill at sea. Secondary affects may be delayed or may continue in the environment into the future, perhaps going unnoticed for many years. DDT, a non degradable compound, seldom poisons birds immediately, but gradually accumulates in their bodies. Birds with high concentrations of this pesticide lay thin-shelled eggs that fail to emerge or produce misshapen offspring. These secondary affects, publicized by Rachel Carson in her 1962 book, *Silent Spring*, threatened the survival of species such as the bald eagle and peregrine falcon, and aroused public concern over the hidden affects of non degradable chemical compounds<sup>138</sup>

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<sup>138</sup>Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

The seas and oceans receive the brunt of human waste, whether it is by deliberate dumping or by natural run-off from the land. In fact over 80% of all marine pollution comes from land-based activities and many pollutants are deposited in estuaries and coastal waters. Here the pollutants enter marine food chains, building up their concentrations until they reach toxic levels. A factory was discharging waste containing methyl mercury in low concentrations into the sea and as this pollutant passed through food chains it became more concentrated in the tissues of marine organisms until it reached toxic levels. As a consequence 649 people died from eating fish and shellfish contaminated with mercury and 3500 people suffered from mercury poisoning<sup>139</sup>.

### **5.1.2 Oil pollution as most dangerous**

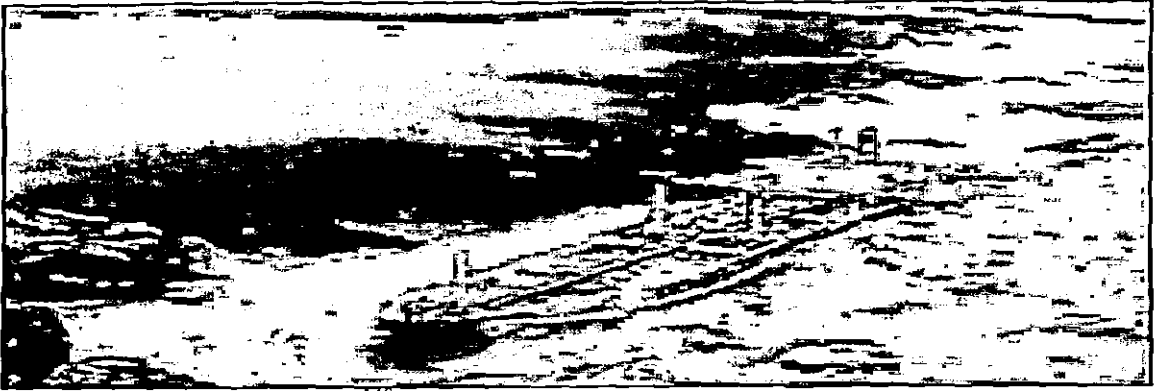
Black tanker-like oil is sometimes washed onto beaches not only causing a nuisance to holidaymakers but also killing many sea-birds. The oil mainly comes from tankers which wash out their holds while out at sea to save time in port. Enforcement of laws concerning the dumping of oil is difficult and responsibility rests with the captain of each tanker to obey the law.

In 1992, more than 4 million tonnes of oil were released into the world's oceans. Recent research by The US National Science Foundation has found that only 2 per cent of hydrocarbon pollution finding its way into the sea each year comes from tanker accidents. 11 per cent comes from natural sources - tar sands and oil seeps, 13 per cent comes from the atmosphere, 24 per cent from all forms of transport, and an astounding 50 per cent comes down drains and rivers to the sea from cities and industries. Anyone who has tipped old engine oil down the drain, or 'buried' it in the soil instead of taking it to a recycling point is responsible for some oil pollution at sea.

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<sup>139</sup> Ibid.





The grief: Dramatic, worst marine threat<sup>140</sup>

In 1992, there were 611 incidents of oil pollution in UK coastal waters alone. Many of the major oil spillages during the last 20 years have been caused, or made worse by human error. Human error can mean carelessness, but it also includes continuing to use old, unsafe ships and employing crews with inadequate training<sup>141</sup>.

In the last thirty years, there have been a number of serious oil spillages caused by oil tanker accidents. The first was in 1967, when the Torrey Canyon ran aground on the Seven Stones Rocks, off Land's End, leaking 106,000 tonnes of oil onto rocks and beaches on both side of the English Channel. British guillemots and razorbills were badly affected, and the population of puffins on the Sept Isles in France was virtually wiped out.

In 1978, The Amoco Cadiz was wrecked following engine failure on the coast of Brittany, releasing 223,000 tonnes of oil into the sea. Thousands of migrating seabirds were killed when they landed on the oily waters, and many French oyster fisheries and beaches were completely ruined<sup>142</sup>.

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<sup>140</sup> Ibid.

<sup>141</sup> Annual Report of the OSPAR Commission, 2002 – 2003, [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

<sup>142</sup> Ibid.

### 5.2.1.A EFECTS ON HUMAN HEALTH

People's health could be adversely affected by oils either when inhaling or touching oil products, or when eating contaminated sea food

When cleaning up oil products from the water surface or the shoreline one must always take certain precautions, one need to wear a face mask or filter mask be protected from inhaling vapours from oils. One also needs to use protective clothing to avoid getting in skin contact with the oil and protective clothing means oil and waterproof gloves and oil and waterproof clothes that cover at least the front of ones body<sup>143</sup>, as well as strong rubber boots. The same safety precautions, in principle, apply who risk coming into contact with oil on beaches one should always avoid touching it, and in an acute phase one should be careful not to inhale vapours from oil slicks

As mentioned above, concentrations of petroleum contaminants in fish and crab tissue, as well as contamination of shellfish, could pose a significant potential for adverse human health effects, and until these products from near shore fisheries or aquaculture have been cleared by the health authorities, they could be banned from human consumption. However, oil trained fish and shellfish will usually taste bad, and that in it will keep people from eating these products.

In the 1950s, residents of Minamata, Japan, began experiencing unusual symptoms, including numbness, vision problems, and convulsions. Several hundred people died. The cause was discovered to be mercury ingestion: A local industry had dumped the toxic chemical into Minamata Bay, poisoning fish and thousands of people. In 1997, after a massive cleanup, Japan announced that the bay had been cleared of the contaminant.

Another main reason for concern about marine pollution is related to the direct effects of pollution on human health. Because many pollutants accumulate in marine organisms, humans are exposed to pollutants when they consume food from polluted areas. Several

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<sup>143</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

studies have documented that human populations that consume large amounts of marine food have high burdens of persistent organic pollutants (POPs), such as dioxins, furans, polychlorinated biphenyls (PCBs), and some heavy metals. There has been a particular focus on indigenous people who consume large amounts of marine food, including blubber products of marine mammals<sup>144</sup>

Because humans are at the top of the food chain, they are particularly vulnerable to the effects of non degradable pollutants. This was clearly illustrated in the 1950s and 1960s when residents living near Minamata Bay, Japan, developed nervous disorders, tremors, and paralysis in a mysterious epidemic. More than 400 people died before authorities discovered that a local industry had released mercury into Minamata Bay. This highly toxic element accumulated in the bodies of local fish and eventually in the bodies of people who consumed the fish. More recently research has revealed that many chemical pollutants, such as DDT and PCBs, mimic sex hormones and interfere with the human body's reproductive and developmental functions. These substances are known as endocrine disrupters<sup>145</sup>.

#### **5.1.2.B EFFECTS OF OIL POLLUTION ON MARINE LIFE**

There is no clear relationship between the amount of oil in the marine environment and the likely impact on wildlife. A smaller spill at the wrong time/wrong season and in a sensitive environment may prove much more harmful than a larger spill at another time of the year in another or even the same environment. Even small spills can have very large effects. Thus, one should not merely compare figures the size of an oil spill is certainly not the only factor of importance in terms of what environmental damage can be caused by the oil.

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<sup>144</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry'  
[www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

<sup>145</sup> *Ibid.*

In 1976, a spill estimated to have been less than 10 tonnes killed more than 60,000 long-tailed ducks wintering in the Baltic Sea and attracted to the seemingly calm water surface created by the oil slick. This could be compared to the effects on seabirds in Alaskan waters from the approximately 40,000 tonnes large Exxon Valdez oil spill in 1989, when an estimated 30,000 birds were oiled<sup>146</sup>.

Another example from the waters off South Africa "There is rather little correlation between the tonnages of oil released in spills and the impacts on the marine ecosystems. For example, a collision between two oil tankers in 1977 released 31,000 tonnes of oil and polluted 47 African Penguins, but in the *Apollo Sea* sinking of 1994, about 2,000 tonnes of oil impacted about 10,000 penguins. After the *Apollo Sea*, we generally believed that this was the maximum amount of penguin mischief that 2,000 tonnes of oil could achieve. However, when the *Treasure* sank on 23 June 2000, half this amount of oil threatened four times as many penguins! In round figures, 20,000 penguins were oiled, and 20,000 penguins were prevented from becoming oiled by removing them off their breeding colonies on Dassen and Robben Islands."

As summarized by the Australian Maritime Safety Authority (AMSA), important factors related to the impact of an oil spill on wildlife are the spread of the oil slick, the type of oil spilled, its movement and weathering characteristics the location of the spill, the area of estuary, sea and foreshore impacted by oil, the sensitivity of the regional environment, eg proximity to bird breeding colony, the number of different habitats impacted, such as rock shore, beach, mangrove, wetland,

The timing of the incident (during seasonal breeding, bird migration), the nature, toxicity and persistence of the oil; and the variety of species at the spill location<sup>147</sup>. In the words of the U.S. Environmental Protection Agency (EPA): "Most biological communities are susceptible to the effects of oil spills. Plant communities on land, marsh grasses in estuaries, and kelp beds in the ocean; microscopic plants and animals; and larger animals, such as fish, amphibians and reptiles, birds and

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<sup>146</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

<sup>147</sup> Ibid.

mammals, are subject to contact, smothering, toxicity, and the chronic long-term effects that may result from the physical and chemical properties of the spilled oil."<sup>148</sup>



*After Exxon Valdez spill, oiled duck and oiled sea otter*

#### **5.1.2.B.1 SEABIRDS AND MARINE MAMMALS**

Oil harms seabirds and marine mammals in two major ways:

Physical contact -when fur or feathers come into contact with oil;

Toxic contamination - some species are susceptible to the toxic effects of inhaled or ingested oil. Oil vapours can cause damage to an animal's central nervous system, liver, and lungs. Animals are also at risk from ingesting oil, which can reduce the animal's ability to eat or digest its food by damaging cells in the intestinal tract. Some studies show that there can also be long-term reproductive problems in animals that have been exposed to oil.

#### **5.1.2.B.2 SEABIRDS**

Oil may kill seabirds in several ways.

The first effect is often that oil destroys the structure of its protective layer of feathers and insulating down. The fat under the birds skin is an energy reserve as well as an extra layer of insulation. Cold water quickly penetrates into the down and reaches the skin. The amount of oil that a bird is smeared with is not important. In a cold climate an oil spot the size of 2-3 sq. centimeters can be enough to kill a bird. The insulating effect of the plumage is destroyed by the oil, and the bird freezes to death (hypothermia). If a bird gets smeared with a lot of oil it may clog the bird's feathers making it impossible for it to fly. The bird may also lose its buoyancy (its ability to float on the water surface) and actually drown.

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<sup>148</sup>Ibid.

In their efforts to clean themselves from oil and put their feathers in their original state, the birds may inhale or ingest oil. As many of the substances in oil are toxic, this may result in serious injuries/health effects such as pneumonia, congested lungs, intestinal or lung hemorrhage, liver and kidney damage. This poisoning is often as deadly as hypothermia, although the effects may not manifest themselves as quickly<sup>149</sup>.

Oil may also affect the reproductive success of the birds as oil from feathers of a bird that is laying on eggs may pass through the pores in the eggshells and either kill the embryos or lead to malformations.

#### **5.1.2.B.1 MARINE MAMMALS**

Seals, sea lions, walruses, polar bears, sea otters, river otters, beavers, whales, dolphins and porpoises, and manatees, are groups of marine mammals that may be affected by oil spills. Their sensitivity seems to be highly variable and appear to be most directly connected to how important their fur and blubber (layer of fat under the skin) are for keeping them warm. Thus, marine mammals living in cold climates (seals, sea lions, polar bears and otters) are likely to be more vulnerable than those living in temperate or tropical waters.

Effects of oil on marine mammals depend upon species may, in addition to hypothermia, include: toxic effects and secondary organ dysfunction due to ingestion of oil; congested lungs; damaged airways; interstitial emphysema due to inhalation of oil droplets and vapour; gastrointestinal ulceration and hemorrhaging due to ingestion of oil during grooming and feeding; eye and skin lesions from continuous exposure to oil; decreased body mass due to restricted diet; and stress due to oil exposure and behavioral changes<sup>150</sup>.

#### **5.1.2.B.2 Seals**

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<sup>149</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

<sup>150</sup> Ibid.

Seals are very vulnerable to oil pollution because they spend much of their time on or near the surface of the water. They need to surface to breathe, and regularly haul out onto beaches. During the course of an oil pollution incident, they are at risk both when surfacing and when hauling out.

Fur seals are more vulnerable due to the likelihood of oil adhering to their fur which will result in the fur losing its insulating ability (as they lack any blubber for additional insulation). Heavy oil coating on fur seals may result in reduced swimming ability and lack of mobility when the seals are on land.

Seals could also be damaged through the ingestion of oiled food or the inhalation of oil droplets and vapours. Oil, especially light oils and hydrocarbon vapours, will attack exposed sensitive tissues. These include mucous membranes that surround the eyes and line the oral cavity, respiratory surfaces, anal and urogenital orifices. This can cause corneal abrasions, conjunctivitis and ulcers. Consumption of oil-contaminated prey could lead to the accumulation of hydrocarbons in tissues and organs.

#### **5.1.2.B.3 Sea otters**

Sea otters spend a lot of their time on the sea surface and are totally depending on their fur for isolation and for the ability to float. As a consequence, sea otters are regarded as being very sensitive to oil spills as oil may result in the fur losing its capacity to insulate the animals. However, inhaling hydrocarbons or ingesting oil when they groom themselves can damage their lungs, cause ulcers, and result in liver and kidney damage. Habitat loss and diminishing food resources constitute indirect effects on the otters. The *Exxon Valdez* incident is believed to have led to the death of 15,000 otters, mainly as a result of ingestion of oil<sup>151</sup>.

#### **5.1.2.B.4 Polar bears**

Polar bears are depending on blubber, so called guard hair and a thick underfur for insulation. When grooming an oil contaminated fur they may swallow oil, something that is known to have resulted in

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<sup>151</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

the death of polar bears. There is also some evidence that the toxic effects of oil cause an inability of polar bears to produce red blood cells and lead to kidney damage.

#### **5.1.2.B.5 Whales, including dolphins**

Due to their migratory behavior, there is little documented evidence of cetaceans (whales) being affected by oil spills. It would, however seem likely that baleen whales would be particularly vulnerable to oil while feeding. Oil may stick to the baleens while the whales "filter feed" in the vicinity of oil slicks. They plunge, take in huge quantities of water and then filter out their feed of plankton and krill. Sticky, tar-like residues are then particularly likely to foul their baleen plates. There are also indications that whales can inhale droplets of oil, vapours and fumes if they surface in slicks when they need to breathe. Exposure to oil in this way could lead to damage of mucous membranes, injuries in airways or even cause death.

Dolphins are smooth-skinned, hairless mammals, and as a consequence oil tends not to stick to their skin, but they can inhale oil and oil vapour. This is most likely to occur when they surface to breathe. This may lead to damages of the airway and lungs, mucous membrane damage or even death. A stressed or panicking dolphin would move faster, breathe more rapidly and therefore surface more frequently into oil which would increase exposure. Dolphins eyesight may also be affected by oil.

#### **5.1.2.B.6 Fish and shellfish**

Fish may ingest large amounts of oil through their gills. Fish that have been exposed to oil may suffer from changes in heart and respiratory rate, enlarged livers, reduced growth, fin erosion and a variety of effects at biochemical and cellular levels. If this does not kill them more or less directly, the oil may affect the reproductive capacity negatively and/or result in deformed fry. Much less is known about the effects of oil on fish eggs and larvae. The large proportion of salmon eggs killed off by the *Exxon Valdez* spill indicate that the effects can be serious and long-term.

Very little is also known about the effects of oil on shellfish (except for the fact that contamination with hydrocarbons will make shellfish taste and smell bad and thus make it impossible to use them for food).<sup>152</sup> Recently there was news regarding Pakistan in daily Dawn of Pakistan that,

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<sup>152</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007



#### **5.1.2.B.7 Recent incident dead fishes found in Pakistan Sea**

“Trawler might have dumped dead fish into the sea

KARACHI, July 29: The Sindh environment and alternative energy department on Sunday ordered an inquiry into the dead fish found floating along the Keamari Harbour on Saturday. The provincial Minister for the Environment, Dr Sagheer Ahmed, ordered the probe to ascertain whether the dead fish were thrown from a fishing trawler. Officials of the environment department visited the harbour to collect samples of the dead fish for testing. Their initial findings suggested that the dead fish might have been thrown from a trawler. The officials said that the findings would be made public after the completion of tests. “We are trying to locate the trawler that had thrown the dead fish. It is against Section 90 of the KPT Act dealing with pollution in the sea. A heavy penalty can be imposed on the trawler responsible under this section,” the Manager of the Marine Pollution Control Department of the Karachi Port Trust, Arshad Yahya Usmani, told Dawn. He said that all the operators of fishing trawlers were aware of the rules and regulations, but the trawler in question might have thrown the dead fish some time in the evening into the deep sea, which found its way to the harbour. The fish was three to four days old as their gills had turned white, he observed, which suggested that the catch was not fresh. He said that four KPT boats were busy in cleaning the harbour. The dead fish have caused a stinking smell all along the harbour. “We will clean the harbour by Monday evening,” Mr Usmani hoped.”<sup>153</sup>

#### **5.1.2.C Socio and economical effect**

Another major effect of pollution is the tremendous cost of pollution cleanup and prevention. The global effort to control emissions of carbon dioxide, a gas produced from the combustion of fossil fuels such as coal or oil, or of other organic materials like wood, is

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<sup>153</sup> Reported in Daily Dawn 29 July 20007 Pakistan

one such example. The cost of maintaining annual national carbon dioxide emissions at 1990 levels is estimated to be 2 percent of the gross domestic product for developed countries. Expenditures to reduce pollution in the United States in 1993 totaled \$109 billion: \$105.4 billion on reduction, \$1.9 billion on regulation, and \$1.7 billion on research and development. Twenty-nine percent of the total cost went toward air pollution, 36 percent to water pollution, and 36 percent to solid waste management.

In Pakistan if we look at the problem In the year 2000-2002, total fish production from Pakistan was 665,000 metric tones, while marine fishes was 480, 000 metric tones and inland fisheries was 185,000 metric tones. Pakistan contains nearly 350 different species having commercial values, out of which 240 are commercial fish, 50 small pelagic, 10 medium size pelagic, 18 large pelagic, 15 species of shrimps, 12 of squid/cattle fish/octopus and 5 lobsters species. At resent the fish production is 0.5 million metric tones.

About 80% of un-treated industrial and domestic waster water discharges in to the Sea through sewers and rivers like: mainly Lyari and Malir. Many creeks and coastal water in Karachi exhibit eutrophication due to presence of high level of organic pollutant. They also contains high level of toxicity high metal in its. This brings marine bio-diversity and fish-eating birds.

#### **5.1.2.C.1 Fisheries and aquaculture**

An oil spill can have a number of direct and indirect effects on fisheries. Valuable fishing and shellfish areas may be closed for fishing for shorter or longer periods because of the risks of the catch being tainted by oil. Concentrations of petroleum contaminants in fish and crab tissue, as well as contamination of shellfish, could pose a significant potential for adverse human health effects, and until these products from near shore fisheries or aquaculture have been cleared by the health authorities, they could be banned from human consumption. Indirectly, the fisheries sector will suffer a heavy loss if consumers are either

stopped from using or unwilling to buy fish and shellfish from the region affected by the spill. As concluded by the Third R&D Forum on high-density oil response (2002), "sunken heavy fuel oil may have significant impact on seabed resources and fishing and Mari culture activities".<sup>154</sup>

The dissolve oxygen reduced below 4 to 5 parts in million arts of water, fish becomes scarce, if further reduction in oxygen amount takes place these results in an increase in anaerobic bacteria. The concentration of sediments (particulate) normally 50,000 to 200,000 ppm, some time its goes up to the level of 600,000 ppm, which cause destruction of fish, fauna and aquatic organisms. Some ornithologists estimate that 50,000 to 250,000 birds are killed each year by the effects of oil pollution. Although sea pollutant deposition in the sediment of ocean floor are clean by bio-geo-chemical cycles, but still polychlorinated b-phenyls, mercury, cadmium and lead salts in the tissues of certain marine organisms are found. The addition of chlorine in water it help in reduction the pollution f various diseases like, typhoid, dysentery, cholera and tuberculosis, but its high concentration becomes pollutant. Boats and gear may be directly damaged by an oil spill. Floating and fixed equipment extending above the sea surface are the ones most likely to be smeared.

#### **5.1.2.C.2 Tourism and recreation**

It goes without saying that contamination of the shoreline with oils is a common characteristic of many oil spills, and when attractive coastal beaches and resorts are affected the costs could be high as it may seriously restrict such recreational activities as bathing, boating, angling and diving for shorter or longer periods of time. As a result, hotel and restaurant owners, and others who have their income from recreational activities in the

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<sup>154</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

coastal zone boat renters, diving tour operators, angling tour operators and many more may suffer significant economic losses<sup>155</sup>.

### **5.1.2.C.3 Industry**

Many industries are depending on clean water, e.g., for cooling purposes in nuclear, other power plants and desalination plants. The facilities can be negatively affected if the risk getting oil into their water intakes. The result may be contamination of piping systems which in turn may require that the plant is shut down while cleaning is carried out.

In addition to its effects on the economy, health, and natural resources, pollution has social implications. Research has shown that low-income populations and minorities do not receive the same protection from environmental contamination as do higher-income communities. Toxic waste incinerators, chemical plants, and solid waste dumps are often located in low-income communities because of a lack of organized, informed community involvement in municipal decision-making processes<sup>156</sup>.

## **5.2 HOW TO PROTECT FROM MARINE POLLUTION?**

There are two ways which can be very effective to avoid from the maritime pollution, firstly we should have to take precautionary measures and other is effective legislation and its implementation.

A number of measures could and should be taken to avoid discharges of oil from shipping (oil tankers and other vessels) and from platforms for offshore oil extraction. Measures to

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<sup>155</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

<sup>156</sup> Ibid.

reduce the risk of accidents involving tankers, and measures to reduce operational discharges from all kinds of commercial vessels, include the following:<sup>157</sup>

### **5.2.1 Precautionary measures**

#### **5.2.1.A Ships Design**

Requirements for double hulls or double bottoms are being introduced. In 1992, the MARPOL Convention was amended to make it mandatory for tankers of 5,000 dwt and more (ships ordered after 6 July 1993) to be fitted with double hulls, or an alternative design approved by IMO (Regulation 13F in Annex I of MARPOL 73/78). The requirement for double hulls that applies to new tankers has also been applied to existing ships under a program that began in 1995 (Regulation 13G in Annex I of MARPOL 73/78). All tankers have to be converted (or taken out of service) when they reach a certain age (up to 30 years old). This measure is being phased in over a number of years because shipyard capacity is limited and it would not be possible to convert all single hulled tankers to double hulls without causing immense disruption to world trade and industry. There are also concerns about building vessels too fast and compromising design standards. An additional possible measure is to limit the size of individual tanks within ships so that spills that occur at least are smaller.

Single hull is a ship construction term. In tankers with single hulls, oil in the cargo tanks is separated from the seawater only by a bottom and a side plate. Should this plate be damaged as a result of a collision or stranding, the contents of the cargo tanks risks spilling into the sea. An effective way of avoiding the risk is to surround the cargo tanks with a second internal plate which is at a sufficient distance from the external plate (generally 1.5-2 metres). This design, known as a double hull, safeguards cargo tanks from damage and

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<sup>157</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007

thus reduces the risk of oil pollution. The double hull construction incorporates both double bottoms and double sides. An alternative solution is to have ships with double sides (double hull along the sides of the ship, an added side-shell plating structure fitted within the ship while the bottom of the ship has a single plate, a single bottom. This means that the cargo tanks are separated from the seawater only by a bottom plate. Double bottom, on the other hand, is a ship construction term referring to two separate but continuous and water-tight plating structures along some length and width of a ship's bottom.<sup>158</sup>

The U.S. has already banned single hull-vessels in their waters and has stronger liability legislation in their Oil Pollution Act. Shortly after the Erika accident, the EU Commission presented a number of proposals to help prevent such accidents occurring again. One measure was a proposed Regulation on the phasing out of single-hull oil tankers. This Regulation was adopted on 20 February 2002, and applies from 1 September 2002. This measure was also agreed at the international level when the IMO adopted a revision of its Regulation 13G of Annex I to MARPOL 73/78 in April 2001. In 2002, after the Prestige accident, it became clear that the international and previously agreed EU schemes were not sufficiently ambitious. The Commission announced a number of measures to minimize the risk of future accidents involving ships such as Erika and Prestige. The Transport Council in 2002, furthermore called for an acceleration of the calendar for phasing-out of single-hull tankers, for applying the Condition Assessment Scheme from 15 years of age, as well as the conclusion of administrative agreements by Member States in view of refusing single hull oil tankers carrying the heaviest grades of oil into their ports, terminals and anchorage areas.

#### **5.2.1.B Maintenance & ship owner responsibility**

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<sup>158</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

Ship owners must ensure a high standard of maintenance. No matter how well a ship is designed, built and equipped unless it is properly maintained, it will sooner or later become a maritime safety risk. The responsibility for regular and good maintenance always rests with the ship owner. It is also worth remembering that also double-hulls have their own inherent problems. Many predict that in a few years time there will be massive oil spills from double-hull tankers as the maintenance of a double-hull is more difficult than a single-hull, and there is also a problem with gas build up between the two hulls. This will make regular inspections of the vessels even more important<sup>159</sup>.

#### **5.1.2.C Competent Crew**

Furthermore, it is the responsibility of the ship owner to recruit crews that are competent and experienced. The crews should also be continuously trained. Many accidents are due to the human factor, and unless the crew members do their job right it does not really matter how well equipped the ship is.

#### **5.1.2.D Navigational Aids And On Board Equipments**

Better navigational equipment for example, electronic charting is needed. All ships must have radar systems to improve navigation (large ships must have two systems that operate independently). In busy shipping corridors, traffic separation schemes and vessel traffic control are required to reduce the risk of a collision. In some areas, mandatory pilotage should be introduced. High-standard fire-fighting equipment must be available and strict fire safety regulations apply on board.

Monitoring and control equipment should be installed on ships so that discharged oil-water mixtures can be traced back to the ship that was carrying the oil.

#### **5.2.1.E Surveillance**

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<sup>159</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

The purposes of surveillance is to function as a deterrent from discharging ship-generated wastes *altogether*, as a means of detection of discharges already made, and as a tool to combat, as effectively as possible the spills that have been detected. Airborne surveillance which increases the ship's risk of being caught in the process of making illegal discharges can be an effective measure to prevent discharges and thus reduce marine pollution from shipping. In the future, airborne surveillance on a regional scale should be introduced in more areas, particularly in the MARPOL Special Areas (as is already the case in the Northeast Atlantic and the Baltic Sea).

#### **5.2.1.F Inspections**

Frequent inspection of ships, particularly older ones, is imperative. Since 1995 all tankers and bulk carriers aged five years and over have been subject to a specially enhanced inspection program which is intended to ensure that any deficiencies — such as corrosion or wear and tear resulting from age or neglect — are detected. Guidelines on enhanced surveys on tankers and bulk carriers are contained in Assembly resolution A. 744 (18), adopted in November 1993. Inspections are coordinated on a regional scale through Memoranda of Understanding on Port State Control (MoUs).<sup>160</sup>

#### **5.2.1.G Reception Facilities**

Better facilities are needed in ports for ships to leave their oily liquid waste and solid oily waste. In MARPOL Special Areas, such port reception facilities are required. However, in order to further reduce marine oil pollution from shipping such facilities should be made universally available in all ports where oil and oily wastes are handled. These facilities should, preferably, be made available at no extra cost, the so-called no special fee system presently in use in the Baltic Sea region.

#### **5.2.1.H Cargo Owner and Oil Consumer Responsibility**

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<sup>160</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.



Finally, the responsibility for upholding safe sea transports of oil products rests also with the cargo owners and the end users, the consumers of the products. Cargo owners should not use sub-standard vessels, but should be prepared to pay for high-quality shipping. Ultimately, the additional costs for choosing to charter safe and well maintained ships will (marginally) affect the price of the products, but it is a small price to pay as a means to prevent as far as possible the pollution of the coastal and marine environment by oils.<sup>161</sup>

### 5.3 EFFECTIVE LEGISLATION

The above given list of legislation does not save the marine life and human life from the marine pollution, as the lack of political will towards the environment. As it is well known that the legislation itself does not protect the environment but equally important is the need to develop the political will to implement these legislation, this is well known fact that the reasons of the uncontrolled pollution are the lack of funding, lack of manpower, lack of technical facilities such as laboratories and testing equipments<sup>162</sup>,

if we concentrate on Pakistan we will find more than these reasons for lack of effective legislation and large number of pollution in the sea and coastal areas as illiterate political leaders who are holding such important and very responsible posts, they are totally ignorant about the environment and its importance, and illiteracy in the common people, hanging poverty, general lack of environment concern and ignorance of its impacts and peoples are busy from hand to mouth that's why we can say that environmental protection would likely to remain an unsolved question which will make us to suffer in our near future even if we see the present situation,. It seems that almost every day there is another story about pollution of one form or another very often our own actions lead to that pollution and in many cases we can do something about it. Pakistan has not signed most convention and have lack of expertise in this important area that's why Pakistan did not sign international

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<sup>161</sup> Stanislav Patin 'Environmental Impact of the Offshore Oil and Gas Industry' [www.itopf.com](http://www.itopf.com) visited on 15<sup>th</sup> August, 2007.

<sup>162</sup> Fahim Ahmed Siddiqui, *The Environmental laws in Pakistan*, 2000, Pg, 99.

fund convention and civil liability convention but after the Tasman Sprit incident Pakistan sign these convention with two years late and so many affected people could not take benefit from this fund just because of Government negligence and other main point is that Pakistan have no particular Act dealing with this great problem only few sections inserted in different Acts. Other main problem is that there is no divisions of power between different Agencies dealing with maritime issues that's why in case of Tasman Sprit still not clear policy that which Agency will follow the Case and who will supervise the pollution problem as mentioned above case of Exxon Valdez nine years survey held by the Agencies as they were well aware of pollution effects but unfortunately after two years of this big incident of Tasman Sprit, no survey held by any Agency. These notes explain how can investigate protect sea pollution and advices on positive action to improve our seas and the beaches.

#### **5.4 RECOMMENDATIONS FOR PAKISTAN**

- ▶ Pollution control cell needs to be set up in Karachi Fisheries Harbour Authority to implement EPA Act 1997.
- ▶ Pakistan Navy should improve its environment protection organization by creating cooperation with all other agencies related with maritime pollution control<sup>163</sup>.
- ▶ Karachi Water & Sewerage Board should set up wastewater treatment plants at appropriate places so that treated water reaches the sea. Wastewater treatment plants are also very essential to stop solid waste from going to the Harbour. Metallic grills of suitable mesh size should also be installed at the mouth of Lyari River and all Nullahs opening in the Sea.
- ▶ An effective solid waste management system should be evolved by Karachi City District Government including ear marking of proper landfill sites. Moreover the City Government should ensure that industrial waste is not disposed of in the land fills of

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<sup>163</sup> Pakistan navy recommended, , quoted in Reports of the Standing Committee on Defence and Defence Production on Pollution in Karachi Harbour and Areas around Pakistan and force base in Karachi Headed by Senator Nisar. A. Memon.

municipal solid waste. Segregation of municipal waste in to compost-able and recycle- able categories should be adopted. Non biodegradable plastic shoppers with thickness of less than 30 micron should be banned.

- ▶ Karachi City Government should ensure provision of septic tanks for biological treatment of sewage in large commercial buildings prior to the approval of building plans.

- ▶ Environmental Protection Agency (Sindh) should check that wastewater is treated as per the National Environmental Quality Standards and industrial wastewater according to WTO requirements.

- ▶ Ministry of Ports and Shipping should ensure the implementation of all international conventions including MARPOL 73/78, United Nations Convention on Laws of the Seas (UNCLOS 1982), and International Convention for Oil Pollution Preparedness & Response (OPRC) 90<sup>164</sup>.

- ▶ All existing industrial areas of Karachi like Sindh Industrial & Trading Estate (SITE), Korangi Industrial & Trading Estate (KITE), Landhi Industrial Area, Federal B. Industrial Area and North Karachi Industrial Area should have provision for collective treatment plants in compliance of National Environmental Quality Standards 2001. Federation of Pakistan Chambers of Commerce and Industry (FPCCI) and Karachi Chamber of Commerce and Industry (KCCI) should facilitate the setting up of such treatment plants while Environment Protection Agency (Sindh) should monitor implementation of National Environmental Quality Standards (NEQS).

- ▶ Provincial Fisheries Departments should ensure hygienic conditions of fish harbours as per international standards and disposal of solid waste on daily basis.

- ▶ Ministry of Environment should launch a public awareness campaign on electronic media about adverse effects of environmental pollution.

- ▶ Maritime Security Agency (MSA) be assigned a special responsibility to control pollutants' discharge into the sea.

- ▶ FPCCI and KCCI should encourage manufacturers to supply their goods in re-useable plastic packing to decrease the volume of solid waste.

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<sup>164</sup> As Implementation of laws is more important than new legislation

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