CHAPTER V
PRIMORDIAL NORMS RELATING TO MARINE POLLUTION WITH
SPECIAL REFERENCE TO SOLID WASTE

SECTION -A
LEGAL REGIME OF MARINE POLLUTION DUE TO THE LAND BASED
SOLID WASTE

I  INTRODUCTION

“The deepest emotional investment of all is in the assumption of that there is a
rule obeying universe, and that its rules are objective, independent of social
validation.”

Douglas.

Huge world coast and sense of adventurous innovation of our ancients have
fostered a great maritime tradition. According to many scientist Life began in the oceans
and it remains our link to life through its control of climate, provision of food and
minerals, sequestration of carbon, assimilation of waste and other precious services.
Hence the protection and preservation of marine environment is of prime concern.

The survey of literature apparent that, legal regime of marine pollution is still in
infant stage. The primordial laws do not provide full range of protection to the marine
environment. Many sources of pollution has not been comprehensively covered, for

1, Shanth kumar, Introduction to environmental law, second edition 2005, wadhwa and company Nagpur
page 67.
Press, Page 655
instance, Land based sources of marine pollution, marine pollution due to the sea bed activities etc.

In recent decades world community is facing the problems relating to effective disposal of land based solid waste. As per the existing data more then 70 percent of marine pollution caused due to the land based sources, still there are no internationally agreed rules, standards and policies to regulate the land based sources of marine pollution. Essentially, the deficiencies of the existing legal regime stemmed from the lack of generally accepted framework or structure of legal principles. Again these norms are not capable to deal with the full range of marine pollution problems. In addition existing legal regime has failed to define the powers and functions of the states comprehensively and with greater particularity. In addition, existing general principles are increasingly seen to be unsatisfactory and ineffective in their operation.

Pollution of oceans takes heavy toll on marine resources. Most of the nations of the world have been made acutely aware of the fact that the problem of the marine pollution is beyond the unilateral control of countries. Although an international consensus seem to exist that the flow of certain toxic heavy metals, chemicals and solid wastes due to the land based activities causing damage to the environment and public health, but no common approach or international agreement on a system of regulations has so far emerged. Pollution from land based sources is probably the most severe problem and the contribution of land based sources is more than the direct dumping or any other source of marine pollution. The disposal of waste substances with in national

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3 Hugo Caminos editor, written by Brownlie, Law of the Sea, University of Miami School of law, USA, Page 374 Para 2, [http://www.oceanlaw.org/index.htm](http://www.oceanlaw.org/index.htm)

4 Ibid

5 Fred.l.Morrison and Rudiger Wolfrum international regional and national environmental law, Page no 51.
boundaries is primarily a domestic responsibility and hence any attempt made by one country to control the inland discharges of another country might be consider as an interference with the domestic affairs of the polluting country and therefore violation of principles of the UN charter. However in Stockholm conference Secretary General Maurice F. Strong has administered psychiatric therapy to the states and convinced them, that the humanity demands a degree of enlightened political will on the part of people and nations to save the planet from environmental degradation. Hence for the effective protection of marine environment against solid waste attention should be given to the integrated solid waste management at various levels, and this problem tenders joint and individual effort from the world community. However categorization of the primordial norms is imperative for the effective and comprehensive study of existing legal regime of marine pollution due to the land based solid waste, which is as follows.

1) International conventions
2) Regional conventions.
3) Indian legislations.

II. International Conventions regarding Land Based Sources of Marine Pollution

Approximately 90% of the solid waste generates on land due to the various anthropogenic activities. In fact land based marine pollution is the single most important source of pollution to marine environment, contributing over 70% of total contaminants. These pollutants reach the marine sooner or later, directly or through various pathways. More than half of the total population of the world community habited with in 240 miles

\[ \text{41% of the continental US drain in to the Gulf of Mexico through the Mississippi river.} \]
of the coast. In United States more than 50 percent of the people habited with in 50 miles of the ocean and hence the waste generation is also high. Inland population has also contributed significantly to the marine pollution through the drainage system, rivers and other path ways. On the other hand the combined runoff of fertilizer, sewage and other nutrients in to the sea has provided ideal conditions for explosive growth of algae. Decomposition of these algae requires much oxygen which creates suffocation for other sea life\textsuperscript{7}. Marine mammals also contained high amounts of industrial compounds, especially PCB’s. The most effective immune-suppressor has been shown to be PCB’s followed in toxicity by mercury, lead, dioxins and pesticides such as DDT\textsuperscript{8}

The main pathways of land based marine pollution are coastal pipes, coastal land fills, waterways like rivers, estuaries, canals, under ground water courses, run off and atmospheric dumping. However, there is a confusion that whether the atmospheric dumping should be treated separately or not. Many scholars and conventions have merged the atmospheric dumping with the land based sources of marine pollution. As a result many conventions that addressed the land based marine pollution have also addresses atmospheric pollution\textsuperscript{9}. Accumulation of land based solid waste is varied from country to country and depends on many aspects like environmental polices of that nation, economic capabilities and advanced technologies to control the waste.

\textsuperscript{7} This condition is known as hypoxia, it is the main reason for the creation of dead zone of the seven thousand square mile, that regularly appears in the gulf of Mexico and smaller sterile Zones in Americas Chesapeake Bay and New York Bight, the Adriatic, North, and Baltic sea, the Inland sea of Japan, Yellow sea, Persian gulf, Bat and harbors etc.

\textsuperscript{8} David Hunter, James Salzman, Durwood, international environmental law and policy. Second edition by Page 749 Para1

\textsuperscript{9} London Dumping Convention 1974
management, public awareness, availability of land for the waste disposal, population growth, management of human settlements, percapita income of that particular nation, etc.

In 1958, Convention on High Seas required that states have to take measures to regulate oil pollution and take measures to prevent pollution from dumping of radioactive waste and also obligated the states to co operate in preventing pollution from activities involving radioactive materials or other harmful agents. Same convention has incorporated general prohibition on the abuse of rights and provided some basis for limiting land based pollution or dumping which interfered with fishing or other legitimate uses of the seas. According to estimation till the enactment of first regional treaty in 1974, marine pollution was severe due to the dumping and discharges of hazardous waste into the sea from many sources. Further inferences can be drawn from the precedents that marine pollution causing serious damage to other sovereign states is the international wrong and therefore in some circumstances, such polluting activities require consultation with other states which are likely to be affected. However, some later treaties, guidelines and declarations affirms the customary obligations to protect the marine environment of other states and put some prompt efforts to avoid the abuse of rights.

A. UNITED NATION CONVENTION ON LAW OF SEA -1982-III (UNCLOS-III-1982)

Part XII of UNCLOS III 1982 devoted for the protection and preservation of marine environment as a whole. Part XII consists of 45 articles, among which 194(3) (a), 207 and 213 provides a framework to combat the Land based marine pollution. Article 194, (3) (a), in its various clauses, recognizes the general obligation towards the

10 Article 24 and 25 of the Convention on the High Seas  
11 Article 2 of the Convention on High Seas
protection and preservation of marine environment. Same article has clarified the scope of regulated subject. This article has imposed mandatory restrictions on all states to refrain from unjustifiable interference with the activities carried out by other states in exercise of their rights and in pursuance of their duties which are in conformity with this convention. Further the various articles of the text of UNCLOS 1982 recognized economic and infrastructural differences that exist between states, particularly between least developed states. These states are required to take all necessary measures by using the best particle means at their disposal in accordance with their capabilities.” This indicates that the UNCLOS-III, in its part XII imposed certain international obligations but not in same degree. Such kind of discretion or unequal obligation gives room for framing of weak environmental legislations as well as non unified laws which ultimately results in to the severe marine pollution.

Article 194, 195 and 196\textsuperscript{12} are best examples for such measures. However, the said provisions are not exhaustive and the main objective of these measures is the minimization rather elimination of pollution. Further the measures in Article 194 is source oriented and article 194(3) (a) exclusive deals with the land based source of toxic, harmful, or noxious substances that released due to the dumping or through the atmosphere.

Article 207 of UNCLOS-III-1982 has provided that states have to take measures including the formulation of laws and regulations to prevent, reduce and control pollution from land based sources\textsuperscript{13}. Further the same article provides that states have to take

\textsuperscript{12} See appendix at the end of the thesis for the detailed provisions of the said articles.
\textsuperscript{13} UNCLOS 1982 has defined the Land Based Sources as Introduction of Pollution from rivers, Estuaries, pipelines and out fall structures, coastal establishments and also from atmospheric pollution.
account of internationally agreed rules standards and recommended practices and draws a
distinction between them. Same articles have also forwarded remarkable flexibility and
conferred huge discretion on the states to make laws to select measures and also to
determine the substances which requires regulation and control. Article 207 has failed to
impose specific obligation on states. Article 207 has directed the states to establish
global and regional rules, standards and recommended practices to combat the land based
pollution, but have not forwarded any framework or guidelines to establish such global
and regional rules. Further the same article has provided that attention should be given to
the characteristic regional features, the economic capacity of developing states and their
need for economic development”.

The said phrase leaves a doubt that whether the convention really intends to
combat the pollution or intends to give room for ambiguity. Because always states are
under the pressure to balance between the proper utilization of land and effective
management of solid waste, hence not willing to commit themselves to the same level of
International control as it committed to other source of marine pollution. The very next
part of the same article has provided that states shall endeavor to harmonize their policies
at the appropriate level and to establish global and regional rules. However these
formulations are without significant normative content, and gives wide room for state
discretion and ambiguity.

Article 213 directed the states to enforce their own law’s, rules and regulations in
accordance with Article 207 and shall make laws which are necessary to adopt
internationally agreed rules and standards, which are established through competent
International Organizations or Diplomatic Conference to prevent, reduce and control
pollution of the marine ecology from Land based sources. This Article has not forwarded any specification regarding the standards, policies, and framework of those norms.

The UNCLOS-III- 1982 is the only global Convention which addressed the Land Bases sources of Marine pollution, but subject to limitations and constraints. At the outset the states are generally unwilling to adopt a stringent text within the ambit of UNCLOS-1982. The states are willing to preserve their freedom to the possible extent, while balancing the environmental protection measures against the need of their own socio-economic conditions. Further the cost of such measures is unacceptably high and not affordable by the least developed countries. If the International organizations are preferred to give any concisions to the least developed countries to adopt feasible measures, by keeping in the view of socio-economic conditions of the least developed countries then such feasibility leads to the weak and non-uniform laws. Hence the UNCLOS 1982 can be considered as first step towards the protection and preservation of marine environment and can be considered as carcass with lots of exclusion. So the protection and preservation of marine environment requires full-fledged regulatory norms without ambiguity and with greater particularity. Again rather conferring the greater flexibility or wide discretion to the least developed states it is good to shoulder the responsibility of the least developed and developing countries to ensure the compliance of international environmental obligations. Because earth planet is our home, hence the protection and preservation of the environment is our solemn responsibility irrespective of nationality.
B. UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

1. EARTH SUMMIT

Two parallel conferences on environment and development held in Rio de Janeiro, Brazil from June 3 to 14, 1972, which has produced number of documents. The formal 12-day conference of governmental delegations, called the UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED) was held at Rio-Centro convention in Rios outskirts. The UNCED (Earth Summit) was attended by more than 170 countries. Simultaneous to Earth Summit, a large gathering of Non Governmental Organizations was held in Flamingo Park, 40 kilometers from the Rio Centro conference cite, under the umbrella title of the global forum. The global forum was a mixture of extensive NGO networking, street fair, trade show, political demonstration and general events and it involved about 18,000 participants plus more than 2,00,000 local residents who visited the site during the conference. Although there were attempts to co-ordinate between the UNCED conference and Global Forum, the distance between them posed great difficulties to the participants who wished to take part in both conferences.

UNCED has produced five documents signed by head of states, they are

1. Rio-declaration
2. Convention on climate change
3. Convention on bio diversity
4. Forest principles
5. Agenda 21

\[\text{\footnotesize{\textsuperscript{14}} Supra note no 2}\]
1. **Rio- declaration;** Consists of 27 principles and gave prime importance to sustainable development. Further it called for the participation of all concerned citizens at the relevant level. Rio declaration gave much emphasis on Transboundary pollution, further interpreted the term right to development so as to equitably meet developmental and environmental needs of present and future generations\textsuperscript{15}.

2. **Convention on Biodiversity.**

For the purpose of this convention Biological diversity means the variability among living organisms from all sources including inter alia, territorial, marine and other aquatic eco system and the ecological complexes of which they are part. This includes diversity with in species, between species and of eco systems. The objective of this convention is the conservation of biological diversity and sustainable use of its components\textsuperscript{16}.

3. **Agenda 21**

Agenda 21 is the monumental center piece agreement adopted by all participating nations at the earth summit in Rio de Janeiro, Brazil. Agenda 21 is a comprehensive global plan of action to confront and overcome the most pressing environmental, health and social problems that facing our planet. It is not a static document but a plan of action to guide the development of the earth in a sustainable manner, Agenda 21 based on the

\textsuperscript{15} Supra note no 1

\textsuperscript{16} For detail provisions of this convention please refer section D of the chapter 5 of this thesis.
premise that sustainable development of the earth is not simply an action, it is a requirement that increasingly imposed by the limits of nature to absorb the punishment which humanity has inflicted on it.

Agenda21 recognized the importance of protection of marine environment which requires an approach that anticipates problems rather than merely reacts to difficulties. Further agenda 21 recommended that such an approach should involve the use of environmental impact assessment, application of specific criteria of classifying hazards substances and comprehensive approach towards addressing damaging impacts from air, land and weather pollution. Agenda 21 put much emphasis on the framing of international regulations to address the land based sources of marine pollution. Since land based sources contribute 70 percent of marine pollution but currently there is no scheme to address marine pollution from land based sources.

III. REGIONAL CONVENTIONS TO GOVERN THE MARINE POLLUTION FROM THE LAND BASED SOLID WASTE

Fortunately, numbers of conventions are there to govern the marine pollution caused due to the land based solid waste, at the regional level. The first and foremost important treaty to regulate the land based sources of marine pollution is convention for the prevention of marine pollution from land based sources 1974. The preamble to the London Dumping Convention it self recognized the importance of mutual co operation at various levels, for effective protection and preservation of the marine environment. This convention is a regional convention and specifically agreed to protect the ecology of North-East-Atlantic and Arctic oceans. The noteworthy point is that OSLO1972
convention\textsuperscript{17} has been recalled by the London Dumping Convention, and London Dumping Convention was replaced by the OSPAR convention 1992. UNEP regional conventions have also forwarded a set of regulations to govern the marine pollution by land based waste in general but no separate convention has been established to regulate the marine pollution due to the land based solid waste.


The term Land Based Sources of Marine Pollution is well defined in the London Dumping Convention. It means pollution of the Maritime area.

(a). Through water courses.

(b) From the coast, including, introduction through under water or other pipe liens.

(c) From man-made structures placed under the jurisdiction of a contracting party with in the limits of the area to which the present convention applies\textsuperscript{18}. The present Convention consists of three annexure part, annex I described the wastes that considered as most dangerous and hazardous. The dumping of these wastes is prohibited but with certain exceptions\textsuperscript{19}. Annexes II, listed the substances, the disposal of which needs special permit. The substances that listed in annex III can be divided in to two categories. First the substances that needs special permit and secondly, the substances which required general permit from the appropriate authorities. Such permit shall be issued only after

\textsuperscript{17} OSLO 1972, opened for signature in OSLO in 1972 and entered in to force on 6\textsuperscript{th} April 1974. The main object is to take steps to prevent pollution of the sea by prohibiting dumping of harmful substances from ships and air crafts.

\textsuperscript{18} Article III ©. The Paris convention covers the North East Atlantic excluding the Baltic Sea and the Mediterranean sea.

\textsuperscript{19} If scientific evidence has established that a serious hazard may be created in the maritime area by that substances, than urgent action should be taken, if necessary.
careful consideration of all the factors set forth in Annex III including prior studies of the characteristic of dumping site, as set forth in section B and C of that annex. Further parties must adopt programmes and measures to eliminate pollution of maritime area form land Based Sources and these measures should be taken with the forethought of latest technical developments and its evil effects. Hence measures should be taken to combat the unlisted substances that arise due to the new technical developments. The London Dumping Convention attempts to control dumping of waste in the territorial sea and the high seas but not in the internal waters of state parties. The convention is silent regarding waste dumping in the exclusive economic zone. However In 1988; eleventh consultative meeting of London Dumping Convention has decided that the scope of the convention should be extended so as to cover the pollution of the exclusive economic zone.

Further, the London Dumping Convention consists of black list, grey list and white list. These lists contains the names of prohibited substances but subjected to certain exceptions. Among these three lists, black list contains exceptions, grey and white lists hardly contribute to the harmonization of national legislations since special and general permits are issued unilaterally by national authorities. However on the perusal of the reports on effectiveness of the London Dumping Convention, one can have the mixed

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20 Article III (3), In the territorial sea, a state is sovereign, but its sovereignty is limited by the right of innocent passage.
21 No state has jurisdiction over the high seas see convention on high seas.
22 The London Dumping Convention (1974) was concluded before the III law of sea convention (UNCLOS 1982) which has defined the Exclusive Economic Zone for the first time.
23 In 1979 it was 17 million tons and in 1987 the quantity of dumping is 6 million tons. Dumping of sewage sludge significantly increased in 1976-1980, it decreased during 1980-1988. The same is not true with dredged materials, 260 million tons of which are dumped annually in to the seas.
24 Ellilouka, over coming National Barriers to international waste trade – A new perspective on the transnational movement of hazardous and radio active waste-by Page no 36. para3.
25 Substances to be eliminated, substances to be strictly limited and reduced
impression. Because on one hand the quantity of industrial wastes that has been dumped in to the ocean has been decreased form seventeen million tons to 6 million tons. On the other hand dumping of sewage sludge significantly increased during 1976-1980, and it has been decreased during 1980-1988. The same is not true with the dredged materials, in other words approximately 260 million tons of dredge materials are dumped annually, in to the seas and London convention has failed to reduce the above said ratio. This partial success of the convention can be attributed to the implementation of alternative disposal methods, waste reuse and application of new and advanced technologies.

However the aforesaid figures are not accurate and reliable because they are incomplete. The reasons for such incomplete figures are as follows. First and foremost important reason is that approximately 30% of the state parties are reporting about the implementation of this Convention to the secretariat of the convention. Secondly, 90% of the reports are submitted by the industrialized countries but those reports were not comprehensive. Thirdly developed countries are not showing their enthusiasm about reporting because of difficulties of assembling information. The reason behind such lack of reports from developing countries is poor infrastructure, in appropriate technology and unskilled staff. However, this kind of inadequate reports has undermined the confidence to ensure the effectiveness of the convention. Finally, the number of accessions to the convention has slowed down and least developed countries have been reluctant to adopt the convention because of two reasons, first, comparatively they produce less wastes.

26 Supra note no 24.
27 Ibid.
28 GAO, international environment, International agreements are not well mentioned 26(RECED-92-43-ed 1992) see chapter of ‘over coming national barriers to international waste trade by Ellilouka.
29 Waste generation depends on so many accept like, industrial development, percapita income, and living style. Prime occupation, mode of agricultural activities Etc
Secondly, lack of resources to implement the provisions of the said convention etc\textsuperscript{30}. The aforesaid ineffectiveness has also been attributed to the lack of political will especially in the regions where developed and developing countries co-exist, such as the Mediterranean region. In addition developing countries have strongly resisted the imposition of controls on their development for the environmental protection. Further developed countries do not yet conceive marine pollution as a serious problem. In least developed countries, provisions for the protection of the marine environment are encountered hand-in-hand with clauses which underlines that environmental protection should not thwart development. Another factor that may have contributed to the ineffectiveness of the convention is the absence of systematic approach\textsuperscript{31} to marine pollution. Besides, the London Dumping Convention embarks upon the marine pollution in a piece meal fashion and on a regional basis, with many more exceptions. This piece meal approach could also be attributed to perceptions that the protection of regional seas is a regional problem in which the international community has no states and consequently, the problem of marine pollution was not effectively regulated.

In 1983 state parties to the London Dumping Convention has adopted two year moratorium that suspended all radioactive waste dumping\textsuperscript{32}. The ban was extended indefinitely in 1985 to allow for accumulation of stronger scientific evidence. In 1990 a Resolution was also adopted which widen the definition of the term sea, that has given in the London Dumping Convention, so as to include the sub soil of sea bed\textsuperscript{33}. The purpose

\textsuperscript{30} Supra note no 33.

\textsuperscript{31} Systematic approach would co operate between the authorities regulating lakes and rivers flowing in to the sea and authorities dealing with the sea pollution.

\textsuperscript{32} Seventh consultative meeting of the contracting parties to the London Dumping Convention regarding the dumping of Radio Active Wastes IMO DOC.LDC13/17, Annex 4

\textsuperscript{33} See 13 consultative meeting of the contracting parties to the London Dumping Convention .IMO, DOC, LDC, 13/17. Annex 7, res. LDC 41 (13) (1990)
of this resolution was to extend the prohibition of high level radio active waste dumping to the sub soil of the sea bed. Again the London dumping Convention concentrates on the reduction of pollution rather than the elimination of marine pollution.

B. CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTH EAST ATLANTIC (OSPAR CONVENTION 1992)

The convention for the protection of the marine environment of the North East Atlantic was opened for signature at the ministerial meeting of the OSLO and Paris Commission, on 21st and 22nd of September 1992. The convention has been signed by all contracting parties to the OSLO Convention and to the Paris Convention. The London Dumping Convention was replaced by the OSPAR Convention. The term land based sources has been well defined in the OSPER Convention. Under OSPAR 1992 contracting parties are under the obligation to combat the pollution not only from the land based sources but pollution caused due to accidents. According to OSPAR 1992 land based sources means point and diffuse sources on land from which substances or energy reach the maritime area via water ways, through the air, or directly from the coastal out falls. It include sources associated with any deliberate disposal under the sea bed made accessible from land by tunnel, pipe line or other means and sources associated with man made structures placed in the maritime area under the jurisdiction of a contracting party.

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34 OSLO 1972 was come in to force in 1974, the main object is to take steps to prevent pollution of the sea by prohibiting dumping of harmful substances from ships and air crafts. Article 3 of this convention has covered North East Atlantic excluding the Baltic sea and Mediterranean sea.


36 Article 3 and Annex 1, Article 1(3)
other than for the purpose of offshore activities\(^{37}\). The OSPAR1992 contained a series of principles; these include the application of the *precautionary principle*, the *polluter pay principle* and the *best available technique’s* for point sources and *best environmental practice* for point and diffuse sources by using the criteria listed in appendix II. The adoption of such programmes and measures is mandatory for certain substances, e.g. heavy metals, organ halogen compounds, organic compounds of phosphorous and silicon biocides, oils, nitrogen and phosphorous, radioactive substances, including radioactive waste, etc. Annex I provides that all discharges and releases of pollutants from point source to the coastal area or to the water or air ultimately reach the marine and causes damage to the marine eco system. Therefore regular control and regulation of these discharges is the prime duty of OSPAR Commission\(^ {38}\).

The OSPAR1992 is the regional convention and for the first time it has introduced the concept of *best available technology* and *best environmental practice*\(^ {39}\) and has forwarded stringent rules and mandatory provisions for the protection of marine environment. However, the OSPAR 1992 is a regional convention, and hence coverage constrained to a limited region.

C. UNEP REGIONAL SEAS PROGRAMES ON THE PROTECTION OF MARINE AGAINST LAND BASED SOURCES OF POLLUTION

UNEP was conceived at the Stock Holm Conference on the Human Environment and created by the General Assembly in 1972. UNEP became the first UN agency with a

\(^{37}\)Philippe Sands, Principles of international Environmental Law 1\(^{st}\) Frame Works, standards and implementation by Page 323, Para5.

\(^{38}\) Annex I article 2. The OSPAR Commission is required to draw up plans to reduce and phase out certain Hazardous Substances and to reduce inputs of nutrients from urban municipal industrial Agricultural and other sources. Article 3

\(^{39}\) These are technology based standards, best practicable technology, best available technology as low as reasonably available, zero discharge and uniform regional emission standard.
specific agenda of the protection and preservation of the marine environment. The programe focused on the protection of the oceans and seas including enclosed and semi enclosed seas and coastal areas and the protection and rational use and development of their living resources. It is a medium for the implementation of the various provisions of United Nation Convention of Law of Sea 1982, and also to facilitate the international co operation in the environmental field. Its present work focused on five areas

1. Environmental information, assessment and research, including environmental emergency response, capacity and strengthening of early warning and assessment functions.

2. Enhanced co ordination of environmental conventions and development of environmental policy instruments

3. Fresh water

4. Industry and technology transfer

5. Support to Africa.

By the end of 1983, UNEP Conventions have been adopted in six regions namely.

1. The Mediterranean region
2. The Kuwait region
3. The west and Central Africa Region
4. The south east pacific region
5. The Red sea and Gulf of Aden Region
6. The wider Caribbean region.

UNEP has actively supported governments and regional organizations in the development of environmental law at the regional level through the provision of technical legal assistance as well as legal advice and support to intergovernmental meetings in the context of developing regional environmental agreements.

These conventions and protocols are as follows. Barcelona Convention 1976, Cartagena convention, Noumea convention 1986, Lima protocol 1981, Kuwait protocol 1978, Jeddah 1982 and Bucharest convention etc. These regional frame work conventions generally contain only one provision on Land Based Marine Pollution, calling for contracting parties to take all appropriate measures to prevent, abate and combat pollution of the regional seas caused by discharges from rivers, coastal establishments or outfalls, or emanating form any other land-based sources within their territories\textsuperscript{41}.

These regional conventions, in contrast with the international treaties on marine pollution, also covered the internal waters of the contracting parties.

1. Cartagena convention 1983:

Cartagena Agreement, adopted in 1983, which is a UNEP Regional Seas Convention that applies to the wider Caribbean region. The protocol to the Cartagena Agreement, adopted in 1999, represents a break from past approaches and provide a new model of thought to the regional conventions addressing the Land based marine pollution. This protocol contains a series of annexes that together provide a detailed program for significant sources of Land Based Marine Pollution. Its general obligations require each contracting party to take appropriate measures to prevent, reduce and control Land Based Marine Pollution in the convention area. However, in this respect, the draft protocol is little different than most regional conventions in two modes.

\textsuperscript{41} Ibid
First, it represents the significant application of the Global Program of Action, providing concrete and detailed provisions for monitoring and impact assessment, reporting mechanism.

Secondly, the draft protocol contains annexes with detailed emission and effluent limits for Land Based Marine Pollution sources. These limits closely resemble national water pollution regulations, setting maximum numeric levels for BOD\textsuperscript{42}, PH\textsuperscript{43}, temperature and other measures of pollution. In addition strict time tables are set for the compliance to the provisions of the convention. However such strict numeric requirements are unprecedented in previous agreements relating to Land Based Marine pollution and this is the first agreement creating regional standards for domestic waste water\textsuperscript{44}.


Article II of this convention has described that the provisions of this convention is applicable to Red Sea, Gulf Aqaba, and Gulf of Aden. All regional conventions contain the same provision with regarding to the elimination of marine pollution, but article VIII of Jeddah convention has forwarded one special provision where the contracting parties has to take all appropriate measures to prevent abate and combat pollution in the sea area resulting from reclamation, that is the waste that generated due to the dredging of estuaries or rivers or any coastal area. It is the only convention which specifically addressed the waste that generated due to the dredge spoils.

\textsuperscript{42} Biological Oxygen Demand
\textsuperscript{43} It is a devise to measure the toxicity of water or existence of the pollutants in the water.
\textsuperscript{44} See http://grid2.cr.usgs.gov/cep-net/law/cartnut.html.
3. **Barcelona convention 1976**

The purpose of this convention is to combat the pollution in Mediterranean Sea caused by discharges from rivers, out falls, canals or other water courses or pollution emanating from any other source or activity with in the territory of the state party to the protocol.

The protocol lists the substances of which discharge is prohibited and the factors which should be taken into account in order to eliminate pollution from these substances. It also lists substances of which discharge is subject to authorization by competent national authorities. This authorization must take particular account of the characteristics and composition of waste, the characteristics of the elements in the waste in terms of harmfulness, the characteristics of the elements in the waste in terms of harmfulness, the characteristics of the place where the waste is discharged and the marine environment it is entering, the techniques available to manage the waste as well as possible damage to marine eco system and its effect on sea water usage.

The protocol also stipulates co operation regarding research and information and the adoption of appropriate measures, and standards aimed at reducing or eliminating the targeted substances.

Council decision 1999/801/EC concerns a number of amendments to the protocol which were accepted by the community in 1996. These amendments concern, in particular, the application of the precautionary principle, the extension of the scope of the protocol to air borne pollution of land based origin the regulatory system for waste
discharge the contained monitoring of pollution levels and technical assistance to developing countries\textsuperscript{45}.

4. **Noumea protocol 1986**

   Alike other conventions, Article 3 of the Noumea Protocol 1986 has imposed certain general obligations, where the parties shall take measures to prevent reduce and control area by dumping. Again article 3(3) provides that national laws, regulations and measures adopted by the parties shall be no less effective then the internationally recognized rules. As per Noumea Convention international rules and regulations means, the rules and regulations specified in the London Convention 1972 relating to the control of dumping. Annex I has listed the substances that are prohibited for the dumping in to the maritime area. Similarly annex II has listed the substances which needs special permit for the dumping of listed substances in to the maritime area. Again article 6 has provided that, the other substances which are not mentioned in the annex I and II needs general permit for the dumping in to the marine, and the states are under the obligation to report about any such dumping to the commission. This article has forwarded the unique provision where the parties has to get the general permit even to dispose the waste or other matter which are not mentioned in the annex I and II.

5. **Lima convention and its Quito protocol 1983**

   This convention intends to provide protection to the South East Pacific against pollution from land based sources. However latest addition to the increasing number of

\textsuperscript{45} See original text of Jeddah convention 1982.
instruments is the protocol on land based sources attached to the convention for the protection of the Black Sea against land based marine pollution, but they have not been terribly effective and just repeated the provisions recommended in other UNEP regional convention.


Article 6 of the Helsinki Convention exclusively devoted for the protection of Baltic Sea area from the land based waste. This article obligated the contracting parties to eliminate pollution of the Baltic Sea area from land based sources by using Best Environmental Practice for all sources and Best Available Technology for point sources. The contracting parties are also under the obligation to implement the procedures and measures set out in annex III. With this end state parties have to co operate in the development and adoption of the specific programme, guidelines, standards or regulations, to govern the emissions and inputs to the water and air. Further the states are under the obligation to provide guidelines to assess the environmental quality and also to dispose the products containing harmful substances and materials.

Again this convention has provided discretion to the contracting parties where the parties have to frame the rules and regulations to combat the land based pollutants. In addition, this article has introduced prior special permit system, which is to be issued by the appropriate national authority, in accordance with the principle’s contained in annex III and subjected to periodical review. Annex III is designed with detailed regulations. It contains two parts, among these two parts, part one has addressed prevention of pollution
from industry and municipalities, where as the part two has addressed prevention of pollution from agriculture. However, in comparison with other conventions and protocols, Helsinki convention has forwarded comprehensive and effective set of regulations to regulate the marine pollution due to the land based waste. Though the Helsinki convention is an effective convention, but applicable only to the specified region, say Baltic sea area. Note worthy point is that even though the Baltic Sea area regulated by the Helsinki convention but the pollution has been increased, especially in this area. Again such failure can be attributed to wide discretion conferred on the Baltic States to frame rules and regulations to combat land based marine pollution.

Hence, though the regional seas agreements have provided strongest international response to the Land Based Marine Pollution, but they have not been terribly effective in controlling the present levels of the overall Marine pollution. Further these regional agreements offered greater flexibility in accommodating the economic, ecological and geopolitical needs of the particular seas and adjacent states. Therefore Birnie and Boyle has concluded that, at the best it can be said that the regional seas programe, as a whole, that it has exercised some influence on the problem of land based pollution in some of the areas which it covers.46 However, the consequences of such regionalization of the problem are the legitimization of weak standards and establishment of weak supervisory institutions for the protection of the marine environment. Further states have not addressed the regional problems with the seriousness merited by scientific reports. Finally, alike the global conventions, UNEP conventions have also conferred the wide discretion to the states, to frame there own rules and regulations to combat the marine

46 Huge Caminos, editor, written by Brownlie, law of the sea , University of Miami School of Law, USA Page 375.
pollution, but have not provided, at least the minimum standards that have to be followed by the states, while framing those norms. The Noteworthy point is that all these regional agreements addressed the Land Based Marine Pollution in general, and not addressed the land based waste in particular. Again hardly there are provisions that address the land based solid waste.

D. MONTREAL GUIDELINES 1985

UNEP established a group of experts during 1983 and 1985 in order to develop and adopt the Montréal guidelines for the protection of the marine environment against pollution from land based sources. The Montréal guideline has provided broad guidance for the control of land based marine pollution. The guidelines were prepared from common elements and principles drawn from the existing arrangements, practices, and experience in their preparation and implementation. These guidelines are recommendatory and provide a broad framework for the development of regional agreements and also to a possible global convention. The guidelines, particularly the annexes are reasonably detailed and foreshadow the developments reflected in the later treaties e.g. OSPAR Convention 1992. Further the guidelines have called for the adoption of measures to prevent, reduce, and control the pollution from land based sources, including the toxic harmful or noxious substances, especially those which are persistent. The same guidelines have provided that measures should be adopted by taking into account of internationally agreed rules, criteria standards, recommended practices

47 Supra note no 37.
48 They declare the basic obligation of the states to protect and preserve the marine environment, and their duty to ensure that discharges from land based sources within their territories do not cause pollution to the marine environment of other states or of areas beyond the jurisdiction of national jurisdiction.
and procedures. These flexible generalities are supplemented by the recommendations that states should establish specially established areas, including environmental quality objectives and to develop a comprehensive environmental management approach. Other techniques recommended by the guidelines are, monitoring and data management, environmental assessment of control strategies, provisions on notification and information exchange, consultation, assistance to developing countries, and recourse to the provisions of the prompt and adequate compensation or relief for damage caused by pollution of the marine environment.

Annex I identifies control strategies which may be based upon marine environmental quality standards, emission standards or planning strategies. In addition annex I identified seven control instruments which may be used in support of effort to prevent pollution from land based sources they are regulations, emission standards and environmental quality standards, guidelines codes of practice, permits, equipment standards certification, product controls, planning restrictions and economic measures etc. Annex II classified substances based upon the approach of Paris and London Convention, by taking into account of persistence; toxicity, bio- accumulation and tendency to bio accumulate etc. Annex III has provided the guidance on monitoring and data management. Thus Montréal Guidelines are not merely a restatement of existing agreements, but a further elaboration. However the principle agreements which were used as a basis of guidelines are the law of the seas convention, the Paris or London Convention on land based marine pollution, Helsinki convention and the Mediterranean protocol on land based marine pollution. However Montréal guidelines were not widely implemented and failed to achieve its purpose because of its recommendatory nature.

49 Montreal guidelines Para 5, 9,11 to 13 and 17
IV. INDIAN LEGISLATIONS TO GOVERN THE LAND BASED SOLID WASTE;

More than 90% of the solid waste generated on land, due to the various human activities and animal discharges. Most of the developed countries have adopted different measures to control the menacing threat of hazardous, as well as other kinds of waste that are in solid form. These measures are administrative, regulatory and legal in nature, for example, United States of America has passed much legislation to regulate the solid waste generation on land they are, solid waste disposal Act 1960, the resource conservation and Recovery Act 1976 and Superfund Act 1980 to deal with the problems relating to solid wastes. Again to control and regulate the toxic substances and hazardous waste, The pesticide control Act 1972, The ocean Dumping Act 1972, The toxic substance control Act 1977, The Nuclear waste policy Act 1982 and various other laws have been enacted. Similarly, in United Kingdom various laws have been passed for the effective regulation of the nuclear, hazardous and solid waste. For e.g., The radioactive substances Act 1960, The nuclear Installation Act 1970, The Radioactive protection Act 1970 and control of pollution Act 1974.

In India there are enormous laws which directly or indirectly deal with hazardous waste, toxic substances and other waste which are in solid form. These legislations are, The Indian Penal Code 1860, where section 268, 269, 277, 278 and 284 enumerated that the acts and omissions that affecting the public health, safety and convenience are considered as penal offences. But these sections are not directly addressed the discharge and disposal of most of the modern hazardous and solid wastes, because this law is more then a century old and at that time the framers of the code has not visualized the problems

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relating to the generation of solid waste, its evil effects and need for the regulation and control of this waste. It is a criminal law that addressed all most all the offences, hence it is praiseworthy that during the 1860’s

India has considered the pollution related problems that can cause obstruction to the public peace and health hence should be punished.

India also enacted Indian Petroleum Act 1934. Inflammable Substances Act 1952, Atomic Energy Act 1962, Insecticides Act 1968 and Radiation protection Rules 1971 etc are deal with the specified hazardous substances. Further, the Stock Holm Conference 1972 can be termed as step stone in the evolution of the environmental jurisprudence in India. Being a participant to the Stock Holm Conference in 1972, India has taken a lead among all other developing countries to have different administrative, regulatory and legal measures to control the hazardous and all other kinds of waste that are in solid form. After the Stockholm Conference in 1972, India has enacted many Acts, they are, the Water (prevention and control of pollution) Act 1974, and The Environmental Protection Act 1986 etc. Further it was realized that most of the hazardous wastes are generated by factories, industries etc. therefore many more laws were enacted to address the said problem. Similarly the Environment Protection Act 1986 (EPA 1986) was enacted that comprehensively deal with all aspects of environmental problems. This Act also covers the pollution caused by hazardous substances, section 2(e) of the Environmental Protection Act defined, the “Hazardous Substances”^50. Further Sec 3 of the Environmental Protection Act empowered the central government to take all measures as it deems necessary or expedient for the purpose of

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^50 Hazardous substances means any substance or preparation which by reason of its chemical or physiochemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism property or the environment.
laying down the procedures and safeguards for handling the hazardous substances and also to comply with the procedural safeguards. Section 6 of the Environmental Protection Act further empowered the central government to make rules in respect of all or any of the matters referred to section 3 of the Act and such rules may provide for

i. The procedures and safeguards for handling of hazardous substances in different areas.

ii. The prohibition and the restriction on handling of hazardous substances in different areas.

iii. The prohibition and restrictions on the location of the industries and carrying on the processes and operation in different areas.

iv. The procedures and safeguards for prevention of accidents which may cause environmental pollution and also to provide remedial measures for such accidents.

The central government in exercise of the powers conferred under section 3, 6, 8 read with sec 2551 of EPA 1986 has enacted various rules and regulations to provide the administrative, regulatory and legal measures to control and regulate the hazardous waste and solid wastes. Some of the important rules enacted under the Environmental Protection Act 1986 to regulate various kinds of solid waste on land, are as follows.

A. Hazardous waste (Management and Handling) Rules 1989


51 Section 25 of the Environmental Protection Act 1986, authorizes the central government to make rules for carrying out purposes of the Act and such rules may provide for the procedure in accordance with and the safeguards in compliance with which hazardous substances shall be of the Act. Sec 25 (2) (b)


G. The Ozone Depleting Substances (Regulation and Control) Rules 2000.


K. Environmental Impact Assessment Notifications.

L. Public Hearing Notifications.

These are the important rules and notifications enacted by the central government to address the solid waste from different sources.


The Hazardous Waste (Management and Handling) Rules 1989 came into force on 28-7-1989. The 1989 Rules consists of 18 Rules and 4 schedules which are specifically designed for the proper and effective management and handling of hazardous waste in India.

Rule 2, has provided the scope and application\(^{52}\) of the said rules and rule 3 deals with the definitions of some important terms. Rule 4 has provided that, the occupier and

\(^{52}\) These Rules shall apply to the Handling of Hazardous Substances as specified in the Schedules to the Rules. However they are not applicable to
the operator of the facility shall be responsible for the proper collection, reception, treatment, storage and disposal of hazardous waste which are listed in the schedules to the Rules. The occupier or any other person acting on his behalf, who intends to get his hazardous wastes treated by the operator of the facility, shall give the operator of the facility, such information as may be specified by the State Pollution Control Board or Committee. It shall be their responsibility to ensure that the wastes are properly handled and disposed of without any adverse effects on the environment.

**DUTIES OF THE OCCUPIER AND OPERATOR OF A FACILITY**

The occupier and the operator of the facility shall take adequate steps, while handling hazardous wastes.

a. To prevent accidents and limit their consequences on the human and on the environment

b. To provide all the necessary information, training and equipments to ensure the safety of the persons who are all working on the site.

Further, every occupier generating hazardous waste, whether having the facility or not for the collection, reception, treatment, transportation, storage and disposal of hazardous wastes, shall make an application in the prescribed from along with requisite fee, for authorization to the member secretary of the State Pollution Control Board or to any other officer designated by the board, for the grant of authorization for above

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a. Waste water and exhaust gases which are covered under the provisions of water (prevention and control of pollution) Act 1981 and Rules made there under.
b. Waste discharged from ships beyond five kilometers as covered under the Provisions of the Atomic energy Act 1962 and the rules made there under.

53 Rule 4-A
mentioned activities\textsuperscript{54}. Similarly, if any person intended to be an operator of the facility or engaged in such business should also seek authorization from the State Pollution Control Board\textsuperscript{55}. However the state pollution control Board has not permitted to issue an authorization unless it is satisfied that the applicant possesses appropriate facilities, technical capacities and equipment to handle hazardous waste with necessary safety\textsuperscript{56}. Rule 7 has provided the specifications for packaging, labeling and transport of hazardous wastes. According to the said rule the Packaging should be based on the composition which is suitable for the handling, storage and transport of such hazardous waste. The labeling should easily visible and able to withstand physical conditions and climatic factors\textsuperscript{57}. In case of inter and intra state transport of hazardous wastes, the occupier should obtain the no objection certificate (NOC) from the State Pollution Control Boards of respective states.

The Hazardous Waste (Management and Handling) Rules 1989 further required that the occupier or any operator of the facility shall be responsible for identifying the sites for establishing the Hazardous Wastes Disposal Facility. The State government, operator of the facility or any association of occupiers shall identify common hazardous waste disposal sites in the state\textsuperscript{58}. They shall also undertake an Environmental Impact Assessment (EIA) of the sites and shall inform the state government to take necessary action for notifying the site.

\textsuperscript{54} Rule 5 of hazardous Waste (handling and Management) Rules 1989
\textsuperscript{55} Stipulated time limitation of such authorization is 5Years from the date of issue or renewal, but the member secretary of state pollution control Board or any officer designated for that purpose, may refuse to grant authorization or can suspend or cancel such authorization.
\textsuperscript{56} Jaswal, Environmental Law, chapter 13, page no 368. Para4.
\textsuperscript{57} Packaging, labeling and transport of hazardous wastes shall be in accordance with the rules made under the motor vehicles Act 1988.
\textsuperscript{58} Rule 8 of the Hazardous Waste (management and Handling) Rules 1989.
Further, the design and setting up of disposal facility should be in consistent with the guidelines issued by the central government or by the state government as the case may be. Before setting up of such disposal facility, the design and the lay out of such facility should be approved by the State Pollution Control Board\textsuperscript{59}. The occupier or the operator, as the case may be shall be responsible for safe and environmentally sound operation of the facility\textsuperscript{60}.

In addition, in case of any accidents occurred at the facility or on a hazardous waste site during the transportation of hazardous waste, the occupier or the operator shall report immediately to the State Pollution Control Board or to the Committee, about the said accident\textsuperscript{61}. Besides, import and export of hazardous waste has been completely prohibited for dumping and disposal. Rule 11, specifically provided that import of hazardous waste form any country to India, and export of hazardous waste form India to any other country for dumping or disposal, shall not be permitted. However, the Rule 12 provides an exception to the Rule 11. According to this rule, import and export of hazardous wastes shall be permitted only when such wastes are used as raw materials for recycling or reuse. Any occupier who export or import the hazardous wastes form India or to India shall comply with the articles of the Basel Convention, for which India is also one among the contracting parties. Hence the movement of hazardous waste from one country to another country shall be considered as illegal\textsuperscript{62}, if such transportation is without prior permission of the central government or if the permission has been obtained.

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{59} Rule 8-A of Hazardous Waste (management and handling ) Rules 1989
\item \textsuperscript{60} Rule 8-B of Hazardous Waste (management and Handling) Rules 1989
\item \textsuperscript{61} Rule 10 of Hazardous Waste (management and Handling ) Rules 1989
\item \textsuperscript{62} Rule 15 of the Hazardous Waste (management and Handling) Rules 1989.
\end{itemize}
\end{footnotesize}
through falsification, misrepresentation or fraud or if it is not in conformity with the shipping details as provided in the documents ⁶³.

Rule 16, has incorporated the “polluters pay principle” and has provided that the occupier, transporter and operator of the facility shall be liable for the damages caused to the environment due to the improper handling and disposal of hazardous wastes listed in the schedules 1, 2 and 3 of the said Rules 1989. The occupier and the operator of a facility shall also be liable to reinstate or restore the damaged or destroyed elements of the environment and shall be liable to pay a fine as levied by the State Pollution Control Board with the approval of the Central Pollution Control Board for any violation of the provisions under these Rules. According to Rule 18, appeal against any order of grant or refusal can be made to the secretary, Department of Environment of State Government.

Hazardous Waste (Management and Handling) Rules 1989, is strong enough to regulate, manage and handle the hazardous waste, but implementation and enforcement part of these Rules needs further stringent regulations for the proper management of the hazardous waste.

The Hazardous Waste (Management and Handling) Rules 1989 contains many directions to regulate, control, manage the hazardous waste but still has not attained the core objectives of said Rules. However, waste generation is directly linked with the socio-economic conditions, industrial development of a nation and depend on the per-capita income of that nation, therefore complete eradication of the waste is not possible, hence attention should be given towards the effective management and control

⁶³ In case of illegal movement, the hazardous waste in question shall be shipped back with in 30 days either to the exporter or to the exporting country. If it can not be shipped back then it shall be disposed of with in 30 days from the date of off loading. However disposal costs should be borne by the exporting country.
of all kinds of wastes, in order to prevent the pollution due to the land based hazardous
and solid waste that enters the marine sooner or later.

B. THE MANUFACTURE, STORAGE AND IMPORT OF
HAZARDOUS CHEMICALS RULES 1989.

The Rules came in to force with effect form 27-11-1989. It contains 20 Rules and
12 schedules. These rules apply to the industrial activity in which hazardous chemicals
are involved and which satisfies any of the criteria laid down in part I of schedule I\textsuperscript{64} or
listed in column 2 of part II of schedule I\textsuperscript{65}. Further, the rules are also applicable to the
storage facility of hazardous chemicals which are specified in scheduled 2 in a quantity
equal to or more than the threshold quantity specified in column 3 of schedule 2\textsuperscript{66}. Rule 5
obligated the occupier, to notify about any accidents that occur on a site or in a pipeline
to the concerned authority, with in 45 days. Then the concerned authority on the receipt
of the report shall undertake a full analysis of the major accidents, and send the requisite
information with in 90 days to the ministry of environment and forest\textsuperscript{67}. The concerned
authority shall inform the occupier, about any lacuna, which in his opinion needs to be
ratified to avoid the major accidents.

Rule 7 and 8 contained the requirements that are to be fulfilled to get the
approval. Rule 15 imposed a duty on the occupier of the industry to take appropriate
steps to inform persons out side the site who are likely to be affected by a major accident.
Such information shall include.

\textsuperscript{64} Part I schedule I contains certain toxic chemicals having the value of acute toxicity and which owing to
their physical and chemical properties and are capable of producing major hazardous.
\textsuperscript{65} Part II of schedule I has listed 684 hazardous chemicals.
\textsuperscript{66} Rule 4 of the manufacture, storage and import of hazardous chemicals Rules 1989.
\textsuperscript{67} An occupier shall notify to the concerned authority about the steps taken to avoid any repetition of such
occurrence on a site.
a. The nature of the major accident hazards and

b. The safety measures and the “Do’s and Don’ts” which should be adopted in the event of major accidents.\(^{68}\)

Rule 17, gave importance to the collection, development and dissemination of information.\(^{69}\) Further Rule 18 applies to the import of those chemicals, which satisfies any of the criteria laid down in part I of schedule I or listed in column 2 of part II of schedule I contains 684 hazardous and toxic chemicals, any person responsible for importing such hazardous chemicals in India shall provide\(^{70}\) before 30 days or as reasonably possible but not later than the date of import to the concerned authorities. If the concerned authority of the state is satisfied that the chemical being imported is likely to cause major accidents, it may direct the importer to take such safety measures, as the concerned authority of the state deems fit. The person importing hazardous chemicals is required to maintain the records as per schedule 10, and shall be inspected by the concerned authority. The importer of the hazardous chemicals shall ensure that while transporting hazardous chemicals from port of entry to ultimate destination, the provisions of motor vehicles Act 1988 and the central vehicle Rules 1989 should be complied with. Certain chemicals are considered as a solid waste like, lead, mercury, zinc, etc. However the import of these chemicals should be in accordance with the provisions of Basel convention as well as the Manufacture, Storage, and Import of Hazardous Chemicals Rules 1989.

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\(^{69}\) According to this rule, the occupier of an industrial activity shall arrange to obtain or develop information in the form of safety data sheet as specified in schedule 9 relating to acute toxic, flammable or explosive substance.

\(^{70}\) The information regarding the name and address of the person receiving the consignment in India, the part of entry in to India mode of transport from the exporting county to India, the quantity of chemicals being imported, complete product and safety information.
C. HAZARDOUS MICRO-ORGANISMS RULES 1989;

The central government has enacted the Hazardous Micro Organisms Rules 1989, to regulate the manufacture, use, import, export, and storage of hazardous micro-organisms and genetically engineered cells. These Rules covered industries, hospitals, research institutions and other establishments that are handling micro-organisms or which are engaged in genetic engineering. Rule 4 plays a very important role in administering the regulations. This rule established the committee of experts which has to recommend various safety regulations. For example the Recombinant DNA Advisory Committee is required to review the developments which are taking place in biotechnology in India and abroad and to recommend suitable regulations in Recombinant DNA research use and applications. The review committee on Genetic Manipulation prescribed the procedures for restricting or prohibiting production, sale, import and use of specified organisms. Rule 7 has prohibited the manufacturing, handling and use of hazardous micro-organisms, provided with the proper approval form the Genetic Engineering Committee. Rule 17, required the establishment of a district level committee which should be headed by the District Collector, to prepare off site emergency plans to contain major accidents caused by the escape of harmful micro-organisms. The provision for the establishment of the committee of experts to recommend various safety measures for the manufacture, import, export, storage of hazardous micro organisms is a prompt effort by the central government.

D. THE CHEMICAL ACCIDENTS (EMERGENCY PLANNING PREPAREDNESS AND RESPONSE) RULES 1996
This rule came into force on 2-8-1996, contains thirteen Rules and eight schedules. These Rules were framed to strengthen the administrative response to the hazardous substance accidents and thereby to supplement the hazardous chemical Rules 1989. The Rules required that the centre and the state has to constitute “crisis Groups” at the National, State and local level. These central crisis Groups are responsible for dealing with major chemical accidents. Rules 4 laid down the constitution of crisis alert system. The central crisis group is the apex body to deal with the major chemical accidents and to provide guidance to handle the major chemical accidents. In addition, the central crisis group shall perform the functions like,

a. Continuous monitor of the post accident situation arising out of major chemical accidents.

b. Conducting post accident analysis of major chemical accidents and evaluation of responses.

c. Review the district off-site emergency plans with a view to examine its adequacy in accordance with the manufacture, storage and import of hazardous chemicals rules and suggest measures to reduce risks in the industrial pockets.

d. Review the progress reports submitted by the state crisis groups.

e. Respond to the queries addressed to it by the state crisis groups and the district crisis groups.

f. Publish a state-wise list of experts and officials who are concerned with the handling of chemical accidents.
g. Render, in the event of a chemical accident in a state, all financial and infrastructural help as may be necessary\textsuperscript{71}

Rule 6 and 7 deals with the constitution, powers and functions of the state crisis group, respectively. Similarly Rule 8 and 9 contemplates the constitution and functions of the district crisis group. Rule 10 deal with the functions of the local crisis group. Besides, the central crisis group is under the duty to provide information on request, regarding the chemical accident prevention, preparedness and mitigation in the country. Similarly the state, district and local crisis groups have to provide awareness on request, regarding prevention of accidents and also preparedness and mitigation of accidents.

E. THE BIO-MEDICAL WASTE (MANAGEMENT AND HANDLING) RULES 1998

The central government in exercise of powers under section 6, 8, and 25 of the Environment (Protection) Act 1986 has enacted the bio-medical waste (management and handling) Rules 1998. This rule contains fourteen rules and six schedules. These rules were further amended in September 17\textsuperscript{th} 2003 by the Bio-medical waste (management and handling) rules 2003\textsuperscript{72}.

These Rules have been enacted to regulate through a licensing and reporting system, the bio-medical waste generated by hospitals, clinics, blood banks and other organizations. These rules apply to all persons who generate, collect, receive, store,

\textsuperscript{71} Rule 5 of chemical accidents (emergency planning preparedness and response) Rules 1996
\textsuperscript{72}S.V. Joga Rao, Bio-medical waste and law, page no 23 Para1.
transport, treat, dispose or handle biomedical waste in any form. The said rules have provided that, the bio-medical waste shall be properly treated and disposed of.

Schedule I has prescribed different methods of treatment of Bio-medical waste and the standards are prescribed in schedule V of the Rules. Schedule I prescribed different methods for the disposal of biomedical wastes in accordance with their nature. These methods are, deep burial, incineration, local autoclaving, micro waving, mutilation, disposal in land fills, chemical treatment. Etc. Every occupier, where required, shall set up requisite bio-medical waste treatment facility, like, incinerator, autoclave, microwave system for the treatment of waste or he has to ensure the requisite treatment of waste at a common waste treatment or any other waste treatment facility. Rule 6 has provided the segregation, packing, transportation and storage of biomedical waste. According to this rule bio-medical waste should not be mixed with other wastes and Bio-medical wastes should be segregated at the point of generation, prior to its storage, transportation, treatment and disposal. The containers should be labeled according to schedule III. If a container is transported form the premises where bio-medical waste is generated to any waste treatment facility outside the premises, the container shall also carry information for transportation of Bio-medical waste as prescribed in schedule IV. Further, untreated bio-medical wastes shall be transported only in such vehicles as may be authorized for the purpose by the competent authority, and untreated bio medical waste shall not be stored beyond a period of 48 hours. Present rules required that every occupier of the institution generating, collecting, receiving, storing, transporting, treating and disposing

74 Rule 5 of Bio-medical waste (management and Handling) rules of 1998
75 If there is a need to store the waste beyond 48 hours the authorized person must take the permission of the concerned authority.
and handling the bio-medical waste in any other manner, (except such occupier of clinics, dispensaries, pathological laboratories, blood banks providing treatment, service to less then 1000 patients per month) and every operator of Bio-medical waste facility shall make an application in the prescribed form No.1 to the prescribed authority for the grant of authorization, by paying prescribed fee, with the application. Rule 10 specifically requires that every occupier and operator should submit an annual report to the prescribed authority, before 31st of January every year. Such report should include the information about the categories and quantities of Bio-medical wastes that were handled during the preceding year. The prescribed authority shall send this information to the central pollution control Board by 31st March of every year.

In addition, in case of any accidents that occurred at any institution or facility or any other side where Bio-medical waste is handled or during transportation of such waste, the authorized person shall report the accident to the prescribed authority. Rule 14 has provided that the municipal corporations, municipal Boards or Urban Local Bodies, as the case may be, shall be responsible for providing suitable common disposal or incineration sites for the bio–medical wastes generated in the area under their jurisdiction.

In the areas outside the jurisdiction of any municipal body, it shall be the responsibility of the occupier or the operator to make arrange for the suitable sites, individually or as an association, for the effective treatment of bio-medical waste, so as to comply with the provisions of the said Rules.

76 Prescribed authority means the state pollution control Board in respect of states and the pollution control committees in respect of the union territories.
77 Rule 8 of Bio-medical waste (management and Handling) rules of 1998.
78 Rule 12, Ibid
F. THE RECYCLED PLASTICS MANUFACTURE AND USAGE RULES 1999

This Rule contains nine Rules. The very purpose for the establishment of these rules is to prohibit the use of carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of food stuffs. These Rules further prescribed conditions for manufacturing of carry bags and containers of plastics. They also put obligation on the plastic Industry Association to undertake self regulatory measures. However, in practice regulating the use of these carry bags is a kind of challenge to the concerned authority.

G. THE OZONE DEPLETING SUBSTANCES (REGULATION AND CONTROL) RULES 2000

The central government in exercise of the powers conferred by section 5, 6, 8 and 25 of the Environment (Protection) Act 1986 has enacted these rules. These Rules came in to force with effect from 19-7-2000, which contained 15 Rules and 12 schedules. The rational behind the establishment of the said Rules is to regulate the production, export, import and consumption of ozone depleting substances and also amid to prohibit the sale and purchase of ozone depleting substances. Rule 9 has provided that no person shall establish or expand or cause to establish or expand any manufacturing facility for production of any ozone depletion substances after the specified date. Further the Rule

79 The state of Himachal Pradesh was the first state to enact a specific legislation, which prohibits the use of plastic carry bags under the Himachal Pradesh non Bio- degradable garbage (control) Act 1995. Recently, a state of Tamil Nadu has enacted the Tamil Nadu Plastic Articles (prohibition of sale, storage, transport and use) Act 2000.
14 has forwarded the procedures for registration\textsuperscript{80}, cancellation\textsuperscript{81} and appeal\textsuperscript{82} against the orders. However, Schedule VIII has provided an exemption, i.e., the applications or circumstances specified in schedule VIII are exempted form the ozone depleting substances (Regulation and control) Rules 2000.

H. THE MUNICIPAL SOLID WASTES (MANAGEMENT AND HANDLING) RULES 2000

The said Rules contained 9 sections and IV schedules. Section 3 of the Rules deals with the definitions of various technical terms and section 4 has provided that the said Rules applies to all the municipal authorities and these authorities should take the responsibility for the proper collection, storage, segregation, transportation, processing and disposal of municipal solid waste. Further, the municipal authority or an operator of a facility shall make an application in form I, to the State Board or to the Committee to set up for grant of authorization waste processing and disposal facility, in order to comply with the implementation programme, that laid down in schedule I\textsuperscript{83}.

\textsuperscript{80} Schedule IX contains the procedures and conditions for the registration.
\textsuperscript{81} If the conditions for the registration was not complied with, than the registering authority has the power to cancel the registration.
\textsuperscript{82} Appeal against the order of the registering authority shall lie with the specified authority given in schedule V with in 30 days from the order.
\textsuperscript{83} Section 4 (2) of municipal Solid Waste Rules 2000
### SCHEDULE I\(^{84}\)

**IMPLEMENTATION SCHEDULE**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Compliance Criteria</th>
<th>Schedule</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Setting up of waste processing and disposal facilities</td>
<td>By 31-12-03 or earlier</td>
</tr>
<tr>
<td>2</td>
<td>Monitoring the performance of waste processing and disposal facilities</td>
<td>Once in 6 months</td>
</tr>
<tr>
<td>3</td>
<td>Improvement of existing land fill sites as per provisions of these rules</td>
<td>By 31-12-2001 or earlier</td>
</tr>
<tr>
<td>4</td>
<td>Identification of land fill sites for future use and making sites(s) ready for operation</td>
<td>By 31-12-2002 or earlier</td>
</tr>
</tbody>
</table>

The municipal authorities shall comply with the rules as per the implementation schedule, laid down in schedule I\(^{85}\). The same section in Para 4 obligated the municipal authorities to furnish its annual reports in form number II, to either secretary-in-charge of the Department of Urban development of the concerned state or to the District Magistrate or to the Deputy Commissioner. Further these officials are under the responsibility for the enforcement of the provisions of the said rules with in the limits of their jurisdiction\(^{86}\). The Central Pollution Control Board and the State Pollution Control Board or the committee\(^{87}\) shall monitor the compliance of standards as specified under schedules II, III, IV\(^{88}\). After the receipt of such application for the grant of authorization to set up the waste processing and disposal facility, the State Board or the Committee

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85. Ibid, Section 4 (3)
86. Section 5(1) and (2)
87. Regarding ground water, ambient air, leachet quality and the compost quality including incineration standards
88. See appendix at the end.
shall examine, by taking into consideration of the views of other agencies\textsuperscript{89}. This prior authorization has to be issued by the State Pollution Control Board or by the Committee; with in 45 days and on the expiry of the validity period, a fresh authorization is necessary\textsuperscript{90}. Para 5 of the same section called for the co-operation between the State and Central Pollution Control Board to implement and review the guidelines, standards\textsuperscript{91}.

The municipal solid waste should be managed in accordance with the present rules and criteria that mentioned in schedule II. The waste processing and disposal facilities to be set up by the municipal authority or by a concerned operator, shall meet the specification and standards as specified in schedule III and IV\textsuperscript{92} In case of any accidents occurred at any municipal solid waste collection, segregation, storage, processing, treatment and disposal facility or during transportation, the municipal authority should report the accident in form V to the secretary in charge or Urban Development or to District Magistrate\textsuperscript{93} or to Deputy Commissioner.

The municipal solid waste Rules 2000 have provided comprehensive guidelines for the collection, segregation, processing and disposal of municipal solid waste. The very first problem in the Municipal Solid Waste Management is, the proper segregation of the various kinds of solid waste and once it has been done effectively then the Municipal solid waste management is not at all a problem. Hence for the effective management of the Municipal solid waste, public awareness is very much important and the society should co-operate with the concerned authority for the effective segregation of

\textsuperscript{89} State Urban Development Department Town planning department
\textsuperscript{90} Section 6(1) (2) (3) and (4)
\textsuperscript{91} Ibid.
\textsuperscript{92} Section 7
\textsuperscript{93} Section 9
the solid waste. It is possible, only when the public segregates the solid waste before its disposal to the ultimate bin kept by the Municipal authorities.

I. THE BATTERIES (MANAGEMENT AND HANDLING) RULES 2001

This rule consists of 14 sections with one schedule and 9 forms. These rules are applicable to every manufacturer, importer, re-conditioner, assembler, dealer, recycler, auctioneer, consumer and bulk-consumer involved in manufacture, processing sale, purchase and use of batteries\(^{94}\) or components there of\(^{95}\) the said rules has provided that, used batteries should be collected back by the manufacturer, importer, assembler and reconditioned through the individual and collective effort. Further they are under the obligation to file returns to the state board regarding the sales and buy back of batteries twice a year, in form number 1\(^{96}\). The same article has provided that, centers to be established to collect the used batteries from consumers or dealers and these collected batteries should be sent only to the registered recyclers, with due care, so as not to endanger the environment. Further public awareness should be given on the hazardous nature of the lead and its repercussion. Besides the said rules 2001 imposed a kind a responsibility on the recyclers, dealers and also on bulk consumers to handle the batteries, so as to prevent the damages to the environment.

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\(^{94}\) Battery means lead acid battery which is a source of electrical energy and contains lead metal. As defined in section 3(e) of the Batteries Rules 2001

\(^{95}\) Section 2 of the Batteries Rules 2001

\(^{96}\) Latest by 30 June, 31\(^{\text{st}}\) December of every year
J. SOLID WASTE MANAGEMENT AND JUDICIAL RESPONSE IN INDIA

The judiciary has shown its deep concern towards the protection of environment from the hazardous and solid wastes. Judiciary has kept in mind the need to have industries carrying on hazardous activities, as they are needed for the national development. The judiciary has emphasized that if any industry causes hazardous to the environment then that industry must compensate for restore the environment to its original status. The judiciary gave much importance to the concepts like sustainable development, polluters pay principle, while deciding the cases relating to the solid waste. Some examples are as follows.

M.C.MEHTA V/S UNION OF INDIA\textsuperscript{97}

The supreme court has considered the question of liability of an enterprise which is engaged in a hazardous as well all dangerous activities and observed that, an enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of the persons working in the factory and residing the surrounding areas owed an absolute and non delegable duty to the community to ensure that no harm to any one on account of hazardous or inherently dangerous nature of the activity which it has undertaken.

It was further observed that, the enterprise must held to be under obligation to provide that the hazardous or inherently dangerous activity in which it engaged must be conducted with the highest standards of safety and if any harm results on account of such

\textsuperscript{97} AIR 1987 S.C 1086 (popularly known as oleum gas Leakage case-III)
activity, the enterprise must be absolutely liable to compensate for such harm and there should be no answer to the enterprise to say that it had taken all reasonable care and such harm occurred without any negligence on the part of enterprise.

The question of the measure of compensation was resolved by the court as follows “The compensation must be correlated to the magnitude and capacity of the enterprise because such compensation must have a deterrent effect”.

IN DR.B.L.WADEHRA V/S UNION OF INDIA\textsuperscript{98}

The petitioner sought direction to the Municipal Corporation Delhi (MCD) and the New Delhi Municipal Council (NDMC) to perform their statutory duties, especially with regard to the collection, removal and disposal of garbage and other wastes. On the other hand MCD and NDMC pleaded the non-availability of funds, inadequacy and inefficiency of staff and insufficiency of machinery for the non-performance of their duties. The court considered all problems relating to the solid waste management in cities and put an effort to maintain the Indian Capital clean and alive; to this context the court has issued the following directions.

1. To have the city of Delhi scavenged and cleaned every day. The garbage /waste shall be lifted from the collection centers every day and transported to the designated places for the disposal.

2. To construct and in stall the incinerators in all the hospitals/nursing homes, with 50 beds and above\textsuperscript{99}.

\textsuperscript{98} 1996 ,2, S.C 594
\textsuperscript{99} All India Institute of Medical Sciences, New Delhi was directed to install sufficient number of incinerators or an equally effective alternative to dispose of hospital waste.
Apart from these guidelines the Doordarshan was directed to undertake a programme of educating the residents of Delhi about their civil duties under the law by making appropriate announcements, displaying on television to inform the public about the penalties which can be imposed for a violation of the law. Further the Government of India was directed to supply the tippers to the MCD, for which the order has been placed by the MCD, with in 3 months. Hence it is clear from the guidelines given in the Wadehra case that, public awareness and needed aid from the government is very much important to control and manage the Land based solid waste.

Similarly, in various decided cases\footnote{Indian Council for Enviro-legal Action v/s Union of India. Almitra H. patel V/s Union of India Research Foundation for science, Technology and Natural Resources policy v/s Union of India and others etc}. Supreme Court has forwarded the directions in order to strengthen the integrated solid waste management system. Rather it is more appropriate to say that, the legal development relating to waste management in India is more or less due to the judicial efforts and activism in India. Further the solid waste generation and its effective management directly dependent on the people of that nation; hence without proper support from the public, the concerned authorities can not manage the waste properly. In addition this area needs further scientific development where each and every house should own its own energy production unit by using the waste that generated in their home itself. Similarly technology should be developed to convert the waste into energy in various industries. Hence the government should give attention towards the development of advanced technology for the effective reuse of waste to its maximum extent.
V. WATER (PREVENTION AND CONTROL OF POLLUTION) ACT 1974

Water (Prevention and Control of Pollution) Act 1974 has forwarded elaborate definition for water pollution which means “such contamination of water or such alteration of the physical chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance in to water (whether directly or indirectly) as may or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organism”\(^{101}\).

Pollutants enter the marine through numerous pathways most important of them are, water ways, rivers, estuaries and floods etc. Therefore the protection and preservation of the rivers and estuaries plays a significant role in the protection and preservation of the marine environment, because huge quantum of land based solid waste enter the marine through these path ways. Hence the ‘Water (Prevention and Control of pollution) Act 1974’ mainly designed to prevent and control the water pollution and to maintain or restore the wholesomeness of the water\(^{102}\). The Act has established the pollution control boards and conferred the powers and imposed obligations for the protection and preservation of the water. Presently these pollution control boards are acting as a watch dog for the protection and preservation of internal water. Section 2(i) (v) empowered the central or state government, by issuing a notification in the official gazette, to specify the

\(^{101}\) Section 2 (e) of the Water (Prevention and Control of Pollution) act, 1974

\(^{102}\) The Water (Prevention and Control of Pollution ) Act 1974 has been designed with the help of 64 sections divided in to 8 chapters
extent of the tidal water and can apply the provisions of the Water Act 1974\textsuperscript{103}. The Act has established State Pollution Control Board, Central Pollution Control Board and also Joint Pollution Control Board. The boards are entrusted with certain duties such as to advice the central government in the matters relating to the protection and preservation of the wholesomeness of the water. The boards have to co-ordinate with the activities of the state pollution control board and resolve dispute among them. Further these boards have to plan and organize the nation wide plan and co-ordinate with each other to execute such action plans. These boards are under the obligation to collect the information, statistical data regarding the water pollution and publish such information. In addition power to establish the environmental laboratories are also vests with these boards. Hence these boards are performing significant role in the protection and preservation of the internal and marine water. However the constitutional structure of these boards is not sufficient to regulate the environmental challenges. Hence soon steps should be taken to revive the structure, functions and powers of the pollution control boards in order to make them stronger to face the new environmental problems in general and solid waste in particular.

\textbf{VI. ENVIRONMENTAL POLICIES}

The government of India has taken systematic and sustained efforts to tackle major environmental problems of this country. One of such effort is to formulate comprehensive policy framework to enable the government to have holistic view of all environmental issues and to formulate an ‘Environment Plan’ for the country.

\textsuperscript{103} Sea or tidal waters to such extent or as the case may be, to such point as the state government, by Notification in the official Gazette, specify in this behalf. Section 2(i) (v)
There have been several policy statements relating to conservation of water, forest, Marine Resources and for the abatement of pollution apart from the environment component, of the policy documents relating to sectors like housing land use, Education, industries and technology etc. some of such policy statements which directly related to the marine pollution are as follows.

1. National water policy 1987
3. The National Conservation Strategy and policy statement on environment and development

The formulation of above policy statement has fulfilled a long standing demand of devising a clear and precise national policy on environmental protection and management. Few of the policy directives are yet to be put in to action fully to test its utility. Rivers, Streams, Estuaries, are most important pathways for land based solid waste to enter the marine environment. Similarly, floods also contributes significantly for the marine pollution, hence planning and management of these water coerces at national level is of prime importance. Floods ultimately reach the marine via rivers and other pathways. According to National commission on floods, the area susceptible to floods is around 40 million hectares. National Water Policy 1987 contains most detailed provisions for the development of water resources, and flood management. According to this policy there should be a master plan for flood control and management for each flood prone basin. Sound watershed management through extensive soil conservation, catchments area treatment preservation of forests and increasing the forest area and the construction
of check-dams should be promoted to reduce the intensity of floods. In addition, an extensive network for flood forecasting should be established for timely warning to the settlements in the flood plains, along with the regulation of settlements and economic activity in the floodplain Zones, to minimize the loss of life and property on account of floods is very much important. Similarly physical flood protection works like embankments and dykes will help for the proper flood management. However the said policy has addressed the development of water resources and flood management and there by incidentally covered the marine pollutants that reach the marine environment through run off, via flood, rivers and estuaries. Hence one can not deny the value of the national water policy 1987, by stating that it has failed to address the solid wastes only because indirectly it has forwarded detailed provisions for the flood management which is one among the important source of marine pollution.

VII. OCEAN POLICY STATEMENT

According to this regime nearly 2.02 million square kilometers of area or nearly two third of land mass has come under India’s national jurisdiction. The vastness, complexity and certainty of the ocean environment call for a coordinated centralized and highly sophisticated development response. The ocean policy statement recognized that, marine development is directly connected with scientific and technological achievements in other areas. Hence while we develop basic marine science and technology i.e. technology for marine environment, our technological advances should be geared to the utilization and preservation of the marine environment. Again the ocean policy has call for an integrated legal framework and its concomitant enforcement to achieve the
protection and preservation of marine environment. However in India the coast Guard Organization is the coordinating mechanisms of overall structure of legislative measures. In addition a centralized data system of ocean development with a proper mechanism for collection, collation and dissemination of information acquired both indigenously and from foreign sources.

Further, existing agencies will have to appropriately strengthen to meet the demands of this growing challenge. The department of ocean development will function in conjunction with other concerned agencies as a focal point to promote institutional capacity in areas where significant work is lacking. The complex program that ocean development entails will require well designed management and institutional extension of the department of ocean development with sufficient powers viz a viz other agencies to help proper and speedy ocean development which enables India to be in the fore front of the international effort. This would also mean close cooperation with both developing and developed countries in a spirit of understanding of the concept that the environment is property of none, hence the protection and preservation of environment is the prime responsibility of human beings.

VIII. IMPORTANT NOTIFICATIONS UNDER-EPA 1986

A. ECO-LABELING NOTIFICATION

The ministry of environment and forest though its notification dated 20th February 1991 has declared its decision to institute a scheme on labeling of environment friendly products.104 The scheme will operate on a national basis and provide accreditation and labeling for household and other consumer products, which meet certain environmental

104 Any Product, which is made, used or disposed of in a way that significantly reduces the harm it would otherwise cause the environment, could be considered as environment friendly product
criteria along with the quality requirements of the Indian standards for their products. The label shall be known as the “Eco mark”.

**PRIME OBJECTIVES OF THIS NOTIFICATION ARE AS FOLLOWS**

To provide an incentive for manufacturers and importers to reduce adverse affects on the environment due to their products.

1. To reward genuine initiatives by companies to reduce adverse environmental impact of their products.
2. To assist consumers to become environmentally responsible in their daily lives by providing information to take account of environmental factors in their purchase decision.
3. To encourage citizens to purchase products which have less harmful environment impacts?
4. Ultimately to improve the quality of environment and to encourage the sustainable management of resources.

The notification has provided for the establishment of a steering committee and a Technical committee apart from the Bureau of Indian Standards.¹⁰⁵

The steering committee will determine the product categories for coverage under the scheme and also formulate strategies for promotion, implementation, future development and improvements in the working of the scheme.

Technical committee set up in the central pollution control Board, will identify the specific product to be selected and the individual criteria to be adopted. The Bureau

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¹⁰⁵ S. Shanth kumar Introduction to Environmental law, second edition, wadhwa and company Nagpur, page no 176 to 182
of Indian standards will asses and certify the products and draw up a contract with the
manufacturers, allowing the use of the label, on payment of prescribed fee.

The products will be examined by considering the environmental impacts of the
products. They are as follows.

a. The products which have substantially less potential for pollution than other
   comparable products in production, usage and disposal.

b. Whether they are recycled, recyclable, or made from recycled products or
   biodegradable where comparable products are not.

c. Products which made significant contribution to saying non-renewable resources,
   including non-renewable energy sources and natural resources, compared with
   comparable products.

d. That product should contribute to a reduction of the adverse primary criteria
   which has the highest environmental impact associated with the use of the
   product, and which will be specifically set for each of the product categories.106

Further, the label shall be awarded for a minimum period of one year and shall
roll forward annually. The Bureau of Indian Standards has the power to withdraw the
license at any time if they find any misleading information. The award may also be
withdrawn in case of any change in criteria due to the advancement of technology or any
other valid reasons, in consultation with the Technical Committee.107

The said notification has so far notified the criteria for the following products as
environment friendly products.

106 Ibid
107 Ibid.
1. Laundry soaps
2. Aerosol sprays
3. Edible oils
4. Tea and coffee
5. Lubricating oils
6. Packaging materials (paper and paper boards and plastics excluding laminates)
7. Packaging materials (laminates and products there of)
8. Architectural paints and powder coatings
9. Food items (beverages, infant food, processed fruits and vegetable products)
10. Lead acid batteries

In fact, indirectly the eco labeling notification plays significant role in the protection and preservation of environment by double checking the products and also its impact on the environment.

B. ENVIRONMENT IMPACT ASSESSMENT NOTIFICATIONS

The Ministry of environment and forest through a notification dated 29th January 1992 has provided for the Environmental Impact Assessment of each project and the necessary Environment management plan for the prevention, elimination or mitigation of the impact likely to be caused by certain developmental projects. The main object of said notification is to balance between the development and environment. Rather, it is better to say that, the very purpose of this notification is to ensure the sustainable development.\textsuperscript{108}

\textsuperscript{108} Ibid.
Schedule I of the notification has listed the projects which required environmental clearance from the central government. They are as follows

1. Nuclear power and related projects such as heavy water plants; nuclear fuels complex etc.

2. River valley projects including hydel power, major irrigation and their combination including flood control.

3. Ports, harbors, airports (except minor ports and harbors)

4. Petroleum refineries including crude and product pipelines

5. Chemical fertilizers (nitrogenous and phosphates other than single super phosphate)

6. Pesticides

7. Petrochemical complexes (both olefin and aromatic) and petrochemical intermediates such as DMT, caprolactam LAB etc and production of basic plastics such as LPDE, HPDE, PP, PVC.

8. Bulk drugs and pharmaceuticals

9. Exploration of oil and gas and their production, transportation and storage.

10. Synthetic rubber.

11. Asbestos and Asbestos products


13. Primary metallurgical industries (such as production of iron and steel aluminum, copper, zinc, lead and Ferro alloys) and electric arc furnaces (mini steel plants)

14. Chlor-alkali industry
15. Integrated paint complex including manufacture of resins and basic raw materials required in the manufacture of paints.

16. Viscose staple fiber and filament yarn.

17. Storage batteries integrated with manufacture of oxides of lead and lead antimony alloy;

18. All tourism projects between 200m – 500meters of high water lien and at locations with an elevation of more than 1000 meters with an investment of more than Rs.5 corers.

19. Thermal power plants

20. Mining projects (major minerals) with leases more than 5 hectares

21. High way projects

22. Tarred roads in Himalayas and / or forest areas.

23. Distilleries

24. Raw skins and hides

25. Pulp, paper and newsprint

26. Dyes

27. Cement

28. Foundries (individual)

29. Electroplating

The notification has provided that “any person who desires to undertake any project in any part of India or the expansion or modernization of any existing industry or project listed above shall submit an application to the secretary, ministry of environment and forest, New Delhi. This application shall be accompanied by a detailed project report

109 Ibid
including an environmental impact assessment Report /Environmental management plan prepared in accordance with the guidelines issued by the central government and also by the Government of the ministry of Environment and forest, form time to time110.

The report submitted with the application shall be evaluated and assessed by the Impact Assessment Agency111 at the central government in consultation with the committee of experts112. The Assessment shall be completed with in the period of 90 days form the date of receipt of such requisite documents and completion of public hearing113. The Impact Assessment Agency shall prepare a set of recommendation based on technical assessment of documents and data furnished by the project Authorities, supplemented by the data collector during the visits to sites or factories and interaction with affected population and environmental groups, if necessary114. The summary of the reports, recommendations and the conditions subject to which environmental clearance is given shall be made available to the concerned parties or environmental groups, on request. Public can access to the summary of the project reports and environmental management plans at the headquarters of the Impact Assessment Agents. The clearance granted shall be valid for a period of 5 years form the commencement of the construction

110 Ibid
111 The Impact Assessment Agency would be the union ministry of environment and forest
112 The committee of experts consists of experts in disciplines like eco-system Management, Air/water pollution control, water resource management, flora/fauna conservation and management, land use planning, social sciences. Etc
113 The public hearing panel consists with the
   1. Representative of state pollution control board
   2. District collector or his nominee
   3. representative of state government dealing with the subject of power
   4. Representative of the department of the state government dealing with environment.
   5. Not more than three representatives of the local bodies such as municipalities or panchayats
   6. Not more than 3 citizens of the area nominated by the District collector.
or operation. No construction work, preliminary or otherwise, relating to the setting up of the project may be undertaken till the environmental clearance is obtained\textsuperscript{115}

The Environment impact assessment, before starting any project is of prime importance. Because in the present scenario proper assessment of the affects of such projects on the environment and also the affects of the waste that generated due to these projects on the environment is very much essential to have the effective environment management plan.

C. THE COASTAL REGULATION ZONE NOTIFICATIONS

The first Coastal Regulation Zone Notification was made on 19\textsuperscript{th} February 1991 for the declaration of coastal stretches as Coastal Regulation Zone and for imposing restriction on industries, operations and processes in the Coastal Regulation Zone. The central government has declared the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action up to 500 meters in the landward side from the high tide line (HTL) and the land between the low tide line (LTL) and the (HTL) as Coastal Regulation Zone. The high Tide line (HTL) means the line on the land up to which the highest water line reaches during the spring tide. The said notification has classified the coastal regulation zone in four categories. They are,

1. CRZ-I  
a). Areas that are ecologically sensitive and important such as national park, marine parks, sanctuaries, reserve forests, wild life habitats, mangroves, corals or coal reefs, areas close to breeding and spawning grounds of fish and other marine lives, areas of outstanding natural beauty or historic or heritage areas, and areas rich in genetic

\textsuperscript{115} Ibid.
diversity, areas likely to be swamped due to the rise in sea level, consequent to global warming and such other as may be declared by the central government or the concerned authorities at the State/Union Territory level from time to time.

b. Area between low tide line and high tide line.

2. CRZ-II

The areas that has already been developed up to the or close to the shoreline to this context “developed area” means the area with in the municipal limit or in other legally designated urban areas which is already substantially built up and which has been provided with drainage and approach roads and other infrastructural facilities, such as water supply and sewerage mains.

3. CRZ-III

Areas that are relatively undisturbed and those which do not belong to category II or I, this include coastal zone in the rural areas (developed and undeveloped) and also areas with in municipal limits or in other legally designated urban areas, which are not substantially built up.

4. CRZ-IV

Coastal stretched in the Andaman and Nicobar, Lakshadweep and small Islands except those designated as CRZ-I or II or III\textsuperscript{116}.

\textsuperscript{116} Ibid
The CRZ Notification has prohibited the following activities within the Coastal Regulation Zone:

1. Setting up of new industries and expansion of existing industries except those industries, which are directly related to the waterfront or directly needs foreshore facilities.

2. Manufacture or handling or storage or disposal of hazardous substances. However, subject to the implementation of safety regulations issued by the oil safety Directorate in the Government of India, certain petroleum products like, crude oil, LPG, motor spirit, kerosene, aviation fuel, high speed diesel, lubricating oil, butane, propane, compressed natural gas, naphtha, furnace oil and low sulphur heavy stock, etc. can be stored.

3. Setting up and expansion of fish processing units including ware housing (excluding hatchery and natural fish drying in permitted areas.)

4. Setting up and expansion of units/mechanism for disposal of waste and effluents, except facilities required for discharging treated effluents in to water course with approval under the water. (Prevention and control of pollution )Act 1974.

5. Discharge of untreated waste and effluents from industries, cities or towns and other human settlements.

6. Offshore exploration activities, beyond 10 kilometers form the nearest habituated village boundary, goothes and ecologically sensitive areas such as mangroves (with a minimum area of 1000sq.m) corals, coral reefs, National parks, Marine parks, Sanctuaries, reserve forests and breeding and spawning grounds of fish and other marine life.
7. Dumping of city or town waste for the purpose of land filling or otherwise.

8. Dumping of ash or any wastes form thermal power stations.

9. Land reclamation, bounding or disturbing the natural course of sea water except those required for construction of port harbors, jetties, wharves, quays, slipways and bridges.

10. Mining of sand, rocks and other substrata materials except those rare minerals not available outside the CRZ areas.

11. Harvesting or drawl of ground water and construction of a mechanism therefore with in 200 meters of HTL, in the 200m to 500m zone, it shall be permitted only when done manually through ordinary wells for drinking horticulture, agriculture and fisheries.

12. Construction activities in ecologically sensitive areas.

13. Any construction activity between LTL and HTL except facilities for carrying treated effluents and waste water discharges in to the sea, facilities for carrying sea water for cooling purposes, oil, gas and similar pipelines.

14. Dressing or altering of sand dunes, hills, natural features including landscape changes for beautification, recreational and other such purposes.

However the same notification has permitted the following activities provided they should get the environment clearance form the ministry of environment and forest government of India.

They are

1. Activities which requires water front and fore-shore facilities.

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117 Ibid
2. Exploration and extraction of oil and natural gas and all associated activities and facilities there to

3. Thermal power plants (only foreshore facilities for transport of raw materials, facilities for intake of cooling water and out fall for discharge of treated waste water or cooling water)

4. Demolition or reconstruction of
   a. Buildings of archaeological or historical importance.
   b. Heritage buildings and
   c. Buildings under public use118
   d. All other activities with investment of five crore rupees or more, provided that activities involving investment of less than five crore rupees shall be regulated by the concerned authorities at the state or union territory level in accordance with the provision of sub paragraph (2) of paragraph 6 of Annexure I of this notification.

Further, the said Notification also contains the norms for the regulated activities, means, and the development or construction activities in different categories of CRZ area shall be regulated by the concerned authorities at the state or Union Territory level.

In addition the CRZ notification has forwarded a list of petroleum products which are permitted for the storage in port areas, in its Annexure III. This list was inserted by amending the notification in 1997.

118 For the purpose of this clause ‘public use’ shall include use for purposes of worship, education, medical care and cultural actives.
The petroleum products are

1. Crude oil
2. Liquefied petroleum gas
3. Motor spirit
4. Kerosene
5. Aviation Fuel
6. High Speed Diesel
7. Lubricating oil
8. Butane
9. Propane
10. Compressed Natural Gas
11. Naphtha
12. Furnace oil and low sulphur heavy stock

D. NATIONAL COASTAL ZONE MANAGEMENT AUTHORITY
NOTIFICATION

The ministry of environment and forest published this notification on 26th
November 1998. Through this notification, the central government has constituted the
National Coastal Management Authority. The Headquarters of the authority shall be at
New Delhi. The Authority comprises of a chairman, a member secretary and 10 other
members. The members of the Authority shall hold office for a period of 2 years.

The Authority have all the power to take the necessary measures for protecting
and improving the quality of the coastal environment and preventing abating and

119 Supra note no 112.
controlling environmental pollution in the coastal area. Further, the authority shall examine and accord its approval to area specific management plans, integrated coastal zone management plans and modifications thereof submitted by the state coastal zone management authorities and Union Territory Coastal zone management Authorities and other institutions or organizations, in matters relating to the protection and improvement of the coastal environment. The Authority shall examine and accord it’s approval to areas specific management plans, integrated coastal zone management plans and modifications there of submitted by the state coastal zone management authorities and Union Territory Coastal Zone Management Authorities. In addition, the Authority has to advise the central government on policy, planning, research and development, setting up pf centers of excellence and funding in matters relating to Coastal Regulation Zone Management. The Authority shall deal with all environmental issues relating to Coastal Regulation Zone, which may be referred to it by the Central government\textsuperscript{120}.

E. NOTIFICATION RELATING TO PROHIBITION AND RESTRICTION OF THE HANDLING OF HAZARDOUS SUBSTANCES IN DIFFERENT CASES

The ministry of Environment and Forests made this notification on 30\textsuperscript{th} January 1990. By this Notification the central government has prohibited and restricted the use of Benzedrine based dyes and its salts in the dyeing and colour processing industries. All dyes and dye intermediates containing Benzedrine and its derivatives shall be prohibited for handling. The use of Benzedrine – based dyes, also called as Benzedrine –azo dyes is also prohibited by this notification.

\textsuperscript{120} Prof., B. Shivalingha, the Environmental Protection and pollution control manual. By Page no 116-178.
In addition, Notification relating to prohibition against open burning of waste oil. Notification authorizing officers or agencies to enter the premises for inspection, Notification authorizing officers or Agencies to take samples, Notification authorizing officers for taking cognizance of offence, Notification relating to environmental laboratories and analysts and aqua culture Authority Notification, which incidentally governs the integrated solid waste management in India\textsuperscript{121}.

One should appreciate the commitment of Indian Government to abate the pollution through its various legislations, regulations, and Notification. But it is not enough for the government to notify laws that are to be complied with. Now the policy elements seek a shift form making laws, towards actual implementation. Hence a positive attitude from each and every bit of the society is essential, for the prevention of pollution. In addition, wide consultation should be held with those who will ultimately implement the policy. Further, the pollution particularly affects the poor, on the other side various developmental activities contribute significantly to the various kinds of pollution and scientific, technological advancement and developmental activities are also one of the main sources of pollution. Therefore the government needs to ensure that, its policies should be based on a set of principles that harmonize the economic development and environmental imperatives. In recent years, the rapid growth of the electronics and IT sectors in India has given rise to the issue of \textit{e-waste management}, which is now becoming a major problem. This is elaborated by the liberalized import of huge amounts of IT related equipments to cater for the needs of the booming software export and knowledge processing and out sourcing business. \textit{Toxic links} which is a Delhi based NGO estimated that India alone produces more then 1, 50,000 tones of e-waste annually.\textsuperscript{121} Ibib
Similarly another NGO *Sahas* has stated that just the city of Bangalore alone generated around 80,000 tones of e-waste every year. The e-waste typically from hard ware comprises of aluminum, cadmium, mercury, brominates flame retardants, complex plastic blends and huge quantities of lead. Unfortunately in India there are no specific environmental laws and guidelines to regulate the e-waste. However several provisions from the existing laws are applicable to the e-waste. Basically e-wastes are solid waste with hazardous nature. Hence the Hazardous Waste Management Rules and Municipal Solid Waste Management and Handling Rules 2000. But now it needs separate or special reference. In other words growing usage of electronic objects result in to the e-waste generation and hence existing legislations are not sufficient to govern the e-waste, hence the establishment of new and sophisticated laws are in urgent need.
SECTION- B

LEGAL REGIME OF MARINE POLLUTION BY VESSEL BASED SOLID WASTE

I. INTRODUCTION

According to J. Kindt, approximately 10% of the pollutants that enter the world oceans are due to direct dumping, dredged spoils, and dredged sediments taken from water ways and harbors, which have been contaminated to potentially unacceptable level because of industrial, urban and agricultural activities. Even non toxic dredged spoils in huge quantities, can also physically damage marine organisms, ranging from inhibiting the presentation of light (due to suspended sediments) to smothering on the ocean floor. Further sewerage sludge from the offshore sewage treatment plants that dumped in to the oceans contains heavy metals and organic chemicals. These components are highly toxic for marine ecology. In addition sewage, garbage, ship breakage due to major accidents, loss of cargo containing dangerous substances, small spills, washing cargo tanks etc are contributes significantly to the marine pollution.

Recent years have seen significant changes in the living style and need of the society, mode of transportation etc. as a result there is a significant rise in the number of air borne vessels which are dumping their waste in a packed form, to the marine. The

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122 UNCLOS 1982 and MARPOL 73/78 have defined the term ship as ‘all kinds of water borne vessels but not include the offshore installations. On the other hand London Dumping Convention 1972 has defined the term vessels so as to include both water borne, air borne vessels and also floating platforms. Therefore to the context of this chapter vessel means water borne and airborne vessels excluding the floating platforms.

123 Joseph J. Kalo Coastal and ocean law cases and materials, page no 768, chapter 8.

124 On 27th June 2008 the princess of stars which contains 10 metric tons of pesticides, nearly 865 passengers and 400 boxes of endosulfan has collapsed in the central Philippines. Philippines vice president Noli de Castro said officials that, divers would not have been sent to the vessels to search for bodies, because United States Environmental Protection Agency classifies it as highly toxic. Further government banned fishing and sealed off the area around the vessel.

125 Supra note no 123
marine pollution due to the vessel based sources is severe and hence prevention and control of pollutants from this source has been a matter of international concern. Fortunately, this source has been regulated and controlled by sophisticated frame work both for compliance and enforcement, best examples are, MARPOL 73/78\textsuperscript{126}, LDC 1972\textsuperscript{127}, and UNCLOS 1982\textsuperscript{128}.

**II. INTERNATIONAL AGREEMENTS FOR THE PROTECTION OF MARINE ENVIRONMENT AGAINST VESSEL BASED SOLID WASTE.**

**A. CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL 73/78)**

As a direct response to the global problem of oil spills and other ship based pollution, the International Convention for the Prevention of Pollution from ships, has been negotiated in 1973, in London under the auspices of International maritime organisation. Following a series of tanker spills in 1976 and in 1977, a separate protocol has been negotiated; said protocol and 1973 convention would be read as a single document known as MARPOL 73/78\textsuperscript{129}. This convention covers all ships operating in marine environment under the flag of a state party or ships operating under a party’s authority\textsuperscript{130}. The prime objective of MARPOL is to create a verifiable and enforceable regime to prevent pollutants that are discharged from the ships. MARPOL consists of VI

\textsuperscript{126} Convention for the Prevention of pollution from Ships popularly known as MARPOL 73/78  
\textsuperscript{127} London Dumping Convention 1972  
\textsuperscript{128} United Nations Convention on Law of the sea 1982 III.  
\textsuperscript{129} David Hunter, James Salzman, Durwood Zaelke, International Environmental Law and Policy, Foundation press page no 710, 711  
\textsuperscript{130} Article 3(1) of the MARPOL 73/78
annexes, each annexes regulate and control specific type of pollution. Present status of MARPOL annexes is as follows.

**TABLE -1**

<table>
<thead>
<tr>
<th>MARPOL73/78 ANNEXES</th>
<th>COVERAGE</th>
<th>PROVISIONS</th>
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<td>I</td>
<td>oil</td>
<td>Mandatory</td>
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<td>II</td>
<td>Noxious Liquid Substances</td>
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<td>III</td>
<td>Packaged Hazardous Substances</td>
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<td>In force</td>
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<tr>
<td>IV</td>
<td>Sewage</td>
<td>Optional</td>
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<td>V</td>
<td>Garbage and Plastic</td>
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<td>VI</td>
<td>Air pollution due to the vessels.</td>
<td>optional</td>
<td>not Yet in force</td>
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MARPOL relies on three very different approaches to prevent marine pollution, they are,

(a). Mandatory standards for discharges which has to be followed by the ships while discharging oily water and other wastes\(^{132}\).

(b). Construction, design, equipment and manning (CDEM) specifications to eliminate or reduce the specific type of pollution\(^{133}\).

(c) Navigation standards that limit the activities of ships in the ecologically sensitive areas\(^{134}\).

\(^{131}\) Table I of chapter 5 section B, Supra note no 8

\(^{132}\) MARPOL parties recognized that requiring ships to follow specific procedures such as discharging Beyond 50 miles of coast

\(^{133}\) MARPOL has specified certain standards to construct and design the ship such as all new built with segregated ballast tanks etc.
Annex III regulates marine pollution by harmful substances carried in packaged forms, by freight containers, portable tankers or road and rail tank wagons etc. To the context of Annex III, empty receptacles, freight containers portable tanks, road and rail tank wagons which have been used previously for the carriage of harmful substances shall themselves treated as harmful substances, unless adequate precautions have been taken to ensure that they contain no residue that is hazardous to the marine environment. Said annex imposes general obligation on the government of each party to the convention that they have to issue detailed requirements on packaging, marking, labeling, documentations, stowage, quantity limitation, exceptions and notification for preventing or minimizing pollution of the marine environment by harmful substances etc. Annex III of MARPOL specifically addressed the solid harmful and packed substances but unfortunately adoption of this annex is optional and hence it is a kind of discretion to cause more pollution. Hence even though annex III elaborately addressed the solid harmful substances but this annex is optional, so we can say that less importance has been given to the solid waste in MARPOL 73/78.

Annex V of MARPOL regulated pollution by discharge of garbage from ships and throwing any plastics overboard is entirely prohibited in the MARPOL 73/78 regime. To the context of Annex V, garbage means all kinds of victual, domestic and operational waste excluding fresh fish and parts there of generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances

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134 MARPOL recognizes some regions as vulnerable to oil pollution. MARPOL in Annex I, Regulation 1(10) recognized the Mediterranean sea, Baltic sea, Black sea, Red sea, Gulf waters and North west European Waters have been defined as special areas, where tankers and ships of 400 tons gross tonnage and above are prohibited from oil discharges
135 Regulation 1 of Annex III of MARPOL
136 Regulation 1(4) of Annex III of MARPOL
which are defined or listed in other Annexes to the present convention\textsuperscript{137}. The provisions of this annex are applicable to all ships\textsuperscript{138}. In past it has been the common practice to throw tangled drift nets overboard where they would continue to ensnare fish, birds and marine mammals before knotting in to a ball. Because plastic fishing nets are rendered as “garbage” MARPOL has prohibited this practice. Packaging and lining materials that float may not be discarded with in 25 nautical miles of the coast. Disposal of other garbage wastes such as food, paper products, glass, metal, bottles, and similar refuse is prohibited with in 12 nautical miles of the coast. In special areas, like the Persian Gulf, the Mediterranean, Baltic, Black and Red Seas, disposal of all garbage is prohibited. However, disposal of food waste and all other garbage including paper products, rags, glass, metal, bottles crockery etc, can be made if it has passed through a comminuter or grinder. When the garbage is mixed with other discharges, having different disposal or discharge requirements MARPOL regime is more stringent\textsuperscript{139}. The same annex has forwarded three exceptions they are disposal of garbage for the safety of ship, accidental loss of garbage, and finally escape of garbage due to the damage in ship\textsuperscript{140}.

However, enforcement of Annex V has proven difficult, because of lack of recording requirement, and difficult to watch ship while discharging garbage illegally\textsuperscript{141}. Further the adoption of this annex is optional, hence lost its efficacy.

In \textit{United States V/s Princess Cruises}\textsuperscript{142} Prince Cruises pled guilty to a felony violation and was fined $ 500,000. In this case two resourceful passengers had filmed the

\textsuperscript{137} Regulation I (1) of Annex V of MARPOL 73/78
\textsuperscript{138} Regulation II of Annex V of MARPOL73/78
\textsuperscript{139} Regulation III (1) a,b,c,(2) of Annex V of MARPOL.
\textsuperscript{140} Regulation VI of annex of MARPOL
\textsuperscript{141} Supra note no 8
\textsuperscript{142} 93,CR 6058, S.D FLA (April 26, 1993)
discharge of 20 plastic bags of garbage, five miles off the Florida coast. The passengers received $2,50,000/- from the government as a reward for their assistance in obtaining conviction.\textsuperscript{143}

Similarly, in United States V/s Regency Cruises\textsuperscript{144}

Defendants pled guilty to two felony violations and were levied a $250,000 fine for discharging plastic bags filled with garbage. Local fishermen saw the bags in the ocean and reported them to the coast guard. When the concerned officials have opened the bags which contained garbage they identified certain materials which specifically mentioned about the ship and voyage.

On the perusal and MARPOL 73/78 and its annex, one can not deny the fact that, even though MARPOL provided consistent and detailed provisions regarding ship based marine pollution but has failed to cover the ship based solid waste. In other words, Annex I deal with ship based oil pollution and adoption is mandatory on the part of every ships and port states. Where as Annex III that contained provisions regarding disposal of harmful substances in a packed form, but optional. In other words the states have the discretion to adopt this annex. This sort of irregularities may be either due to the lack of scientific advancement or due to the lack of awareness regarding the vulnerability of such disposal, both on marine organisms and human health. In addition regulation 7 of Annex V\textsuperscript{145} deal with the provisions relating to disposal of garbage and other ship based solid

\textsuperscript{143} Supra note no 8  
\textsuperscript{144} Case no 94-245-CR-T-21( c ) (M.P FLA .oct 25. 1994)  
\textsuperscript{145} Regulation 7 requires the government of each party to the convention, to ensure the provision of facilities at ports and terminals for the reception of garbage with out causing undue delay to ships and according to the needs of the ships using them. Secondly the government of each party shall notify the organization for transmission to the parties concerned of all cases where the facilities provided under this regulation are alleged to be in adequate.
waste, but to this context the coastal or port states has to provide proper and effective facilities for the reception of garbage at their port. This provision gives room for many questions like, is it a reasonable responsibility on the port states? If yes, what aid and assistance is providing to the port states to provide such reception facilities? How effectively the least developed countries are able to obey this obligation, in good faith? Whether the least developed countries can provide the reception facilities which are in conformity with the international standards?

Further ships are mainly governed by the various legislations and policies of flag state. On the other hand port state extends its sovereign right over its territorial water with an exception to innocent passage. Hence always there is a conflict between the environmental policies of flag state and port state. Such difference gives room for non uniformity of environmental policies and disposal standards of coastal state and port state.

B. CONVENTION FOR THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTE AND OTHER MATTER, ADOPTED IN LONDON, MEXICO CITY, MOSCOW, WASHINGTON, 29 DECEMBER 1972 POPULARLY KNOWN AS LONDON DUMPING CONVENTION 1972.

In Pursuant to the recommendation 86 of the United Nations conference on the human environment held from June 5 to 16th of 1972 at Stock Holm the government of United Kingdom convened the intergovernmental conference on the convention on the dumping of wastes at sea from October 30 to November 13 1972, in London. The
conference adopted the convention on the prevention of marine pollution by dumping of wastes and other matter.\textsuperscript{146}

This convention provides for measures to prevent pollution, caused by deliberate disposal at sea of wastes or other substances, and represents yet another step towards the achievement of cleaner oceans.\textsuperscript{147} Present convention tendered state parties to take all practicable steps individually and jointly.\textsuperscript{148} Article II empowered the state parties to take effective measures individually in accordance with their scientific, technical and economic capabilities. In other words, this article conferred discretion to the state parties to formulate their own measures in accordance with their scientific, technical and economic capabilities. This part gave room for many more questions and confusions like is it a legitimate discretion? Again it gave room for non uniform laws. Further the convention has defined the term dumping and vessel elaborately, according to which vessel means water borne or airborne craft of any type what so ever. This expression includes air cushioned craft and floating craft whether self propelled or not.\textsuperscript{150} Again the convention prohibited dumping of certain hazardous materials listed in Annex I and endeavors to control the dumping of others by prescribing the requirement of permits.\textsuperscript{151} Article V provides that when it becomes necessary to secure safety of human life or vessels, air craft, platforms or other man made structures at seas in cases of “Force

\begin{footnotesize}
146 The convention is deposited with the governments of Mexico. The Union of Soviet socialist republics, the United kingdom of Great Britain and Northern Ireland and the United States of America
147 The Maharaja Narendra Singh, British Shipping Laws, International Maritime Law Conventions, Volume3. Training Employment and welfare Environment By Page 2523 Para 1
149 Article III has defined the term ‘dumping’ which means “ any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man made structures at sea. But according to this article the term dumping does not include disposal by vessels, aircrafts, platforms or other man made structures at sea which is incidental or derived from normal operations of vessels. Finally disposal of waste which directly arise due to the exploration and exploitation of sea bed mineral resources
150 Article III (2) of Convention on the prevention of Marine pollution by dumping of wastes and other matter
151 Article IV Ibid
\end{footnotesize}
majeure” the provisions of the convention shall not apply. The annexes to the convention deal with substances the dumping of which are prohibited and those which require permits before dumping as well as the criteria governing the issue of the permits. The said convention is vast including sewage sludge, dredged materials, construction and demolition debris, explosives, chemical munitions, radio active waste and other materials loaded on a vessel for the purpose of dumping. The London convention is widely regarded as one of the most successful treaties addressing the marine pollution, periodic resolution and amendments have further strengthened the control of this convention and extended it’s breadth of coverage considerably.\(^{152}\)

Sometimes, there is confusion between the provisions of MARPOL 73/78 and London Convention, but in fact both are different and have covered very different activities. For example MARPOL 73/78 controls the operational pollution from ships, along with the unintentional releases of pollution.\(^{153}\) The London Convention covered deliberate dumping of waste from ships. Therefore in order to ensure this difference Article 2 of MARPOL 73/78 has excluded the term ‘discharge’ from its definition Part. Similarly London Convention 1972 has excluded the dumping of waste which is incidental to the normal operation of vessels, aircrafts and from other man made structures and all kinds of waste dumping which are covered by MARPOL 73/78. A the beginning the London Convention has covered ocean dumping and now extended to incineration of sewage sludge, industrial waste and also disposal of low level radio active waste.

\(^{152}\) London Convention 1972 has covered waste from atmosphere, rivers, estuaries outfalls and pipelines

\(^{153}\) Article 2 (3) (a) MARPOL 73/78 defined the term discharge as release, however caused from a ship and includes any escape, disposal, spilling, leaking, pumping and emitting or emptying. But not include the dumping of waste covered by London Convention 1972, release of harmful substances directly arising from the exploration and exploitation of sea bed resources. Release of harmful substances due to the scientific research
wastes. To reflect this enlarged coverage, during the 15th consultative meeting in 1992 the parties to the convention has changed the name “London Dumping Convention” in to “London Convention 1972”. The said change reflects the object of member states, which is to protect the marine environment as a whole and not just the ocean dumping\textsuperscript{154}.

In 1996, a new protocol replaced the original 1972 agreement. In deed this protocol virtually rewrites the London Convention. Article 5 of the protocol rejected the ‘Black and ‘Grey’ list system of the original agreement and employed ‘reserve list’ strategy. According to this new strategy dumping of waste or other matter is prohibited unless it is listed in Annex I... Such dumping should get prior permit. Similarly the state parties are under the duty to manage wastes locally by prohibiting the export of wastes to other countries for dumping or incineration at sea. However this convention contains several exceptions like water borne vessels and air crafts which are entitled to sovereign immunity as per the international law are except from the provisions of this convention.

Compliance provisions of London convention require parties to keep records showing the nature and quantities of permitted dumping as well as the location, time and method used for dumping. However surprisingly there are no provisions in the protocol regarding the sanctions in case of any failure to enforce the various provisions of London convention. Fortunately even though there is a lack of provisions for sanctions, voluntary compliance of London Convention is high. Further, Annex III of the protocol established a dispute resolution process which agreed in 1978, but was not adopted. In addition there is a lack of provision which deal with the formal non compliance procedure\textsuperscript{155}. The protocol contains number of provisions which are designed to encourage developing countries to

\textsuperscript{154} supra note no 123
\textsuperscript{155} Prior to the protocol regular consultative meeting have provided a forum to workout disputes informally.
become. New parties to the protocol are given a five year period to achieve full compliance with its provisions, if any country needs further more time to comply with the provisions of protocol, it may apply for up to five years as a transitional period\(^{156}\). However rational behind the grant of such additional time is to secure the international co-operation in order to control and regulate the ocean dumping of waste. London Convention 1972 and its protocol have forwarded many more provisions which are comprehensive to cover the solid waste disposal to the ocean.

**C. UNITED NATION CONVENTION OF LAW OF THE SEA- 1982. UNCLOS - III-19982.**

At the commencement of the UN third law of sea conference (UNCLOS III) sessions in 1974, one committee was assigned to formulate draft articles on marine pollution. During these eight years of deliberations, efforts were made to negotiate a multilateral treaty that would deal with all kinds of ocean based activities, part XII of UNCCOLS 1982, and consists of 42 Articles which are exclusively devoted for the protection and preservation of marine environment\(^{157}\). Among these 42 Articles 194 (3) (b), 210 (4), 211, 216, to 220 and 221 (2), 226 have particularly addressed marine pollution due to the ship based pollutants. Very first provision\(^{158}\) summarizes the problem stating that, measures to be taken in this field should design so as to minimize the marine pollution to the fullest possible extent. Further UNCLOS III 1982 has provided that measures to be taken to prevent both intentional and unintentional discharges, and to ensure the safety of operations at sea by regulating design,

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\(^{156}\) Article 26 of 1996 protocol to the convention on the prevention of marine pollution by dumping of wastes and other matter 1972
\(^{157}\) Article 211 (1) and 2 of UNCLOS 1982
\(^{158}\) 194 (3) (b) of UNCLOS 1982
construction, equipment operation and manning of vessels, again the same article insists that measures should be taken to prevent the accidents and to effectively deal with the emergencies\textsuperscript{159}. In addition, UNCLOS 1982 has imposed a sort of obligation where under States have to establish international rules and standards to prevent reduce and control pollution of the marine environment from vessels and has to adopt routing system in order to prevent the accidents which might cause severe marine pollution. Moreover, states are under obligation to adopt national laws for vessels flying their flag or of their registry which at least have the same effect as that of generally accepted international rules and standards\textsuperscript{160}. This commits all states to ensuring that their national laws comply with the minimum standards of international law. Again UNCLOS III 1982 has permitted the states to establish, individually or as part of cooperative arrangements, special rules for the prevention, reduction and control of vessel based pollution, but such special rules and regulations should not hinder the right of innocent passage. In case if states have formulated any special rules and regulations or any conditions for the foreign vessels to take entry in to the ports or internal waters of that particular state, then such states have to communicate those specially established rules, regulations or standards to the International maritime organization\textsuperscript{161}. States may also adopt laws to combat vessel based pollution from foreign vessels while passing through their territorial waters including those exercising the right of innocent passage\textsuperscript{162}. With respect to their exclusive economic zone states may, for the purpose of enforcement adopt laws and regulations which conform to and give effect to generally accepted international rules and

\textsuperscript{159} Article 211 (3) of UNCLOS 1982

\textsuperscript{160} Article 211(4) of UNCLOS 1982

\textsuperscript{161} Article 211 (5) of the UNCLOS 1982

\textsuperscript{162} Article 211 (6) (a) see generally IMO, Guidelines for the designation of special areas and the identification of sensitive sea areas, Regulation A.720 (17), 6 November 1991
standards\textsuperscript{163}. For a defined area of the exclusive economic zone states may, with the consent of competent international organisation, adopt special mandatory measures for the prevention of pollution from vessels which implement international rules, standards or navigational practices made applicable by that organisation for special areas. This right is limited to a defined area of the exclusive economic zone. Because it is required for recognized technical reasons in relation to it’s oceanographically and ecological conditions, as well as its utilization or to the protection of it’s resources and may before the particular character of its traffic\textsuperscript{164}. Additional laws and regulations for the same area relating to discharges or navigational practices may be adopted by the states through agreement with a competent international organization\textsuperscript{165}. Again UNCLOS III has introduced a three way division of responsibility of the flag state to assure that vessels flying its flag always comply with the respective requirements of that state. The port state is allowed to initiate proceedings against violations on the high seas and against unworthy ships, and the coastal state, in its own proceedings against violations in the territorial sea or in its exclusive economic zone\textsuperscript{166}. The enforcement duties of flat state are strengthened by requiring them to take appropriate measures to assure that the required certifications are carried on board. In addition to investigation and physical inspections of vessels the coastal and port states can detain vessels. In case of violations in its territorial sea, the coastal state can arrest the ship and initiate criminal proceedings against the crew. However limitations of this authority arise from the prohibitions

\textsuperscript{163} Article 211 (6) (C )
\textsuperscript{164} Article 218-220 of UNCLOS 1982 Part XII
\textsuperscript{165} Article 217 of UNCLOS 1982
\textsuperscript{166} The port state is concerned with (in addition to the prevention of sailing of unworthy ships Article 219) violations on the high seas. The coastal states acts as a guardian of territorial sea and to a limited extent as a guardian of an exclusive economic zone
against discrimination and undue delay as well as from rights of notification and compensation. With regard to the authority of enforcement UNCLOS has essentially adopted the zonal approach i.e. the approach according to which coastal state set and enforces environmental law with in the territorial sea and the exclusive economic zone. This law must at least with regard to the exclusive economic zone conform to the international rules and standards. However they may not issue standards concerning “design, construction, manning or equipment” and they may only detain a ship “which endangers the peace good order, security of the coastal state” and the deliberate act which cause serious marine pollution.

Article 216 UNCLOS III requires costal state to enforce national and international rules concerning dumping, when such dumping presents a potential violations of it’s territorial sea, its exclusive economic zone or it’s continental shelf. The flag states are responsible for all violations by the vessels bearing flags of that particular nation, these states have to enforce their national and international laws concerning dumping. Again port states can enforce national and international laws with regard to ships loading waste with in its territory. However same division of competence is employed in the London Convention and other regional dumping agreements but there is a lack of specific rules for the exclusive economic zone and the continental shelf. Dumping with in the territorial sea, the exclusive economic zone or to the continental shelf needs prior approval from the coastal state.

167 In comparison with the UNCLOS 1982 MARPOL73/78 has restricted the role of coastal state by requiring that to carry the investigations of violations coastal states have to present appropriate evidence to the flag state so that the flag state can initiate criminal proceedings.
UNCLOS-III-1982, depart from traditional international law by providing the provisions for the arrest, prosecution and punishment to vessels, which has violated the applicable international pollution rules of the port state whose territorial water or exclusive economic zone is threatened by such violations. However the flag state retains the right to administer justice to its own vessels for violations in the exclusive economic zone. Here the text exemplifies the convention policy in balancing the coastal state interest by protecting their resources, and also not denied the primary legal responsibility of the flag state for their vessels in exclusive economic zone of another states or on high seas. This makes for friendly international relations; hence it may not prove to be an effective enforcement measures\textsuperscript{168}.

UNCLOS III 1982, Part XII has established tremendous approaches to combat the marine pollution, but the question is whether these rules are strong enough to govern one of most wide spread and swift growing pollution? Whether these articles are able to impose specific obligations on state parties? Further UNCLOS III 1982 part XII conferred discretion to the nations to frame there own legislations to regulate the marine pollution, but has failed to forward the standards, policies and framework to the state parties while making provisions regarding measures to combat marine pollution, the text always used the term compatible with the international standards. It means while drafting such articles drafters kept some international standards but not expressed in words; so again, it is left to the wide discretion of the states. Again it has provided general principles which do not contain the detailed prescriptions that are necessary for effective

\textsuperscript{168} 20U. Miami Inter-U.L.Rev 579
administration of international pollution control regime. Article 192 merely enunciated general obligations to protect and preserve the marine environment but this kind generally imposed obligations are not sufficient to combat marine pollution. UNCLOS III – 1982 gave much importance to define jurisdictional rights of coastal, flag and port state which gives room for non uniformity of laws and conflicts of interest. Further the convention has kept oil pollution in their mind while drafting the provisions which specifically deal with the discharge of sewage and disposal of garbage. The provisions that deal with vessel based pollution are general and weak. These articles gave much importance to minimize the marine pollution rather the elimination of marine pollution.

D. PROTOCOL RELATING TO INTERVENTION ON THE HIGH SEAS IN CASES OF POLLUTION BY SUBSTANCES OTHER THEN OIL, LONDON 1973

In response to the recommendation of the international legal conference on marine pollution damage 1969, IMCO\textsuperscript{169} has extended its work on all aspects of pollution by agents other than oil. The organisation developed draft of an instrument to extend the application of the provisions of the international convention relating to intervention on the high seas in cases of oil pollution causalities 1969 (Intervention convention) to certain substances other than oil\textsuperscript{170}. The said protocol consists of eleven articles and four annexes. Annex I exclusively devoted to oil, annex II contains a list of noxious substances, annex III mentioned about liquefied gases and annex IV deal with the radioactive substances\textsuperscript{171}.

\textsuperscript{169} International Maritime Consultative Organization Now IMO International Maritime Organization
\textsuperscript{170} Maharaja Narendra Singh, Judge of International Court of Justice and Its vice president International Maritime Law Conventions volume 3, Training, Employment and welfare, Environment by the t
\textsuperscript{171} Ibid
Article I (2) has elaborately defined the term substances other than oil\textsuperscript{172}. Article II of his protocol empowered the state parties and members of the organization to include qualified experts to give advice in relation to substances other than oil. Any amendment to the list proposed by a party to the present protocol shall be submitted to the organisation and circulated by it to all members of the organisation and all parties to the present protocol at least three months prior to its consideration by the appropriate body\textsuperscript{173}.

If any amendments are adopted by the 2/3 majority of the parties who present and vote\textsuperscript{174}, then such amendments shall be communicated by the organisation to all Parties to the present protocol for acceptance.

The said protocol elaborately designed the annexes II and IV which deal with the noxious substances\textsuperscript{175} and radio active waste\textsuperscript{176} respectively. However it is a prompt

\textsuperscript{172} Substances other than oil means (a) the substances enumerated in a list which shall be established by an appropriate body designated by the organization and which shall be annexed to the present protocol and (b) those other substances which are liable to create hazardous to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

\textsuperscript{173} Article III (2) of Protocol relating to intervention on high seas in cases of pollution by substances other than oil-1973

\textsuperscript{174} Article III (4). Ibid

\textsuperscript{175} Some Noxious substances provided in the list are as follows
1. Acetic anhydride
2. Acetone
3. Acrolein
4. Aldrin
5. Allyl isothiocyanate
6. aluminum phosphide
7. Ammonia (28% aqueous)
8. Ammonium Phosphate
9. aniline
10. Atrazine
11. Barium azide
12. Barium cyanide
13. Barium oxide
14. Benzene
15. Benzedrine
16. Bromine
17. butyric acid
18. lead compounds
effort to combat marine pollution from the substances other than oil but not exhaustive and failed to cover the marine pollution problems comprehensively.

III. REGIONAL AGREEMENTS TO GOVERN THE VESSEL BASED SOLID WASTE AND OCEAN DUMPING.

In addition to the MARPOL73/78 and other Global conventions, regional agreements play an important role in strengthening the implementation and effectiveness of the London convention\textsuperscript{177}. These regional conventions have added a level of institutional supervision closer to the implementation level and effectively reinforce the baseline requirements of the convention by ensuring compliance with its provisions\textsuperscript{178}.

Helsinki, OSLO 1972, OSPAR convention Barcelona protocol 1976 and Noumea protocol 1986 are the prime regional conventions which contain many provisions to govern the marine pollution due to the vessel based solid waste.

A. CONVENTION ON THE PROTECTION OF THE BALTIC SEA AREA 1992 (HELSINKI CONVENTION)

The prime object of this convention is to assure the ecological restoration of the Baltic Sea ensuring the possibility of self regeneration of the marine environment and

19. DDT
20. Endrin
21. Oleum
22. Phenol
23. Sodium Pentachlorophenate
24. Toxaphene etc

\textsuperscript{176} Radioactive substances, including, but not limited to elements and compounds the isotopes of which are subject to the requirements of section 835 of the regulations for the safe transport of radioactive materials, 1973 revised edition, published by the IAEA and which may be found to be stored or transported as substances and/or materials in Type A packages, Type B Packages as fissile or materials transported under special agreements.

\textsuperscript{177} David Hunter and others Page 739 Para 2, International Environmental Law and policy second Edition.

\textsuperscript{178} Ibid
preservation of its ecological balance. This convention considered hydrofoil boats, air cushion vehicles, and submersibles, floating craft and fixed or floating platforms as 'ship'\textsuperscript{179} Said definition of the term ship is different from the definition that has been forwarded by MARPOL and similar to the definition given by London Convention. Further this convention tendered individual and joint effort to take all appropriate legislative administrative or other relevant measures to prevent and eliminate pollution in order to promote the ecological restoration of the promote sea area and the preservation of its ecological balance\textsuperscript{180}. This convention put much emphasis on the polluter pays principle\textsuperscript{181}, and also to the concept ‘Best Environmental Practice and Best Available Technology\textsuperscript{182}. However this convention shall not apply to any warship, military aircraft or any other ship owned or operated by a state or government non commercial service\textsuperscript{183}. Annex IV of Helsinki convention completely devoted to protect the marine environment against pollution from ships. This part of Helsinki convention contains many preventive measures, and these measures are designed elaborately in twelve regulations. Regulation 1 has obligated the state parties to cooperate particularly in promoting the development of international rules, based on fundamental principles and obligations of this convention which also includes the promotion and use of BEP and BAT\textsuperscript{184} as defined in Annex II. Further the state parties have to cooperate in the effective and harmonized implementation of rules adopted by the international maritime organisation. Various

\textsuperscript{179} Article 2 (3) of the Helsinki Convention 1992
\textsuperscript{180} Article 3(1) of the Helsinki Convention 1992
\textsuperscript{181} Article 3 (4) of the Helsinki Convention 1992
\textsuperscript{182} Article 3(3) of Helsinki Convention 1992
\textsuperscript{183} Article 4 (3) of Helsinki Convention 1992
\textsuperscript{184} Supra Note no
regulations of Annex IV have imposed a sort of obligation on contracting parties, under which they have to follow the provisions of Annex I to V of MARPOL 73/78.

This is a convention having effective provisions but applicable only to the Baltic Sea area. It is to be appreciating that this convention further strengthened the provisions of MARPOL 73/78. Further Helsinki convention has a wide coverage in comparative with the MARPOL 73/78, because Helsinki convention in its Article 2(3) defined the term ship so as to cover the fixed or floating platforms. Where as MARPOL 73/78 is confined the definition of ship by excluding off shore installations. Hence this part of the Helsinki convention gave enhanced protection to the marine environment of the Baltic Sea area. Further Helsinki convention has established a commission called ‘Helcom’ the prime duties of the commission are to implement the convention, to make recommendations on measures relating to the purposes of this convention. This commission has to review the contents of the convention and has to make proper amendments in case of need. It has to promote scientific and technological research, to this end the commission has to cooperate with the appropriate governmental bodies, international and regional organizations. In case of any confusion and disputes regarding the interpretation of the convention, the contracting parties have to take resource of various provisions and procedures laid down in the convention.

Here it is clear that Helsinki convention has forwarded a comprehensive, effective system to protect and preserve the marine environment of Baltic Sea area. Helcom is the care taker and hence it has act as a watch dog to protect and preserve the marine environment. Despite of exists Helsinki convention, the Baltic sea area is not excluded

185 The Baltic Marine Environment Protection Commission
186 Article 19 and 20 of the Helsinki Convention
187 Article 26 of the Helsinki Convention
from the threat of serene pollution, so it is the right time to search for the exact reasons behind such increased threat for the marine environment of Baltic sea area. However, such failure can be attributed either to improper implementation of provisions or in efficiency of the provisions of the Helsinki convention.

**B. CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTE AND OTHER MATTER-1972, (OSLO-1972)**

OSLO convention 1972 is a regional convention and applicable only to the North East Atlantic and North Sea. The prime object of this convention is to prevent the pollution of sea by prohibiting the dumping of harmful substances from ship and aircraft and providing for a system of permits (i.e. prior approval) for dumping of other substances. This convention has formulated many ground rules which were not exist before for ex: Black and Grey list system. Now such lists can be found in almost all international treaties. The said convention was supplemented by international waters protocol OSLO 1989, but it is not yet in force. OSLO convention 1972 contains four annexes, Annex I is called as black list which is entirely prohibited. Annex II is called as grey list the dumping the substances listed in the grey list needs specific permit from the appropriate national authorities. Annex III has forwarded the provisions governing the issue of permits and approvals for the dumping of wastes at sea. Oslo convention 1972 has forwarded an exception to the provision to the dumping of waste or other matter

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188 Here in after called as Oslo Convention 1972.  
189 The provisions of this convention apply to the High seas, Territorial sea and internal Coastal water. Membership restricted to European states as specified and also to other states upon invitation.  
191 Black list contains the substances like organ halogen compounds, organ silicon compounds carcinogenic substances, mercury compounds, persistent plastics and other persistent synthetic materials etc  
192 Gray list contains Zinc, copper, lead, and ammonia  
193 These provisions elaborately described the method of dumping site and also characteristics of the waste.
with out prior permission from the appropriate authorities. In other words there is an exception to the rule in the case of force majeure due to the stress of weather or any other cause, and when the safety of human life or of a ship or air craft is threatened. Such dumping shall immediately be reported to the commission together with full details of the circumstances and of the nature and quantities of the substances and materials dumped.\footnote{Article 8(1) of the convention for the prevention of Marine pollution by dumping from ships and air crafts (OSLO 1972)} In case of emergency if a contracting party considered that the substances listed in Annex I of this convention can not be disposed of on land with out unacceptable danger or damage. Under such circumstances the contracting party has to consult the commission. The commission shall recommend the methods of storage or the most satisfactory means of distraction or disposal under the prevailing circumstances. Again the contracting party has to inform the commission about the steps adopted in pursuance of its recommendation.\footnote{Article 9 of OSLO Convention 1972} Further the same article has imposed a kind of obligation to cooperate with each other. In addition, OSLO convention has encouraged the state parties to conduct research in order to invent alternative and effective methods of disposal of harmful substances.\footnote{Article 12 of OSLO Convention} Article 15 of Oslo convention has established a set of rules, regulations and standards relating to dumping of waste and other matters which has to be followed by contracting parties, while dumping of wastes and harmful substances listed in the annexes to the convention.\footnote{Article 15 (1) each contracting party under takes to ensure compliance with the provisions of this convention} Oslo Convention contain a provision for the

\begin{itemize}
\item \text{By ships and air crafts registered in its territory}
\item \text{By ships and air crafts loading in its territory the substances and materials which are to be dumped}
\item \text{By ships and air crafts believed to be engaged in dumping with in its territory in its territorial sea}
\item \text{15 (2) each contracting party under takes to issue instructions to its maritime inspection vessels and aircrafts and to other appropriate services to report its authorities any incidents or conditions on the high}
\end{itemize}
withdrawal from the membership by giving a notice in writing. Such withdrawal shall take effect twelve months after the date of its acceptance\textsuperscript{198}.

Oslo convention 1972 has established number of basic ground rules which are now following by many international conventions. This convention is supplemented by the international waters protocol 1989 but not yet in force. Further the provision for withdrawal from the membership affects the prime object of this convention.

The Oslo convention and Paris convention (Convention on the marine pollution from land based sources) are renegotiated and scheduled a new convention for signature on September 1992, in Paris called as OSPAR convention. The most important amendment is an expansion of the scope so as to include the concepts which have developed. Since the original convention was prepared. Such as precautionary principle, best available technology, best environmental practice, polluters pay principle. Etc OSPAR convention came in to force in 1998\textsuperscript{199}.

OSPAR convention consists of 4 annexes. Among these 4 annexes, Annex I deal with provisions relating to the prevention and elimination of pollution from land based sources. Annex II addressed provisions relating to the prevention and elimination of pollution by dumping or incineration. Annex III concentrate on the provisions relating to the prevention and elimination of pollution from off shore sources and Annex IV laid down the procedures for the assessment of the quality of the marine environment. The convention also allows the adoption of additional annexes to protect the maritime area of the convention; as a result first new annex was adopted by the 1998 ministerial meeting

\textsuperscript{198} P.C Sinha, Coastal and marine disasters. Page 132-137

\textsuperscript{199} Ibid.
of the OSPAR commission (i.e. MMC 1998). This Annex V contains provisions with regard to the protection and conservation of the eco systems and biological diversity of maritime area. This annex will enter in to force once it has been ratified by at least seven contracting parties. As a result of these agreements, oil producing states of western and Europe work as a single country for the purpose of controlling offshore waste disposal. However effective implementation of the OSPAR regulations is still governed by national laws and European directives.

C. BARCELONA PROTOCOL 1976

Bearing in the mind, the convention on the prevention of marine pollution by dumping of wastes and other matter adopted in 1972, states have agreed to protect the marine environment of Mediterranean Sea. This protocol has imposed a kind of general obligation on each and every member states to take all necessary measures to prevent and abate the marine environment. The said Article lacks the specification of obligations it just mentioned necessary measures but failed to forward the standards. According to this protocol platforms and man made structures at sea are considered as 'ship'. This protocol also excludes the waste dumped during the normal operations of vessels or aircraft and their equipment. Further the said protocol has provided that Article 4, 5, and 6 are not applicable in case of majeure due to stress of weather or any other reason, where human life or the safety of a ship or aircraft is threatened, provided such dumping shall be immediately be reported to the organisation or directly to any party or parties likely to

\[200\] Ibid
\[201\] Article 1 of Barcelona Protocol 1976
\[202\] Article 3(1) of Barcelona Protocol
\[203\] Article 3 (4) (b) of Barcelona protocol 1976
be effected, together with the details of the circumstances and of the nature and quantities of the wastes or other matter dumped\textsuperscript{204}.

If a party to the protocol is of the opinion that the substances mentioned in Annex – I can not be disposed without unacceptable changes, and then such parties have to inform the situation to the organisation. Organisation on such request and consultation with the other parties to the protocol, will recommend the method of storage distribution or disposal. Again the parties are under obligation to inform the organisation of the steps adopted in pursuance of these recommendations\textsuperscript{205}. Ships, aircrafts, operated by state parties to this protocol, for government non commercial purposes are excluded form the coverage of this protocol\textsuperscript{206}, each state parties has to issue instruction to it’s maritime inspection ships and aircraft and other appropriate services to report it’s authorities any incidents or conditions in Mediterranean sea area which gave rise to dumping in contravention of the provisions of this protocol\textsuperscript{207}. The state parties have to arrange meetings to keep review the implementation of this protocol and to consider the efficacy of measures adopted and the need for any other measures, particularly in the form of annex, finally to review and amend as per the need\textsuperscript{208}.

The Barcelona protocol contains 3 annexes, Annex I contains the substances, the dumping of which is completely prohibited\textsuperscript{209}. Noteworthy point is that Annex I\textsuperscript{210} and Annex II\textsuperscript{211} completely prohibited the dumping and radio active waste

\textsuperscript{204} Article 8 of Barcelona protocol 
\textsuperscript{205} Article 9 of Barcelona Protocol 1976 
\textsuperscript{206} Article 11(2) of Barcelona Protocol 
\textsuperscript{207} Article 12 of Barcelona Protocol 
\textsuperscript{208} Article 14 of Barcelona Protocol 1976 
\textsuperscript{209} Article 14 of Barcelona Protocol 
\textsuperscript{210} Annex-I includes the substances like, organ halogen compounds, organ silicon which are non toxic or which are rapidly converted in the sea in to substances which are biologically harmless. Mercury and
again it has mentioned that to dump radio active substances the state has to consult the IAEA. Annex III deal with the provisions or criteria’s that generally govern the issue of permit. These factors are characteristics and composition of the matter, characteristics of dumping site and method of deposit etc.

Barcelona protocol has completely prohibited the dumping of radio active waste at the first instance, and again included the radio active waste in the Annex II which contained the substances that needs special permit. But here the states have to take the permission from the IAEA to dump even low level radio active waste. The said provision shows the concern of the states towards the protection of marine environment of Mediterranean Sea. Again there is a scope for the review of implementation of the provision of the said protocol. Further the states have to conduct meeting in order to amend the text of the protocol based on the need. But till this day states have not recommended any such amendments to the protocol. This gave rise to a doubt whether the protocol is complete and effective or the states are showing less concern towards such new additions.

D. PROTOCOL FOR THE PREVENTION OF POLLUTION OF THE SOUTH PACIFIC REGION BY DUMPING

As other regional protocols, Noumea protocol imposed general obligation, that all parties shall take appropriate measures to prevent and control the pollution dumping with in the territorial sea, exclusive economic zone or continental shelf shall not be carried

mercury compounds, cadmium and cadmium compounds persistent plastic, crude oil .high, medium and low level radio active waste, Acid and Alkaline etc.

211 Annexes II listed the substances like Arsenic, lead, copper, Zinc, Beryllium, chromium, nickel, vanadium, selenium, antimony and their compounds. The dumping of these substances requires special care and prior permit.

212 Noumea, 25th of November 1986
without the express prior approval\textsuperscript{213}. Further the same article has provided that, national laws, regulations, measures adopted by the parties shall be effective to prevent, reduce control pollution by dumping, but has failed to set down the minimum standards. Said protocol contains 4 annexes, Annex I listed the substances that are completely prohibited. Annex II listed the substances the dumping of which needs special permit from the concerned authorities. Again Annex III contains the criteria’s that govern the issue of permits. Finally annex IV contains the provision for the allocation of substances to annexes on certain grounds. These grounds are as follows.

- Persistence and degradability
- Bio accumulation potential
- Toxicity of marine life
- Toxicity of man, domestic animals, marine mammals and Birds preying on marine organism.
- Carcinogenicity and mutagenicity.
- Ability to interfere with other legitimate uses of the sea.

However to some extent Noumea protocol 1986 is unique from other regional instruments. Since annex IV of this protocol has forwarded the guidelines which have to be followed by the state parties, while allocating the substances to the first two annexes. In other words the protocol tendered the state parties to allocate some more substances based on the guidelines given in the Annex IV. For which the state parties have to conduct research of marine environment, from time to time so as to find out the

\textsuperscript{213} Article 3 of Noumea protocol on dumping 1986
substances which proved hazardous to the marine environment in order to effectively implement the provisions laid down in the annex IV to the protocol.

IV. TRANSBOUNDARY MARINE POLLUTION DUE TO VESSEL BASED SOURCES

Marine eco-system is indivisible, integrated and unified. The ocean currents can transfer the harmful compounds from one territorial water to the territorial water of other state\textsuperscript{214}. In other words marine pollution is not confined to the national geographic boundaries of a particular state. Hence the problem of Transboundary pollution has tendered the international and regional co-operation among the states.

Transboundary movement of waste means ‘any movement of hazardous waste or other wastes from an area under the national jurisdiction of one state to or through an area under the national jurisdiction of another state or to or through an area not under the national jurisdiction of any state, provided at least two states are involved in the movement\textsuperscript{215}'. In fact a state can exercise it is jurisdiction over economic and natural resources, extending geographically or politically along a coast line up to 12 nautical miles for the territorial sea or 200 nautical miles for extended. However national jurisdictions are unavailing in terms of controlling the mobility of pollutants and hence effluents discharged by the one costal state can easily cause degradation of the territorial waters of another state\textsuperscript{216}. In addition steps during the course of navigation can directly harm the waters of coastal state through the deliberate dumping or accidental dumping of waste. Ships can also pollute the territorial waters of coastal state indirectly, it means

\textsuperscript{214} Alyn C. Duxbury University of Washington the earth and its oceans, chapter 12 Circulation of the oceans page 210.
\textsuperscript{215} Basel Convention 1989, Article 2(3).
\textsuperscript{216} 20U.Miami Inter-AM.L .Rev 579
when vessels on the high seas discharges pollutants, which are subsequently carried in to shore by the currents\textsuperscript{217}.

All such factors have mandate the need for a collective effort, Comprised of all countries to prevent and control transnational pollution. In other words international legal regime is necessary because principles of international law are at the foundation of international co-operation\textsuperscript{218}

Principle 2 of the Rio-declaration has provided that the states have sovereign right to exploit their own resources in accordance with their own environmental and developmental policies and shall ensure that the activities with in their jurisdiction or control do not cause damage to the environment of other states. The principle of state responsibility for Transboundary pollution is contained in the maxim neminem lacdit quisuojure uteri\textsuperscript{219} (i.e. nobody harms another when he exercises his own rights)

The principle is reinstated in Article 21 of the Stockholm declaration and is reaffirmed in the Rio-declaration\textsuperscript{220}. In deed, principles of state responsibility for pollution damage in customary law are usually derived from the \textit{Trail Smelter Arbitration Case}\textsuperscript{221}, the \textit{Carfuchannel case}\textsuperscript{222} and the \textit{lake Lanoux arbitration case}\textsuperscript{223}.

These decisions appear to put states under an obligation not to use or permit the use of their territory to cause loss or damage to another state, and it has been assumed that this principle is applicable by extension to damage caused by marine pollution emanating from another state or activities under another state jurisdiction or control.

\begin{itemize}
  \item \textsuperscript{217} Ibid
  \item \textsuperscript{218} Ibid
  \item \textsuperscript{219} ibid
  \item \textsuperscript{220} Ibid
  \item \textsuperscript{221} International Court of Justice 1949
  \item \textsuperscript{222} International Arbitration Awards 281(1957)
  \item \textsuperscript{223} Hugo Caminos, Law of sea University of Miami School of Law USA. Page 392-394
\end{itemize}
These customary principles are expressed at a high level of generality and as regards marine pollution are supported by little evidence of state practice. It has thus been difficult to determine with any degree of particularity the scope and content of primary obligations for whose default states may be held liable to make reparation. In addition it is uncertain to what extent responsibility in customary law is strict and views differ over the circumstances in which a state should be held responsible for the action nationals. The availability at the international level of declaratory or injunctive relief for environmental damage is also a controversial issue.

Many of these problems derive from uncertainties about the principles of state responsibility in general and they can only be resolved in the wider context of a review of those principles as a whole. However International Law commission is conducting such a review. The Law of sea convention merely urges co-operation in the further development of the subject. But the convention does not provide that states are responsible for fulfilling their International obligations concerning the Protecting and Preservation of the marine environment.

Article 194(2) and 198 of UNLLOS-III-1982 reiterate the Basic customary obligations to avoid causing pollution damage to other states or their environment and states has to notify the coastal states about the imminent or actual damage. UNLLOS 1982 has forwarded Compressive legislations to protect and preserve the marine environment, states are thus required to take all necessary measure to prevent and control the Transboundary pollution of the marine environment. In other words to prevent

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224 Supra note no 95.
226 Article 194 of (1) of UNCLOS 1982
pollution from spreading beyond the areas where they exercise sovereign rights\textsuperscript{227}, to prevent the transfer of pollution damage or hazards from one area to another or the transformation of one type of pollution into another\textsuperscript{228} to prevent, reduce and control pollution from the use of technology or the introduction of new or alien species\textsuperscript{229}.

**A. BASEL CONVENTION 1986:**

After two years of negotiations a conference was convened under the auspices of UNEP & adopted the Basel convention on the control of Transboundary movement of hazardous waste and their disposal (Basel Convention) in 1989\textsuperscript{230}. The Basel Convention has established a global notification and consent system for the Transboundary shipments of hazardous and other wastes among parties, providing the impetus for many nations to revise or enact the laws to govern the import and export of hazardous waste. It also prohibits parties from trading in the waste that are mentioned in the annexes of Basel convention with the non parties. In 1995, the parties agreed to amend the convention to ban the shipment of waste destined for disposal or recovery from developed to less developed countries. However the Basel Ban amendment has proven controversial and it is not yet in force. Article 4 of Basel Convention 1989 has imposed certain general obligations on the state parties. According to this article the state parties who are decided to prohibit the import of waste for disposal, shall inform the other state regarding their decisions. Again the same article says that the parties can prohibit or permit the export of

\textsuperscript{227} Article 194 (2), Ibid
\textsuperscript{228} Article 195, Ibid
\textsuperscript{229} Article 196, Ibid
\textsuperscript{230} 116 Countries were the parties to this convention at the time of its negotiation and by August 2001, 148 countries were party to the Basel Convention and entered into force on May 5/1992. At present 170 countries are the parties to the convention.
waste if the importing state does not consent in writing to the specific import, provided that state of import has not prohibited the import of such wastes. Further the state parties are under the obligation to ensure that the generation of hazardous waste and other waste should be minimized to its maximum extent and to this end, the states have to formulate laws by taking in to account of social, technological and economic aspects. This convention consists of 29 articles and 9 annexes. Basel convention in its article 4 insisted that transportation or Transboundary movement and disposal of hazardous waste and other waste should be properly managed and it should not be harm the human health or environment. The transportation or Transboundary movement of hazardous waste should not cause harm to the coastal state.

Hence Basel Convention has introduced a system where notification should contain information about the reason for the export, the means of transportation, type of wastes, the technical discretion of the disposal plant, and the contract between the exporter and the disposer. Further each party to the convention require that, wastes to be packaged, labeled and transported in accordance with the generally accepted rules and standards” The wastes that can not be disposed of in accordance to the terms of the contract must be returned to the exporting country. This convention has failed to ban the trade in hazardous waste. Again the whole text contains rare provisions for the protection of the marine environment against the pollution that probably caused due to the shipment, transportation and dumping of hazardous waste.

231 Annex I- Categories of waste to be controlled
Annex II- Categories of waste requiring Special Consideration
AnnexIII- list of hazardous characteristics
AnnexIV- Disposal Operaton
AnnexV- Information to be provided on Notification
Annex VI- Arbitrations, Annex VII, VIII and IX were introduced by Basel Ban Convention.
B. THE BASEL BAN CONVENTION;

Restricting trade between OECD\textsuperscript{232} and non OECD parties was an issue hotly debated during the original negotiations for a convention. In the three initial conferences of the parties, developing countries and environmental NGOs worked together to achieve the goals of a complete ban on Transboundary movement of hazardous waste between the OECD and non OECD parties.

The first Basel conference of parties held in Uruguay in 1992, adopted a decision that request the industrialized countries to prohibit Transboundary movement of hazardous waste and other waste or disposal to developing countries and further requests developing countries to prohibit the import of hazardous waste from industrialized countries\textsuperscript{233}. The next conference of parties was held in Geneva in 1994 adopted a decision banning the export of hazardous waste intended for final disposal from OECD to non OECD countries and by the end of 1997, the export of wastes intended for recovery and recycling. This political declaration was given legal meaning and adopted as an amendment to the convention at the next conference of parties in 1995. The said amendment banned the export of hazardous waste for final disposal and recycling from countries listed in annex VII of the convention. Thus when ratified the Basel Ban amendment prohibit the hazardous waste shipments from parties that are OCED or EU countries, to non OCED / EU countries. However the new article 4A has provided that

(1) Each party listed in Annex VII must prohibit all Transboundary movements of hazardous wastes that are destined for disposal operations in countries not listed in annex VII

\textsuperscript{232} Organization for Economic Co-Operation and development

\textsuperscript{233} See International Environmental law and policy by David Hunter and others Page 849-851
(2) Each party listed in Annex VII must phase out by December 31-1997 and prohibit as of that date all Transboundary movements of hazardous wastes under Article 1(1) of the convention which are destined from recovery/recycling operations in countries not listed in Annex VII.

Following the adoption of the Basel Ban amendment, parties have adopted two new waste lists to clarify the wastes that would be covered by the convention. Annex VIII (known as list A) lists those wastes deemed to be hazardous under the Article 1 (1) (a) and therefore covered by the ban. Annex IX includes a “list B” of wastes that are not generally considered as hazardous and which are not subject to control under the convention. The amendment has been criticized, particularly in the context of materials destined for recycling, some developed and developing countries argues that the Ban has covered only exports. Originating from Annex VII countries and it has failed to address south trade in waste. However it is not yet in force because of lack of membership.234

C. THE BAMAKO CONVENTION

The Bamako convention on the ban of import in to Africa and the control of Transboundary movement and management of Hazardous wastes with in Africa was signed by all 51 members of the organisation for African unity (OAU) on January, 1991, in Bamako.235

234 62 State parties have to ratify the Basel Ban to enter in to force
235 The Bamako Convention Came in to force on April-22-1998
This convention based the import of hazardous waste generated outside of Africa. The legacy of toxic colonialism of developing countries and exploitation as a cheap disposal sites were the dominant concern to these conventions.

Many African states have refused to sign the convention complaining it was not stringent enough. Thirty two African nations have ratified the convention. The members of the organisation for African unity favored a complete ban on the export of hazardous waste to developing countries. The organisation for African unity states has also argued that Basel had failed to address three important problems adequately. They are,

1. How to control shipments of mixed waste.
2. How to address and
3. How to prevent forgery and bribery from circumventing Basel’s notice and the consent provisions.

Despite refusing to sign the Basel convention, African countries could still receive waste from Basel parties through Basel’s Article 11 (eleven) exception for exports by a party to a non party pursuant to a separate bilateral or multilateral agreement. To eliminate this possibility the organisation for African unity states made use of Basel’s article 4 provision forbidding a party from shipping waste to a state that has banned all hazardous waste imports, or that belongs to an economic integration organisation that has done so, article 4 (2) (c). Thus in January 1991, all the nations of Africa (except South Africa which was not a member of the OAU at that time) came together to ban hazardous waste imports by singing the Bamako Convention. Despite this political consensus the capacity of governments to implement the obligations contained in the Bamako convention are quite limited. Bamako convention requires all parties to prohibit under
there own domestic law, the importation of hazardous waste from out side Africa. Article 4 (1) of Bamako states that,” All parties shall take appropriate legal, administrative and other measures with in the area under their jurisdiction to prohibit the import of all hazardous wastes, for any reason, in to Africa from non contracting parties such import shall be deemed illegal and criminal act. This convention requires, the parties to adopt laws prohibiting the dumping of hazardous wastes at sea or in the territorial water, exclusive economic zone (EEZ) and continental shelf of each party. This provision also declared that any dumping of hazardous wastes at sea and incineration at sea is illegal236. Bamako Convention exceeds the restrictions of Basel, in fact Bamako convention arose from the failure of the Basel convention to prohibit trade of hazardous waste to least developed countries and from the realization that many developed nations were exporting toxic wastes to Africa. This impression was strengthened by several prominent cases like KOKO incident237 Khian case238 etc. KOKO incident occurred in 1987 concerned the importation in to Nigeria of 18,000 barrels of hazardous waste from the Italian companies. In this case Italian Businessman shipped toxic waste of Several Italian industries to Nigeria for storage in the backyard of a Nigerian business man, whose name is Sunday Nana. Sunday Nana has described these wastes as miscellaneous construction materials. Months later a scandal over toxic waste was published when the barrels of waste began leaking in to the surrounding area239.

236 Bamako Article 4(2) (a)
238 Supra note no123 of this chapter
239 Italy approximately produces 40 to 50 million tons of industrial waste and 16 million tons of household waste each year, most of which believed to be exported to developing countries for disposal
In Khian Sea incident, a ship loaded with hazardous incinerator ash allegedly dumped its cargo at sea after being refused docking rights by several nations.\(^{240}\)

Further Bamako’s definition of waste is broader than Basel’s. In addition to the Basel wastes definition, Bamako defined the hazardous waste substances so as to include the radioactive substances and also the substances which were or have been banned, canceled, refused registration by government’s regulatory action or voluntarily withdrawn from registration in the country of manufacture, for human health and environment reasons.\(^{241}\)

Bamako’s enforcement provisions provide that,

a) Each party must create its own national body to act as a watch dog or “Dump watch” as it is labeled by the convention and,

b) Violations should be subject to criminal penalties as are their accomplices including any person who plans carries, out or assists illegal imports.\(^{242}\) Moreover Bamako does not ban the importation of waste generated in one African State to another African state.

However the states are under the obligation that they have to pass domestic laws requiring generators to report their waste generation and shipment to the secretariat and subjects generators to strict joint and several liabilities for the release of hazardous waste.\(^{243}\) The Basel convention has postponed the issue of liability for later negotiations.\(^{244}\) However the Bamako convention has used a format and language similar to that of the Basel convention, but its much stronger than the Basel convention in

\(^{240}\) Supra note no 113 of this chapter

\(^{241}\) Bamako article 2(1) (d)

\(^{242}\) Prior to the Bamako Convention the countries of Nigeria, and Cameroon had already imposed the death penalty for imports of hazardous waste

\(^{243}\) Bamako article 4(3)(b).

\(^{244}\) Protocol on Basel liability
prohibiting all imports of hazardous waste. In addition, Bamako convention does not make exceptions on certain hazardous waste (like radioactive materials) made by the Basel convention.

**D. LOME IV CONVENTION**

The Lome IV convention signed in 1990. It is a trade agreement that prohibits the exports of hazardous waste from the European community to the African, Caribbean and Pacific (ACP) States. Since the Basel Convention has failed to ban the hazardous waste within their territories.

However Lome IV banned the direct and indirect export of any hazardous or radioactive waste from European community states to African, Caribbean and pacific states. Under Lome IV convention ACP States agreed not to accept waste imports from any other states outside the European community. This sweeping provision effectively halted developed country waste shipments to ACP states and ensured that European Nations had not placed themselves at a competitive disadvantage by unilaterally excluding a destination for its wastes.

**E. BASEL PROTOCOL ON LIABILITY AND COMPENSATION:**

Article 12 of the Basel convention has stated that parties to the convention has to prepare a protocol establishing appropriate liability rules and procedures for damage resulting from the hazardous waste trade. After 10 years of negotiation, in the fifth conference of parties, the state parties have adopted the protocol on liability in 1999.\(^{246}\)

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\(^{245}\) Lome Convention opened for signature in March 22, 1990, As of 68 countries had ratified Lome IV.

\(^{246}\) As August 2001, 13 states ratified the protocol. However it will become effective once 20 parties have ratified.
This protocol applies to Transboundary shipments of hazardous wastes including illegal traffic, from the point where the wastes are loaded for transport in the country of export to the point where they are accepted by the disposal agent. Liability does not extend to damage after disposal, such as leakage from storage tanks, or other forms of improper disposal. The protocol also establishes a fault based liability regime in the event that a party disregards convention requirements or acts in a wrongful, intentional, reckless or negligent manner.

However the protocol has not addressed the liability for international environmental harms\textsuperscript{247}. Hence the protocol has been roundly criticized by environmental groups and UNEP for the omission of such an important area.

“Poverty is the reason people have been lured, into accepting substances that other wise they would not have “. Poverty gave rise to the waste trade and thus encouraged waste exports to many developing and least developed countries, including Africa. In some cases the fees for trade in hazardous waste rivals the African nations annual gross national product. Such import and export of hazardous waste is the prime reason for the shipment of hazardous waste ,but no convention have effectively addressed the accidents , dumping of waste by such ships to the marine, either deliberately or accidentally.

Basel convention 1986, Basel Ban, Bamako and Lome IV Conventions have failed to regulate the pollution of maritime area that caused due to these kinds of ships. Again protocol on Basel liability also failed to protect the Marine environment, since it has not at all addressed the harm caused to the international marine environment. These

\textsuperscript{247} Except oil spills and nuclear reactors accidents, hence UNEP has called the said protocol as a major break through
conventions addressed the problems relating to the package, transportation, trading, management and reception of hazardous waste by importing and exporting states, but not covered the problems relating to the preservation of marine environment against the pollution caused due to the ships carrying hazardous waste.

Chronologically responsibility for the injury caused by the activities of one sovereign state to another sovereign state was first recognized in an international context in the land mark decision called Trial Smelter decision.

Trail Smelter case\textsuperscript{248} In this case a Canadian company operated one of the largest zinc and lead ore smelting plants in the north-west. These ores contained sulfur, which was discharged in to the air as sulphur dioxide. The problems arose in the early 1930s when the daily rate of sulphur dioxide has risen to approximately 700 tons. As a result of the meteorological conditions in the area, these noxious fumes were blown over the Canada United States border, located eleven miles south of Trail. Crops, timber and live stock were severely damaged in the state of Washington. Over the years several private claims had been initiated against Trail Smelter. However, attempts to settle the problems with in the confines of municipal law and subsequent referral to the two states International joint commission on Frontier problems failed. In 1935, two governments were signed an agreement under which a tribunal was instituted to secure a permanent solution to the problem by means of arbitration\textsuperscript{249}. The tribunal was established to decide questions with respect to the nature and extent of the damage caused by the trail smelter, to impose remedial sanctions, including injunctive relief and indemnity, and to prescribe

\textsuperscript{248} 20U. Miami Inter- AM.L.Rev. 579
\textsuperscript{249} Supra note no 2
regimes to be “adopted or maintained by the “trail Smelter”. Finally the tribunal created by the convention has framed the following issues to be answered.

1. Whether any damage was caused by the Trial Smelter since January 1932, and if so, what indemnity, should be paid there of…?

2. If the answer to the first part of the preceding question was affirmative, should the trial smelter, required to refrain from causing damage to Washington in the future, and if so to what extent?

3. In view of the answer to the preceding question what measure or regime, if any, should be adopted or maintained by the Trial Smelter.

4. Pursuant to any decision rendered by the tribunal on the preceding questions, what indemnity or compensation, if any, should be paid?

The tribunal has applied the law of United States as well as international law and practice in order to get solution for the questions; on 11 March 1941 tribunal had pronounced the judgment which is as follows\textsuperscript{250}.

“No state has the right to use or permit the use of its territory in such a manner so as to cause injury by fumes in or the territory of another or the properties of persons there in. When the case is of serious consequence and the injury is established by clear and convincing evidence, considering the circumstances of the case, the tribunal holds that dominion of Canada is responsible in international law for the conduct of the Trial Smelter. Apart from the undertaking, in the convention, it is, therefore the duty of government of the dominion of Canada to see to it that this conduct should be in conformity with the obligation of the dominion under international law.

\textsuperscript{250} Supra note no 128
The United States was granted an award of indemnity for damage to timber, land, crops, and cleared land not used for crops. The decision also prescribed a regime over the Trail Smelter emissions. Agreed reparation would be paid by Canada for future damage for improper management and maintenance of the regime. The United States would be compensated up to $7,500 per year for any necessary investigations but only under the condition that two parties agreed that damage exceeding $7,500 had in fact occurred.\footnote{251}

The case is significant for introducing the principle of state responsibility for hazardous activities which cause injury to other states. The Trial Smelter case may be considered the principle lay down in Rayland’s V/s Fletcher of international law. The Trial Smelter case is cited in legal literature as the beacon for principles of state responsibility. No other international case at that time and perhaps even up to the present day, so directly and exhaustively addressed the issues of transnational responsibility. Hence, for the first time Trail Smelter case has recognized the responsibility of one state towards the other state. A sovereign state has a right to exploit their natural resources, their properties but not on the cost of environment or any rights of another sovereign state.\footnote{252}

1. CORFU CHANNEL CASE

The incident which gave rise to litigation occurred on May 15, 1946, When the British Admiralty sent two warships to the Corfu channel located between the Albania main land and the northern portion of the island of Corfu. The Channel was considered

\footnote{251} 20U.Miami Inter-AM.L.Rev579
\footnote{252} Ibid
mine-free, since the mines that were placed during World War II had been swept in October 1944. During their cruise through the channel, the British Warships were fired upon, but not hit.

In an exchange of notes, the British government has announced that, it had a right to pass through the straits and was not required to announce the passage before hand or await permission from Albania. Albania asserted its permission for passage was required. The British Admiralty dispatched two cruisers and two destroyers to the Corfu channel\textsuperscript{253}. The two destroyers struck mines and were badly damaged, many people died or injured. Several weeks following the incident the British Navy independently and unilaterally conducted mine sweeping operations in the channel. Before this undertaking, the British had communicated their intentions to the Albanians, to which the Albanians replied with strong protests.

On 22 May 1947, United Kingdom has unilaterally filed a case before the International Court of Justice, Albania contested the courts competence. After the court rendered its first, judgment, the two parties submitted a compromise in which the court was petitioned to decide whether Albania was responsible for the explosions in the channel and whether the united kingdom had infringed upon Albanians sovereign rights\textsuperscript{254}.

In the proceedings on the merits of the case, the court ruled that Albanians presumed knowledge of the presence of the minefield in Albanian territorial waters obligated the Albanian government to notify for the benefit of shipping in general, the existence of the minefield in Albanian territorial Waters” and to warn the approaching

\textsuperscript{253} Ibid
\textsuperscript{254} Ibid
British warships of the imminent danger to which the minefield exposed them”.

The court ruled that Albania had failed to meet this obligation and was therefore responsible under international law for the explosions that occurred in her waters and for the ensuring damage and loss of human life. The court also ruled the British Navy’s mine sweeping operation in Albanian waters had violated the sovereignty of the people’s republic of Albania.  

While the Corfu channel case is widely cited for its holding on two question of innocent passage through straights. The said case is an important precedent for the doctrine of state responsibility. It reinforced and extended the Trial Smelter ruling. The decision of this case has recognized that a state can not exercise its sovereignty in a manner which causes injury to other states with in its territory. A state can not exercise its sovereignty with a reckless disregard for welfare of others. However to the context of marine pollution a state should held responsible when it recklessly allows the discharge of pollutants in to its own waters, there by causing injury to the waters of its neighbors.

2. THE LAC LANOUX CASE.

The Lac Lanoux Arbitral Award involved a controversy between France and Spain over the use of the Lack Lanoux waters and the interpretation of the treaty of Bayonne of 1866. Lac Lanoux lies in French territory and has its source there in. The waters flow naturally in to the river carol, which runs in to Spain and joins the River Serge, following eventually in to the Mediterranean. Spain, the lower riparian, claimed that France could not unilaterally decide to divert the waters of Lac Lanoux as part of a

255 Ibid
hydro electric project. The question put before the tribunal was whether France had
violated the treaty of Bayonne of 1866 by constructing a plant with the intention of using
the waters of Lac Lanoux without the prior consent of the Spanish government.

Spain contended that the French project affected the entire water system of the
carol and the diversion of the waters would alter and degrade the physical features of the
hydrographic basin. The arbitral tribunal rejected Spain’s claim since it failed to show
that “the works would bring about a definite pollution of waters of the river carol which
flowed from Lac Lanoux in to Spain and to which the diverted water would be returned
or that returned waters would have a chemical composition or a temperature or some
other characteristic which could injure Spanish interest.

3. THE JAPANESE FISHERMAN INCIDENT

The Japanese Fisherman incident is the best example for the flagrant abuse of
states rights. In this incident, the United States conducted hydrogen bomb tests in the
Marshall Islands. Unlike the previous two cases, no tribunal was instituted to decide the
issues of liability and damages. However, through diplomatic agreement the United
States paid two million dollars to the Japanese government as compensation for
subjecting a crew member of a Japanese fishing boat to excessive amounts of radiation
and for contaminating the catch of a number of other fishermen. The United States was
severely criticized for conducting these dangerous tests. Critics asserted that the testing
violated the trusteeship, agreement, and was unlawful under International law because it
was in violation of U.N. Charter. Commentators have maintained that even though the

256 Ibid
257 Ibid
258 Ibid
United States may not have been guilty of a violation per se, the standard of reasonableness should apply in international conflicts over environmental pollution. “The standard should be determined by the familiar process of balancing the utility of the conduct, causing damage against the gravity of harm to the injured party. One principle emerges from this case regardless of the propriety or impropriety of the action if it results in an injury or damage. The case demonstrates that by 1954 the concept of state responsibility for damage caused by pollution was beginning to find acceptance259

The value of these precedents is derived from the development of generally recognized principles of International law embodied in the international legal protection of the environment. These precedents has widen the definition of state responsibility and established a general rule of International law, that states must not permit their nationals to discharge effluents to the sea that may cause injury to the nations of other states. However these rules are general, broad and non specific in nature. These rules are not sufficient in effective and lacks detailed emission standards which are necessary for the protection of International maritime area.

V. INDIAN LEGISLATIONS TO GOVERN THE VESSEL BASED SOLID WASTE

India has a long coast line of around 6200 kilometers and three sides of the country surrounded by Sea. Unfortunately there is a lack of awareness about marine pollution. Such kind of ignorance can be attributed to many reasons, like most of the people have considered sea as a most suitable place for waste disposal. According to many people ocean disposal is one of the most economic, and ecological mode.

259 Ibid
India has approximately 11 major ports, 16 intermediate ports, and 78 minor ports, but Indian ports have not been really geared up to control marine pollution in their sea areas and most of the ports have hardly taken any measures to combat the same due to lack of funds and trained man power. Recently, the responsibility to prevent and control the marine pollution has been entrusted to Indian coast Guard, governed by the Indian Coast Guard Act 1976. In addition, numbers of agencies are engaged in prevention and control of marine pollution, namely National Institute of Oceanography and its three regional centers, which have developed sufficient expertise to advice and assist scientific aspects of Marine pollution. Department of ocean development was created with a view to create policies including co ordination, security, regulatory and developmental measures relating to the ocean. In addition State and Central Pollution Control Boards port authorities are playing vital role in preventing the marine pollution.

Industrialization, urbanization, increase in population, deforestation, increase in number and size of ships, demand for oil, chemicals, dangerous goods, dumping of sewage and garbage, dumping of nuclear waste, trade in hazardous waste, running and sub-standard ships by irresponsible operators are the main reason for the increased marine pollution in India.

A. INDIAN COAST GUARD ACT 1976

After Stockholm conference in 1972, Indian Coast Guard Act 1976 was enacted in India to protect the Indian Maritime area from all kinds of pollution. According to Coast Guard Act ‘Maritime zone of India’ means the territorial waters, the contiguous

\footnote{P.C Sinha, coastal and marine disasters, Anmol publications, Page no 174-178.}
zone, the continental shelf, exclusive economic zone or any maritime zone of India\textsuperscript{261}. This Act is applicable to both vessels and any station belonging to Coast Guard whether with in or outside the India\textsuperscript{262}. The coast Guard Act 1976 has defined the term territorial waters, contiguous zone, continental shelf and exclusive economic zone, in section 1(y).

Section 4 (1) has imposed an obligation on armed force of the union for ensuring the security of the maritime zones of India with a view to the protection of maritime and other national interests in such zones. General super intendance, direction and control of the coast Guard are vested in the officer appointed by the Central Government\textsuperscript{263}. Chapter III of Coast Guard Act 1978 described the duties and functions of the Coast Guard.

Sec 14 (1) The Coast Guards are under the duty to take all necessary measures to protect the interest of India in its maritime zones and other zones. Again same section has provided that Coast Guard shall take all necessary measures ensuring the safety and protection of artificial Islands, offshore terminals, installations and other structures, devices in maritime zones. Section 14 (2) (c) Specially mentioned that Coast Guard shall take all measures to protect the marine environment and to prevent the marine pollution. Coast Guard has to take measures to enforce the provisions of such enactments as are for time being in force in maritime zones, and it also ensure the safety of life and properly at sea by collection of scientific data\textsuperscript{264} Section 17 of the Coast Guard Act has listed the offences which are punishable under the Indian Coast Guard Act 1978. Coast Guards has been provided that any person subject to this Act who will fully or negligently loses,

\textsuperscript{261} Section 1(m) of Indian coast Guard Act 1978
\textsuperscript{262} Section 1(u) ibid
\textsuperscript{263} “Territorial Waters” “contiguous Zone’ Continental shelf and exclusive economic zone shall have the meanings respectively assigned to them in the territorial waster , continental shelf, exclusive economic zone and other maritime zones Act 1976. Section 5(1) of Indian coast guard Act 1978
\textsuperscript{264} Section 14 (2) (a) & (f)

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strands or hazards or suffers to be lost, standard or hazarded any ship belonging to or in
the service of the Coast Guard or losses or suffers to be lost any air craft belonging to or
in the service of the Coast Guard shall on conviction by a Coast Guard Court be liable to
suffer imprisonment for a term which may extend to seven years or such les punishment
as is in this Act mentioned. Again the same section imposed imprisonment for a term
which may extend up to 2 years265

Officers of Coast Guard Act are under the duty to issue the certificate to the
vessels ensuring its accuracy, if any officer has committed any default or falsified the
documents then such officers are liable for punishments up to two years266.

The Indian Coast Guard Act 1978 has been established, to provide for the
constitution and regulation of an armed force of the union for ensuring the security of the
maritime zones of India with a view to the protection of maritime and other national
interests in such zones and connected matters. Note worthy point is that the Coast Guard
Act 1978 is not specific about the protection of Marine environment. This Act just
mentioned that officers of Coast Guard have to take all measures to prevent marine
pollution. But the Act has not established the frame work, minimum standards and
guidelines to combat the marine pollution. Again the whole Act put much emphasis on
the discharge of duties, powers and functions of officers of Coast Guard, the punishment
for their default in their duties etc. In other words the Act contained rarest of rare
provisions to regulate and control the marine environment.

Among other governing laws of India, Indian ports Act 1908/1976 is most
recognized one, the aim of this act is to consolidate the enactments relating to ports and

265 Section 27(1)&(2) of Indian Coast Guard Act 1976
266 Section 29 and 33 of the Indian Coast Guard Act 1978
port charge where as it is expedient to consolidate the enactments relating to ports and port charges. According to this act port means any part of a river or channel in which this act is for the time being in force\textsuperscript{267}. Chapter 4 of this Act contains many provisions for the safety of shipping and also for the conservation of ports. But these provisions are not at all sufficient to regulate the problems of marine pollution because these provisions have not addressed the many problems that arose due to the vessels. Chapter 4 has imposed 200 Rs fine and six months imprisonment for a person who willfully losses the vessels\textsuperscript{148}. The same chapter prohibited the act of discharging ballast and rubbish etc which are likely to form a bank or appears to be detrimental to the navigation, or other legitimate use of the maritime area. Again this act has prohibited the act of releasing heat or discharging boiling water from the vessels in to the sea\textsuperscript{268}.

As mentioned above the Indian Ports Act mainly intended to consolidate the enactments relating to ports and port charges. This Act consists of 68 sections and 2 schedules. Schedule I deals with the port charges and II schedule is repealed. It is clear from the study of this act, that Indian Port Act incidentally addressed the Marine pollution problems. In other words Marine pollution is not the main concern of this Act.

The international and Regional legal regime is strong enough to regulate the marine pollution that caused due to the vessel based sources and dumping of waste and other matter. but the Indian legislations are still in infant stage hence it is the right time to frame comprehensive, stringent norms to govern the marine pollution and care should be taken to ensure that these norms should be compatible with the international standards. Indian Coast Guard Act 1978 and Indian Ports Act 1975 incidentally

\textsuperscript{267} Section 3(4) of the Indian Ports Trust Act 1908/75
\textsuperscript{268} Section 3 (7) of the Indian Ports Act 1908/75
addressed the marine pollution. Still there are no comprehensive legislations to govern the Indian maritime zones. However in recent years being a member of MARPOL 73/38 Indian maritime zones are also governed by the provisions of MARPOL 73/78, UNCLOS III 1982.
SECTION-C

Legal Regime of Marine pollution by solid waste generated due to the sea bed activities

I. INTRODUCTION

Pollution of marine environment is caused due to the release of harmful substances that arise directly from the exploration and exploitation of various marine resources. Such exploration and exploitation activities encouraged the development of offshore installations, platforms and other excavation devices throughout the seas, mainly in coastal areas. Many scientists have opinioned that approximately 1 present of total marine pollutants are contributed by the sea bed activities. In addition, sea bed activities like exploration and exploitation of natural resources, brings revenue to the states. Hence the regular discharges, disposal, dumping, and release of waste from these resources are non prohibitive. Further there is no separate comprehensive and particular definition for the term offshore installations. Many international and regional conventions have merged the meaning and definition of the offshore installations and platforms with the definition of vessels and ships. There is no separate legal status for these offshore installations even though they are unique from the vessels and ships, both in technology, and functional characteristics. Again it is difficult to define the offshore installations because of its use for various purposes, which range from the small observation buoys gathering scientific data to huge oil and gas production and storage complexes. It also include deep water ports, sea cities floating factories, broad casting stations even important military installations etc

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269Philippe Sands, principles of International Environmental Law I st Frame works, Standards and implementation by page 330, 331
However in international law the varied functions of these off shore installations does not affect their legal status. In deed they are traditionally treated as a single legal species operating under the same general rules\textsuperscript{270}.

Off shore installations have been divided in to two groups: - They are, First, Man – made alluvial formations created by dredging or dumping sand, rocks, gravel and other natural substances in two seas\textsuperscript{271} “non naturally formed structure permanently attached to the sea bed and surrounded by water which is above water at high tide”.

Second Group: Consists of “installations” man – made structures constructed from such non natural materials as concrete and steel. Therefore can not partake of the nature of territory and are not deemed to possess the same degree of permanence as the artificial Islands\textsuperscript{272}

However both categories are fall under the definition of artificial structure as “Any man – made construction which is fixed to the bottom of the sea of floats permanently at a given spot for the duration of the activity for which it was designed\textsuperscript{273}

In 1977, C.M.I. Draft international convention offshore mobile craft defined. As “Craft, shall mean any marine structure of what ever nature, not permanently fixed in to the sea bed which

a. Is capable of moving or keeping moved whilst floating in or on water, whether or not attached to the sea – bed during operations. And

\textsuperscript{270} Ibid
\textsuperscript{271} Ibid
\textsuperscript{272} Ibid
\textsuperscript{273} Ibid
b. Is used or intended for use in the exploration, exploitation, processing, transport or storage of the mineral resources of the sea bed or it’s sub soil or in ancillary activities.274

However, it is clear from their artificial nature and temporary character that off shore installations do not have the statues of islands. Indeed, that was intended from an early state in the development of the doctrine of continental shelf, which allowed the coastal state to erect installations on its continental shelf in order to explore and exploit its natural resources. The special reporter to the international law commission during the deliberations on the law of the sea in 1950’s, JPA Francois, explained that such installations in the high seas would not have their own territorial sea but would only be entitled to zones of security. This statement was included in the final report of international law commission to the General Assembly, which became crystallized in article 4 and 5 of the Geneva Convention on the continental shelf 1958. The same was repeated in article 60, 68, 80 and 147(e) of UNCLOS. However, initially there was some controversy as to the exact nature of the powers of the coastal state to take measures necessary for the protection of the structure, especially with regard to the limited degree of jurisdiction and control it had over foreign shipping. However, state practice offers evidence as to the tendency of the coastal states to exercise the whole range of their jurisdictional rights in the safety zone and even beyond it. Indeed, some states, such as Norway, forbid contain navigational and fishing practices in wider areas around offshore installations.

274 Article I of C.M.I Draft International Convention Off shore mobile craft.
Many conventions have included the offshore installations, platforms, artificial structures with in the meaning of ships. In fact, some matters especially regarding registration, safety regulations, collision, salvage etc. brings forth the connection with ships. Hence whether a platform can be described as a ship in legal terms remains an open question, because there is no separate definition for ship. Again whether on oilrig is a ship for the purpose of rights of passage through the Great Belt was yet to be decided in the international court of justice275

The maritime conventions have adopted different definitions in accordance with their specific purposes. For instance article 11 & 12 of the Brussels convention relating to intervention on the high seas in cases of oil Pollution causalities, Article 19 and 20 of the 1972 OSLO convention for the prevention of marine pollution by dumping from ships and aircraft, Article 3 of 1972 London convention on the prevention of Marine pollution by dumping of waste and other matter. Inevitably, the question refers back to the realm of domestic law, which also offers a wide range choice. However the rational behind such detail discussion about the distinction between ship and off shore installations is to find out the law that applicable to the ships and off shore installations, because the ships fall under the authority of their flag state. The same principle is inconvenient for the coastal state, where a foreign company operating platforms, off shore installations and can give rise to the problems like concurrency of jurisdiction.

In fact, the technical characteristics and functions of “off shore installations” and ships are vary from each other. But existing conventions have considered these two species as a single species, and applied the same set regulations. Again the existing

275 Passage through the great belt Case, Finland v/s Denmark I.C.J Reports 1991 however the case has been settled out of the court in 1992.
domestic laws on mining through the island and on the operation of ship are different. In addition existing conventions have conferred huge degree of discretion to the states to formulate their own laws to govern both ships and island. This kind of discretion, which is not allowed by the policy framework or at least minimum standards, leads to the framing of soft norms and there by freedom to pollute more. Hence at the first there is an urgent need for a separate and comprehensive definition for both ships and island. Secondly, such definition should be based on the characteristics, functions and discharge of pollutants rather then the procedural aspects like, registration of vessels or of shore installations. Thirdly, there is a great need for the separate legal regime to both species, which should be able to treat the ships differently from islands. Because as per an recent estimation, by 2025 more than 50% of oceans will be used for scientific and other purposes.

II. INTERNATIONAL CONVENTION TO ADDRESS THE MARINE POLLUTIION DUE TO THE SOLID WASTE

Normally, the right to exploitation of natural resources is followed by the responsibility to protect the marine environment. But incase of sea bed activities the law relating to exploitation is still in infant stage and this area has been considered as common heritage a man kind276. Hence only one international convention exists to govern this area. However numbers of regional conventions have addressed the marine pollution due to the sea bed activities but along with the pollution caused due to the vessel based pollutants again UNCLOS III 1982 has addressed this.

276 Arvid Parado of Malta proposed that the sea bed and the ocean floor beyond the limits of national jurisdiction to be common heritage of mankind. The implications of common heritage of man kind 1 Non, appropriation 2. International Management 3, sharing of benefits 4. Reservation for peaceful purposes 5.reservation for future generations The sea-bed, ocean floor are beyond the limits of national jurisdiction hence it is property of mankind
A. UNITED NATIONS CONVENTION ON LAW OF THE SEA (UNCLOS – III)

UNCLOS III 1982, has defined the area as “area means the sea bed and ocean floor and sub-soil there of beyond the limits of national jurisdiction”. Activities in the area means all activities of exploration and exploitation of resources of the area. Part XI of the UNCLOS exclusively deal with the various provisions relating to area. Article 145 of UNCLOS – III – 1982 has provided that states shall take all necessary steps to provide effective protection to the marine environment. The same article imposed an obligation to the authority to adopt appropriate rules regulations and procedures for the prevention reduction and control of pollution and other hazardous to the marine environment, including the coast line and of interference with the ecological balance of the marine environment.

UNCLOS – 1982, Part XI, Section 4 established the international Sea Bed Authority it should function in accordance with the provisions of part XI of the UNCLOS 1982. Under this convention, sea bed authority has to give special attention to protect the marine environment from harmful effects of certain activities like drilling, bridging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities. Further the council is under the duty to disapprove the areas for exploitation by Contractors or by the enterprises, in cases where substantial evidence indicated the risk of serious harm to the marine environment.

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277 Article 1 (1) of UNCLOS 1982
278 Article 1(3) of UNCLOS 1982
279 Part XI of UNCLOS 1982, consists of 59 articles designed from 133 to 191 of UNCLOS III. These Articles deal with the provisions relating to common heritage of mankind, Legal status of area and its resources. Marine scientific research, transfer of technology
280 For detail information about the Sea Bed Authority see chapter 7 of this thesis entitled Role of International Organizations in the Protection and preservation of the Marine Environment
281 Article 145 (1) of UNCLOS III 1982
282 Article 162(2)(X) of UNCLOS 1982, Council is an executive organ of the Sea Bed Authority
environment. Article 194 (3) (c) has imposed general obligation on the states to frame particular regulations to govern the pollution caused due to offshore installations, devices, which are used exploration and exploitation of sea bed resources. Article 208 has laid down the detailed provisions to regulate the marine pollution due to sea bed activities that subjected to national jurisdiction. This article has conferred wide discretion to the states to establish there own laws and regulations to prevent, reduce and control pollution of the marine environment arising from or in connection with, sea bed activities, with in their jurisdiction and the states also has discretion to frame laws to regulate the pollution that caused due to the artificial Islands, installations and structures under their jurisdiction pursuant to article 60\(^{283}\) and \(80^{284}\) of UNCLOS 1982\(^{285}\). Further the same article has provided that the rules, regulations and measures adopted by the states should be equivalent to the international rules, standards and recommended practices and procedures and these policies and procedures should be incorporated at all regional level. Again the states have to re examine these policies and regulations from time to time\(^{286}\).

Note worthy point is that, these international rules, regulations and procedures shall be established in accordance with part XI of UNCLOS 1982, in order to prevent and protect the marine environment from activities in area. Again enforcement of international rules, regulation and procedures established in accordance with part XI should be governed by that part only\(^{287}\) (i.e. by part XI) Above stated articles have distinguished the pollution resulting from activities taking place in the zone and in the area subjected to national

\(^{283}\) Article 60 of UNCLOS 1982 has provided exclusive right to the states to construct, to authorize and regulate the construction operation and use of artificial islands, offshore installations and structures. Again states have exclusive jurisdiction over customs, fiscal, health, safety and immigration laws and regulations

\(^{284}\) Article 60 applies Mutatis Munandis to artificial islands, installations and structures on the continental shelf

\(^{285}\) Article 208 of UNCLOS 1982

\(^{286}\) Article 208 of UNCLOS 1982

\(^{287}\) Article 209 and 215 of UNCLOS 1982
jurisdiction. Article 145 is applicable to the zone and Article 208 applicable to the states, hence again there is non-uniform laws and standards to govern the same species or same island. Again article 208 has conferred more discretion to the coastal states; as a result states can frame soft norms to govern the sea bed activities. Such negligence can be attributed to two reasons. First, these islands are one of the prime sources of revenue and secondly, in comparison with other types of marine pollution, pollution that caused due to the sea bed activities is less, that is to say 1%. But, in fact, in future the data would not be the same because there is anticipation that by 2025 more than 50 percent of the ocean would be used for many purposes, including exploration and exploitation of natural resources, scientific research, navigational and non navigational purposes, so such negligence with regarding to the framing of rules and regulations are not all reasonable and hence non acceptable.

B. CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTE AND OTHER MATTER 1972 (LONDON CONVENTION 1972)

London convention recalled the resolution 2749(XXV) of the general assembly of the United Nations on the principles governing the sea bed and the ocean floor and the sub-soil there of, beyond the limits of national jurisdiction. At the outset the convention has imposed general obligation on the state parties to adopt rules and regulations to combat the marine pollution and called the states to pledge themselves to take all practicable steps to protect and preserve the marine environment288. The definition of dumping does not include the regular discharges from offshore installations and

288 Article 1 and 2 of the London convention 1972
discharges from offshore installations and man-made structures at sea, but has included deliberate disposal at sea by above said sources. Further each contracting party has to take the effective measures, required to implement the present convention to all fixed or floating platforms under its jurisdiction, believed to be engaged in dumping. Again the convention gave discretion to the state parties to take appropriate measures to punish the conduct which are in contravention with the provisions of the convention. Further the state parties have to pledge them self to promote the measures, with the competent specialized agencies and other international bodies, to prevent the marine pollution that caused due to the waste generated during the course of operation of vessels, air craft, platforms and other man made structures at sea, and also to combat the waste or other matter that directly arise from or related to the exploration and exploitation of sea bed resources.

Though, London Convention 1972, has recalled the resolution 2749 (XXV) of the general assembly of the United Nations, which deal with the principles governing the sea bed and ocean floor beyond the limits of national jurisdiction, but has not contributed any special rules or unique regulations to govern the area. As other conventions it gave huge discretion to the state parties to frame laws, to adopt measures, which means freedom to pollute more. However, London convention, for the first time mentioned about the sanctions for the conduct which are in contravention with the main provisions of the text, and hence acquired unique position in the legal Regime of marine pollution. Further it is a sort of departure from the traditional international law, and established a new step stone in the international environmental law.

289 Article 3 of London Convention 1972
290 Article 7 (2) and (3) of London Convention 1972
III. REGIONAL CONVENTIONS RELATING TO THE MARINE POLLUTION BY SOLID WASTE DUE TO THE SEA BED ACTIVITIES

A. UNEP REGIONAL SEAS PROGRAME

All the regional seas treaties have re-affirmed the UNCLOS principles in general. Barcelona convention 1976\(^\text{291}\) obligated the contracting parties to take all appropriate measures to prevent, abate and combat pollution of the Mediterranean Sea area resulting from exploration and exploitation of the continental shelf and the sea bed and its sub soil\(^\text{292}\).

Article XI of Bucharest convention\(^\text{293}\), has imposed obligation on states to adopt laws and regulations as soon as possible to prevent the pollution of Black sea caused by or connected with activities on its continental shelf, including exploration and exploitation of natural resources of the continental shelf. With this respect the contracting parties shall inform each other through the commission about the laws, regulations and measures adapted by them to the context of sea – bad activities. In addition, contracting parties shall co-operate in this field as appropriate, and endeavor to harmonize the measures that taken as per the Para one of this article\(^\text{294}\).

Article 10 of Helsinki Convention on Baltic Sea, Article 8 of Abidjan convention 198\(^\text{295}\), Article 4(c) of 1981 Lima convention for south East pacific\(^\text{296}\). Article 7 of 1982, Jeddah convention for the red sea, Article 8 of 1983 Cartagena convention for the

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\(^{291}\) Barcelona convention for the protection of the Mediterranean Sea Against Pollution , Signed in 1976, in force February 12, 1978, revised on 10 June 1995 as the convention for the protection of Marine environment and the coastal region of the Mediterranean

\(^{292}\) Article 7 of Barcelona convention


\(^{294}\) Article XI (2) of Bucharest Convention

\(^{295}\) Convention for the co operation in the protection and development of the marine and coastal environment of the west and central African Region and protocol 1981 entry in force 5 August 1984

\(^{296}\) Convention for the Protection of the Marine Environment of South- East Pacific, Lima 1981

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Caribbean region, Article 9 of 1986 Noumea convention for the South pacific imposed general obligation on contracting states to take all appropriate and effective measures to prevent the pollution that introduced to the marine ecology due to the activities carried in continental shelf and in sea bed area. However, these provisions are general and non comprehensive. On one side these provisions have wide discretion to the states to frame there own laws, on the other side failed to establish standards, policy framework to frame such national legislations. So even though all the seas were covered by these conventions, but failed to combat the marine pollution. Hence these provisions are like, muscle with out bone.

B. OSPAR CONVENTION

Under the 1992 OSPAR Convention the parties will be required to prevent and eliminate pollution from off shore sources, including accidents and comply with the rules set out by annex III\textsuperscript{297}. OSPAR convention has prohibited the dumping of wastes or other matter from offshore installations\textsuperscript{298}. However discharges or emissions from offshore sources are not included in the prohibition, but they, together with the use of substances which may reach and affect the maritime area, are strictly subject to authorization or regulation and monitoring\textsuperscript{299}. Further non exploitable or abandoned offshore instillations or pipelines must not be dumped and no disused offshore installation can be left wholly or party in place without a permit issued on a case –by- case basis granted in accordance with applicable decisions, recommendations and other agreements adopted under the

\textsuperscript{297} Article 5 of Annex III has defined the offshore pipelines from which substances or energy reach the maritime area
\textsuperscript{298} Article 3 of the Annex III
\textsuperscript{299} Article 4 of Annex III
convention. Again, permits will not be granted if the disused installation or pipeline contains substances which result or likely to result in hazardous harms or interference with other legitimate uses of the sea. The annex also includes rules on placement, compliance, sovereign immunity and the role of the OSPAR commission.

C. PROTOCOL CONCERNING MARINE POLLUTION RESULTING FROM EXPLORATION AND EXPLOITATION OF THE CONTINENTAL SHELF;
(Done at Kuwait on 29 March 1989)

The protocol has elaborately defined the offshore installations. It includes any structure, plant or vessel whether floating or fixed to or under the sea bed placed for the purpose of offshore operations. This definition is based on the purpose behind installations of these devices, or platforms, hence it is the most comprehensive definition. Article II requires contracting states to take all appropriate measures to prevent, abate and control marine pollution from offshore operations in areas that exist in their jurisdiction, and states have to take action individually and jointly to combat marine pollution. The protocol establishes that any offshore operation shall be conducted under a licence, and the licensing of any offshore operation which could cause significant risk of pollution in the protocol area, requires a prior assessment of the potential environmental effects.

Moreover, no license shall be granted until the competent state authority is satisfied that the operation will entail no unacceptable risk of environmental damage in the area. The regional Organisation established the guidelines for the environmental protection.

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300 Article 5(1) of Annex III
301 Article 5(2) of Annex III of OSPAR Convention
302 Article 8 to 10 of Annex III of OSPAR Convention
303 In pursuance with the Article 76, 197 and 208 of the UNCLOS 1982, Gulf state have established this protocol on 1989
304 Article IV of Kuwait Regional Protocol 1989
impact statement and states must send the organization a summary of the environmental effects reported in the assessment submitted to them. After receiving the assessment summaries, the organisation must send them to all the contracting states with in four days. Again before the grant of license, other contracting states must be allowed to submit their representations through the organizations within a stipulated, reasonable time. In case, if any state parties have submitted their representation, the state has to consider such representation before granting the license on operation.

Article X has prohibited the dumping of solid waste from the offshore installations, platforms or any other man made structures. According to this provision the states have to take all measure to prevent have to take all measure to prevent the marine pollution from dumping of the solid waste. The said article has completely prohibited the disposal of all kinds of plastic including synthetic ropes, synthetic fishing nets, plastic garbage bags, paper products, rags, glass, metal bottles, crockery, donnage, lining and packing materials. Further if garbage is mixed with other discharges which have different disposal requirements then, disposal of such garbage requires severe measures to be followed. Sewage should not be discharged into the protocol area from an installation permanently manned by 10 or more persons. In addition, Article X (2) requires, each states have to provide adequate reception facilities, at the coast line, to the offshore installations that situated with in their jurisdiction. In one of the most advanced measures article XI required that each operator of an offshore installation prepare a chemical use plan for approval by the competent state authority. However in of emergency, the operator can amend the plan and leave the chemical to escape into the marine environment.
The state authority has the power to prohibit, limit, or regulate the use of a chemical or product and can impose the conditions on its storage, and its use, in order to protect the marine environment. In exercising its power, the authority shall have due regard to guidelines issued by the regional organisation.

D. CONVENTION ON THE PROTECTION OF THE MARINE ENVIRONMENT OF THE BALTIC SEA AREA 1982 (HELSINKI CONVENTION)

In comparison with the other UNEP regional seas convention, Helsinki convention for the protection and preservation of Baltic Sea area is most comprehensive and effective convention. Article 3 of this convention has imposed general obligation on the state parties where under the state parties has to take all appropriate legislative and administrative measures, individually and jointly to prevent and eliminate the pollution in order to promote the ecological restoration of Baltic sea area. With this end the parties has to apply the precautionary principle and has to adopt the practices like Best Environmental Practice, Best Available Technology, and also the polluter pay principle\(^{305}\). Article 12 of Helsinki convention specially addressed the marine pollution due to the exploration and exploitation of Sea bed resources. Where under the state parties have to take immediate steps to prevent the marine pollution and to this context the state parties have to implement the procedures and measures set out in Annex VI of this convention\(^{306}\). Regulation 1 deals with the definition part where the Annex has defined the term offshore activity\(^{307}\), offshore unit\(^{308}\) exploration and exploitation.

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\(^{305}\) Article 3(1), (2), (3) and (4) of Helsinki Convention 1992

\(^{306}\) Article 12(2) of Helsinki Convention 1992

\(^{307}\) ‘Offshore Activity’ means any exploration and exploitation of oil and gas nay a fixed or floating offshore installations or structure including all associated activities there on
Regulation 2 has insisted the state parties to adopt BET and BAT as specified in annex II of this convention. Every state has to conduct environmental impact assessment before permitting the offshore activity. In case such offshore activity is subjected to any discharges mentioned in regulation 5 then the state is under the duty to inform the same to the commission before the offshore activity is permitted to start\(^{309}\). While conducting the environmental impact assessment the state has to assess the importance of the area for birds and marine mammals, importance of the area as fishing or spawning grounds for fish and shellfish and for aquaculture, importance of the area as a recreational site, the composition of the sediment, the abundance and diversity of benthic fauna etc\(^{310}\).

Regulation 4 and 5 deal with the discharges on the exploration phase and exploitation phase respectively. Regulation 4 restricted the use of oil based drilling of mud that contained harmful substances\(^{311}\). In case of any offshore activity such mud released from the offshore installations then such mud should not be discharged to the Baltic Sea area, but should take on shore for final treatment, and for the disposal in an environmentally acceptable manner. Again discharge of water based mud and cuttings shall be subject to authorization by the appropriate national authority, however before authorization the content of the water based mud must be proven to be of low toxicity. According to regulation 5, all chemical and materials shall be taken a shore and may be discharged only after obtaining the permission from the appropriate national authority in each individual operation. Discharge of production water is prohibited if it contains oil more then 15 mg per liter of water, and such water shall be sent to the analysis through

\(^{308}\) ‘Offshore Unit’ means any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities or loading or unloading activities

\(^{309}\) Article 3 of Helsinki Convention 1992

\(^{310}\) Article 3 (2),(3),(4) of Helsinki Convention

\(^{311}\) Article 4(1) Ibid
sampling. Further in any case the discharges from off shore installations shall not create any unacceptable effects on the marine environment. However in order to ensure the cleaning and production technology the state parties has to review the discharge permits regularly through the appropriate national authority and discharge limits shall revised from time to time.

The Helsinki convention contains more sophisticated provisions which played significant role in the regulation and control of pollution that caused due to the off shore activities. But in practice the Baltic Sea area is one among the most polluted maritime area and the pollution is even exceeded the assimilative capacity of the ocean, hence Baltic Sea is also known as dead sea. In addition though the convention contained effective provisions to regulate the various kinds of marine pollution for the Baltic Sea area but failed to eliminate the marine pollution or even to reduce the pollution to balance with the assimilative capacity of the oceans. Such failure may be attributed to the non-effective implementation of the Rules and regulations of the existing treaties.

IV. INDIAN LEGISLATIONS TO GOVERN THE MARINE POLLUTION DUE TO THE SEA BED ACTIVITIES

India has a long coast line of around 6200 kilometers and three side of the country is surrounded by sea. But unfortunately there has been hardly any awareness of the marine pollution and its hazards. People presumed the sea or world oceans are the best place for waste disposal and in addition oceans are the great reservoir of resources hence the waste disposal at the time of exploration and exploitation of mineral resources has been neglected from past few decades. In India, hardly there are regulations to govern the marine pollution due to the sea bed activities. Territorial waters continental
shelf exclusive economic zone and other maritime zones Act 1976, The Indian Coast Guard Act 1978, The Indian Ports Act 1965/1975, Merchant Shipping Act 1983, etc, are the Indian laws which incidentally addressed the marine pollution. Among these legislations, only territorial waters, continental shelf, exclusive economic zone and other maritime zones Act 1976. Indian Coast Guard Act 1978 contained hardly two sections to address all kinds of marine pollution. Unfortunately these two sections have imposed general obligation to protect and preserve the marine environment. Section 6 (d) of Territorial water, continental shelf, exclusive economic zone and other maritime Act 1976 has stated that state has the exclusive jurisdiction to preserve and protect the marine environment and to prevent and control the marine pollution. Similarly section 7 (4) (d) of the same Act and has provided that the state has the exclusive jurisdiction to preserve and protect the marine environment and prevent and control the marine pollution of exclusive economic zone. These sections are not sufficient to control the marine pollution caused due to the various kinds of pollution. Unfortunately Indian government has neglected the protection and preservation of marine pollution as a whole. Though we have pollution laws, still we need to have more comprehensive legislations to cover various aspects like declaration of goals and policy in regard to effluent limitations, toxic effluent standard, hazardous substances, liability etc. In fact there is a need to institute separate, comprehensive and effective legal regime to govern the marine pollution due to the sea bed activities, since by 2025 more than 50% of the oceans would be used for many purposes including scientific research, exploration and exploitation of natural resources etc.
SECTION –D
IMPORTANCE OF MARINE BIO DIVERSITY IN THE
PROTECTION AND PRESERVATION OF MARINE ECOLOGY

_Every form of life is unique, warranting respect regardless of its Worth to man, and to accord other organisms such recognition,
Man must be guided moral code of conduct._

- _Preamble, world charter for nature 1982^312_

I. INTRODUCTION

Marine biodiversity is unique, huge but not unlimited. Marine bio diversity contributes significantly to increase the self purification capacity of the ocean and hence the protection and preservation of marine bio diversity is imperative for the protection and preservation of marine environment. The term ‘biological diversity’ commonly shortened to ‘biodiversity’ which describes the number, variety and variability of living organisms^313_. However biodiversity is well defined in the United Nations Convention on Biological diversity as “ The variability among living organisms from all sources, including inter alia (among other things) terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part this includes diversity with in species, between species and of eco-systems”^314^.

^313^ See Environmental Science by S.C.Santra. Chapter 6, page 70.
^314^ Article of the convention on biodiversity 1992
To the context of present thesis I gave much importance to the marine biodiversity, its ecological importance and role of biological diversity in the protection and preservation of marine environment.

II. MARINE BIODIVERSITY

Marine biology is the scientific study of living organisms in the ocean or other marine or brackish bodies of water. Marine biology classifies species based on the environment rather than on taxonomy. Marine biology differs from marine ecology. Marine ecology is focused on how organisms interact with each other and with environment and marine biology is a study of creature itself. Hence for the purpose of my thesis a glance on aquatic organisms is sufficient rather to concentrate on the study of species itself. The following are the major marine living organisms.

A. Microscopic life;

Microscopic life under sea is incredibly diverse and still poorly understood. For example the role of viruses in marine eco system is broadly being explored even in the 21st century.

B. The role of phytoplankton is better understood due to their critical position as the most numerous primary producers on earth. Phytoplanktons are categorized in to cyan bacteria (also called blue-green algae/bacteria). Various types of algae are in red, green, brown, and yellow-green colors. Diatoms, dinoflagellates, Coccolithophorids, cryptomonads are the most recognized Marine biota’s.

C. Zooplanktons tend to be some what larger and not all are microscopic. Many protozoa are zooplankton, including dinoflagellates. Annelids and many larger animals begin their
life as zooplankton before they become large enough to take their familiar forms. Two examples are fish larvae and sea stars (also called as starfish).

**D. Plants and algae**

Plant life is relatively rare under sea. Most of the place occupied by sub plants on land is actually occupied by microscopic algae in the ocean, such as Sargassom and kelp; those are commonly known as sea weeds that create kelp forests. The non algae plants that do survive in the sea are often found in shallow waters. Such as the sea grasses (examples of which is eelgrass, Zosfera, and turtle grass, Thalassia). These plants have adapted to the high salinity of the ocean environment. The intertidal zone is also a good place to find plant life in the sea and where mangroves or cordgrass or beach grass might grow. Sea kelp is very important to small sea creatures because the creatures can hide from predators. Eelgrass is the most important; it is where hiring and other small fish live to escape from predators.

**E. Marine Invertebrates**

As on land, invertebrates make up a huge portion of life includes cnidarians such as jelly fish and sea anemones. Mollusea including shellfish, squid, octopus, crustacean, porifera, bryozoa Echinodermata including star fish. Fish have evolved very different biological function from other large organisms. Well known fish include sardines, anchovy, lingcod, clownfish and bottom fish, halibut, predators include sharks and barracuda.

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315 Fish anatomy includes a two chambered heart. Operculum’s secretory cells that produce mucous, swim ladder, scales, fins, lips and eyes. Fish breathe by extracting oxygen from water through their gills.
**F. Reptiles**

Reptiles which inhabit or common in the sea include sea turtles, marine laguna, sea snakes and salt water crocodiles. Most extant marine reptiles, except for some sea snakes are oviparous and need to return to land to lay their eggs. Thus most species, excepting sea turtles live on or near land rather than in the ocean some extinct marine reptiles. Such as ichthyosaurs, evolved to be viviparous and had no requirement to return to land.

**G. Sea birds**

Sea birds are species of birds adapted to living in marine environment examples including albatross, penguins, gannets and auks. Although they spend most species such as gulls can often be found thousands of miles inland.

**H. Marine mammals**

There are five main types of Marine mammals

1. Cetaceans include toothed whales (suborder odontoceti) such as the sperm whale. Dolphins and porpoises such as the Dall’s porpoise.
2. Sirenians include manatees, Dugong stellers sea cow.
4. Sea other which includes weasels and badgers.
5. Polar bear is sometimes considered as marine mammals because of its dependence on the sea.

**I. Oceanic habitats;**

**Reefs**

Reefs comprise some of the densest and most diverse habitats in the world. The best known types of reefs are tropical coral reefs which exist in most tropical waters. However reefs can also exist in cold water. Reefs are built up by corals and other calcium

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depositing animals. Usually on top of the rocky outcrop on the ocean floor. Reefs can also grow on other surfaces, which have made it possible to create artificial reefs. Coral reefs also support a huge community of life, including the coral themselves, their symbiotic zooxanthellae, tropical fish and many other organisms\(^{317}\).

Much attention in marine biology is focused on coral reefs. In 1988, coral reefs experienced a “once in a thousand years “bleaching event” in which vast expanses of reefs across the earth died because sea surface temperatures rose well above normal. Some reefs are recovering, but scientists say that 58 of the world’s coral reefs are now endangered and predict that global warming could exacerbate this trend.

The deep sea and trenches are very deep and no sunlight still some life exists in such deep sea and trenches. They are small flounder, fish and shrimp. In general the deep sea is considered to start the aphotic zone, the point where sunlight loses its power of transference through the water. Many life forms that live at these depths have the ability to create their own light\(^{318}\).

Much life centers on seamounts that rise from the deeps, where fish and other sea life congregate to spawn and feed. Hydrothermal vents along the mid ocean ridge spreading centers act as oases, as do their opposites cold seeps such places support unique biomes and many new microbes and other life forms have been discovered at these locations\(^{319}\).

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\(^{317}\) Ibid
\(^{319}\) ibid
II. ECOLOGICAL IMPORTANCE OF MARINE BIO DIVERSITY.

It is a general belief that species diversity is essential for the proper function for the emergence of community level properties. So scientists believe that are many kinds of species necessary to maintain community structure. Always there is a question that is specific mixes of species necessary for the communities and ecosystem to function?

This is a very old question in ecology, having two opposing views. One view is that a community is formed by the species that happened to arrive first. That the mix of species that happened to arrive first. The mix of species in a community is a matter of chance. The vegetation of an area is merely the resultant of two factors, first the fluctuating and fortuitous immigration of plants, and an equally fluctuating and variable environment.

According to opposite view “in any fairly limited area, only a fraction of the forms that could theoretically do so actually form a community really is an organized association of species is that it has a limited membership”. Communities with species diversity may cope with long term environmental fluctuations better then do communities with few species. But this is not always true, terrestrial communities in the climatically variable mid latitudes are less diverse then tropical communities in more uniform environments.

Again all species are an integral part of their eco system by performing specific functions that are often essential to their eco systems and often to human survival as well. The prime functions that are performed by this marine bio diversity are as follows.

1. Marine bio diversity incarcerates and stores the energy.
2. It Produces organic materials.
3. It Decomposes organic material

4. It plays a significant role to recycle the polluted marine water and nutrients

5. Helps to regulate climate and atmospheric gases.

6. The marine is unique because of its self purification capacity which is attributed by the marine organisms. Waste decomposition process needs the support of numerous marine organisms.

Removing species from eco systems means removing the important functions performed by those species. Therefore the greater bio diversity of an eco system can better maintain the balance between productivity and environmental stressors.

Again marine biodiversity is important because it provides value beyond their economic scientific and ecological contributions and they are part of our cultural and spiritual heritage. They are valuable simply for their beauty and individuality and hence they have a right to exist on this planet.

Dr, Elliot Norse of the marine conservation biology institute has summarized the importance of biodiversity eloquently. “We also know two very distressing things about the earth’s biological diversity. One is that it is being destroyed very rapidly. In the next half century less than blue whales, giant pandas and millions of lesser known species. Entire eco system types, such as tropical dry forests mangroves and food plain rivers could be damaged beyond repair. Our planet is now facing the most devastating biological catastrophe in the last 65 million years, since a huge asteroid hit the earth and caused appalling damage, killing off more then half of the planets other species. But today’s mass extinction has a very different cause i.e. the way we humans live our lives”.
Since the early 1980’s increasing attention has been paid to the importance of bio
diversity and to the increasing number of species being depleted at an alarming rate.
Many biologist believe that we are in the center of a mass extinction because the rate of
species loss is higher now then ever before. It is estimated that between 17000, and
100000 species are estimated each year studies have shown that as many as one in
eight plant species are threatened with extinction. The majority of these species losses
are due to human activity. However extinction of land based species can be estimated
but it is not possible to estimate the destruction rate of marine bio diversity, rain forest,
coral reefs, mangroves and other rich habitats has become a hot issue being addressed
by conservation organizations and global legislations which encourages sustainable
management of resources.

III. THREATS TO MARINE BIO DIVERSITY

   Some of basic threats to marine bio diversity are as follows.
1. Increasing human populations out of balance with the scale of natural resources
2. Heavy consumption and exploitation of marine resources
3. Lack of scientific knowledge and understanding of species and eco system
4. Destruction of marine eco systems and habitats during exploration and exploitation
   process.
5. Urbanization, increased pollution. Under estimation of cause and effect of marine
   eco system.
6. Assimilation of waste.
7. Global climate change.
8. Ecological disasters like volcanic, Tsunami, floods, land slides, etc³²⁰.

³²⁰ For detail information see chapter three of this thesis.
IV. NEED FOR CONSERVATION OF MARINE BIO DIVERSITY

The marine possess more than 80% of the total species that exist on the earth planet. Marine bio diversity is rich in near shore areas and in the areas where the sun light can reach. The deep ocean trenches posses less number of species and plants. This tremendous prodigality of nature has astonished delighted humans and is ultimately the source of their sustenance, but the current rate of loss of bio diversity and the reduction in the genetic verity of marine species could seriously affect marine ecology means marine will loses its assimilative capacity and there by effects the earths ecology as well as human welfare . Hence the world community aware about the conservation of bio diversity and gave start towards the protection and preservation of biodiversity.

V. LEGAL REGIME FOR CONSERVATION OF MARINE BIO DIVERSITY

Considering the immense values of bio diversity and subsequent rapid loss of the same during past couple of decades, enormous conservation efforts were made for restoring the marine bio diversity rich and secured.

Fisheries Law,

In past, fisheries law has been closely resembled the property law. In other words living marine resources with in a nation’s territory belonged exclusively to the nation like its natural resources and fisheries beyond national jurisdiction in the high seas were common resources and subject to the law of capture\(^{321}\). Thus in international Arbitration between the United States and Great Britain in 1898, British ships were held to be exercising a legitimate freedom of the sea when they caught fur seals more then three

\(^{321}\) Resources belong to one who took the resources in to possession first.
miles off the United States coast\textsuperscript{322}. This simple regime has been evolved since the 1950s however, in to an international frame work of marine living resource law governed by three guiding principles. They are,

1. Harvest level based on scientific data.
2. Regulation of the species through its whole range
3. Broad consideration of the relevant ecological factors affecting conservation of the species and its habitat\textsuperscript{323}.


A. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA AND CONSERVATION OF MARINE BIO DIVERSITY

UNCLOS 1982 has provided clear and detailed provisions regarding the exploration and exploitation of marine living resources. In other words UNCLOS 1982 has clearly mentioned that, with in the territorial sea (up to 12 nautical miles off the coast) a coastal state has exclusive sovereignty to regulate fisheries and other living organisms. In the Exclusive Economic Zone (up to 200 nautical miles of the coast) coastal state retains the right to explore, exploit and manage the living and non living

\textsuperscript{322} See Bering sea Fur Seals Arbitration J. MooRe .International Arbitrations 75 (1892).
\textsuperscript{323} See Birnie and Boyle. International Law and the environment 425 (1993)
natural resources\textsuperscript{324}, but subject to the limitations and responsibility to manage and conserve the marine living resources mentioned in Article 56 of UNCLOS 1982. UNCLOS 1982 has addressed 4 categories of fish that historically have provided serious challenges to the rule of international law; they are straddling stocks\textsuperscript{325}, highly migratory species\textsuperscript{326}, anadromous species\textsuperscript{327}, and catadromous species\textsuperscript{328}. UNCLOS 1982 has forwarded elaborate provision for the conservation of marine living resources. Where under the state parties are under the obligation to determine the allowable catch of marine living resources in its Exclusive Economic Zone and the states should ensure that the measures adopted by those states for the protection and conservation of marine living resources are compatible with the global, regional standards\textsuperscript{329}. The state should give attention to reduce the over exploitation of fish stock and restoration of population which can produce minimum sustainable yield. Again the states have to balance between the economic needs of state and environmental factors. UNCLOS 1982 has imposed various obligations and responsibilities on the state parties for the protection, conservation and sustainable use of available marine living resources they are as follows

1. Coastal state shall determine the allowable catch of living resources in this EEZ\textsuperscript{330}.

2. States have to adopt best and scientific measures to avoid over exploitation of fish stock\textsuperscript{331}.

3. Such measures should be compatible with the International Standards\textsuperscript{332}.

\textsuperscript{324} Part V of UNCLOS 1982.
\textsuperscript{325} Straddling stocks are fish whose habitat straddles the EEZ and the High seas.
\textsuperscript{326} Highly migratory species may traverse the waters of several nations as well as the high seas.
\textsuperscript{327} Anadromous species such as salmon are born in fresh water, spend most of their life in the sea and return to fresh water to spawn.
\textsuperscript{328} The species live in the fresh water and enter the salt water to spawn.
\textsuperscript{329} Article 61(1),(2) of UNCLOS 1982.
\textsuperscript{330} Article 61(1), (2) of UNCLOS 1982.
\textsuperscript{331} Article 61(2) of the UNCLOS 1982
4. States shall take effective measures to restore the population of harvested species which can produce maximum sustainable yield and thereby states has to balance their economical need and environmental factor.

5. States has to contribute and exchange the available scientific information, catch and fishing effort statistics and other data that are relevant to the conservation of fish stock, with the competent international organization\textsuperscript{333}.

6. Coastal states shall promote the objective of optimum utilization of the living resources in the EEZ\textsuperscript{334}.

7. The coastal state shall determine its capacity to harvest the entire allowable catch. If state parties lack such capacity then they can, through agreements, give other states access to the surplus of the allowable catch.

8. Where the same stock or stocks of associated species occur with in the EEZ of two or more coastal states then these states can seek the coordination of other states to ensure the effective conservation of those species, either directly or indirectly, through the agreements or through the global regional or sub regional organizations.

9. Where the same stock of associated species occur both with in the EEZ and in an area beyond and adjacent to the Zone. In such cases the coastal states can seek support from the regional, sub regional or with any competent international organizations to ensure the effective protection of such species stock adjacent to the EEZ\textsuperscript{335}.

\textsuperscript{332} Ibid.

\textsuperscript{333} Article 61(5) of the UNCLOS 1982

\textsuperscript{334} Article 62 of the UNCLOS 1982

\textsuperscript{335} Article 63 of the UNCLOS 1982
10. The state shall take strict measures for the conservation of marine mammals with this end the states has to conduct advance research for the effective management and conservation of marine mammals\textsuperscript{336}.

11. States shall co operate with each other for the protection and conserve the living resources of high seas and should adopt effective measures for that purpose\textsuperscript{337}.

**B. CONVENTION ON THE CONSERVATION OF THE ATLANTIC LIVING RESOURCES 1980**

In response to over fishing in the 1970s, in 1980 the convention on the conservation of Antarctic Marine living Resources (CCAMLAR) was adopted\textsuperscript{338}. This convention mainly intends to protect the marine living resources and the first Antarctic agreement to promote conservation through an eco system approach i.e. focusing not only on the populations of particular species but on the ecological inter relationships between species and their physical environment. To ensure this eco system approach, convention has extended its coverage beyond 60 degrees south latitude to include the southern waters dependent upon the massive upwelling of nutrients and phytoplankton growth\textsuperscript{339}. The greatest challenge to the convention has been the conservation of the fisheries. Because fish in the southern ocean live in waters that would literally freeze most other fish. In other words to survive they have evolved extraordinary adoptions such as antifreeze in their blood. They also have slower metabolic rates then warm water fish growing to

\textsuperscript{336} Article 65 of the UNCLOS 1982

\textsuperscript{337} Article 117, 118, 119 of the UNCLOS 1982

\textsuperscript{338} 19. I.L.M 837 (1980).

\textsuperscript{339} Argentina, Australia, Belgium Brazil, Chile, European community, France, Germany, India, Italy, Japan, New Zealand, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, Ukraine, United Kingdom, United States of America, Uruguay and the Republic of Korea.
sexual maturity later in life. Therefore the southern oceans fish take longer to recover their numbers when they have been over fished\textsuperscript{340}.

UNEP has stated that from July 1, 1996 to June 30, 1997, the reported legal catch of Patagonian toothfish was 10245 tons in the entire fishing region, while the unreported and illegal catch was estimated to be 10 times higher, around 107000 to 115000, tons in just the Indian ocean sector.

Green peace estimated that over half of the Patagonian toothfish catch worth an estimated $ 500 million each year, is taken by illegal pirate fishing companies who are based out of countries that are not member of CCAMLR and therefore, have not agreed to annual catch limits. At this alarming rate, they predict that the toothfish will be commercially extinct with in the next two years\textsuperscript{341}.

Addressing these concerns, in 1999 the CCAMLR commission created a toothfish catch Documentation Scheme, an Action plan to persuade other non member countries to follow the standards set by CCAMLR and a research programme to investigate the impact of fishing in the region. It requires permits for the killing and capturing of native mammals and birds as well as the import of non indigenous species, protects specially protected areas from collection and vehicles and obliges treaty members to minimize water pollution and harmful interference with Antarctic Living conditions.

**C. CONVENTION ON BIO DIVERSITY**

The convention on biological diversity informally known as biodiversity convention is an international convention that was adopted in Rio de Janeiro in June 1992. The Convention on Biological diversity has three goals

\textsuperscript{340} \url{http://www.asoc.org/general/fisheries.htm}
\textsuperscript{341} \url{http://www.greenpeace.org}
1. Conservation on biological diversity

2. Sustainable use of its components

3. Fair and equitable sharing of benefits arising from genetic resources.

In other words its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is often seen as the key document regarding sustainable development. However, for the first time the convention has recognized the international concern for the conservation of the biological diversity and it is an integral part of the development process. The agreement covers all ecosystems, species and genetic resources. The convention has recognized a link between the traditional conservation efforts to the economic goal of using biological resources sustainable. It sets principle for the fair and equitable sharing of the benefits arising from the use of genetic resources. Again the convention has provided the measures for the conservation and sustainable use of biodiversity. The convention also tendered the decision makers guidance based on the precautionary principle that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat. The convention acknowledges that substantial investments require conserving biological diversity. However it argues that the conservation will bring us significant environmental economic and social benefits in return.

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342 Article 1 of convention on Biological diversity 1992
D. AGREEMENT TO PROMOTE COMPLIANCE WITH INTERNATIONAL CONSERVATION AND MANAGEMENT MEASURES BY FISHING VESSELS ON THE HIGH SEAS

The preamble of this convention has recognized that all states have the right for their nationals to engage in fishing on the high seas, subject to the relevant rules of international law as reflected in the UNCLOS 1982. Similarly, as stated in UNCLOS 1982 the states are under the duty to take or co-operates with other states in taking such measures for the conservation of living resources of high seas. The convention has recalled the Agenda 21, and stated that states to take effective action to deter reflagging of vessels by their nationals as a means of avoiding compliance with applicable conservation and management rules for fishing activities on the high seas. Further the convention has recalled all the states which do not participate in global, regional or sub regional fisheries organizations or arrangements or as appropriate, to enter in to understandings with such organizations or with parties to such organizations or arrangements with a view to achieving compliance with international conservation and management measures.\(^{343}\)

The provisions of this agreement are applicable to all vessels or ships that are intending to catch fish on the High Seas, provided such fishing vessels should be more then 24 meters in length.\(^{344}\) The Agreement has imposed many obligations on the state parties, such as state parties has to take all the measures to ensure that fishing vessels entitled to fly its flag should not engage in the activities which are in contrary to the international law and conservation and management measures. State parties shall not

\(^{343}\) This agreement has been concluded with in the frame work of the food and agriculture organization of the United Nations. i.e., F A O.

\(^{344}\) Article II clause (1), (2), of agreement
allow the fishing vessels to conduct fishing activities without prior authorization to that effect, and vessels shall follow the terms and conditions of such authorization.

For the proper identification of fishing vessels the agreement has forwarded the FAO standard specifications for the marking and identification of the fishing vessels. The state parties have to cooperate as appropriate to implement the provisions of this convention, and particularly to exchange information, and evidentiary material relating to activities of fishing vessels reported to have engaged in activities of undermining international conservation and management measures. Again the parties are permitted to enter into co-operative agreement or arrangements of mutual assistance on a global, regional, sub-regional or bilateral basis so as to promote the achievements of the objective of this agreement. Article VIII of the agreement has recommended that the state parties shall encourage the non-state parties to this agreement to accept this agreement and to adopt laws and regulations consistent with the provisions of this agreement. The agreement has at the core, recalled the rights and responsibilities that stated in the UNCLOS and Agenda 21 towards conservation and management of marine living resources with this end the convention has imposed many more responsibilities on both flag states and port states. Again the agreement has forwarded many more approaches like marking of fishing vessels, prior authorization, cancellation of prior authorization etc. These measures are really praise worthy. The agreement has called even the non-state parties to give their shoulders for the international responsibility of conservation of marine living resources, through their cooperation. However the agreement has concentrated on vessels which is more than 24 meters of length and

345 Article III of the agreement
346 Article V of the agreement
347 Article VI and VII of the agreement
excluded the fishing vessels of less than 24 meters which may contribute towards the over exploitation of marine living resources.

E. INTERNATIONAL CONVENTION FOR THE REGULATION OF WHALING, AND ITS PROTOCOL 1956

Desiring to establish a system of International regulation for the whale fisheries, to ensure proper and effective conservation and development of whale stocks on the basis of the principles embodied in the international agreement for the regulation of whaling, signed in London on 8th June 1937 and the protocol to that agreement signed in London on 24th June 1938. The protocol to the convention has provided elaborate definition to the term whale catcher, so as to include the helicopter, air craft or a ship used for the purpose of hunting, taking, towing, holding on to or scouting for whales”.

The commission established under this convention is called as International whaling commission\textsuperscript{348}. The convention intended to double check the wale catch, it permits through authorization to the contracting parties to kill, take and treat whales for the purpose of scientific research in accordance with the provisions of the convention. Such permits should be communicated to the commission and whales taken under such permission shall be processed in accordance with the directions. Each contracting state has to take appropriate measures to ensure the application of the provision of this convention and the punishment of infractions against the said provisions in operations carried out by vessels under its jurisdiction. Again the convention has established the punishments at various levels, to the activities which are contrary to the provisions of this

\textsuperscript{348} For detail provisions of commission see chapter VIII of this thesis.
convention. The convention in its article X has conferred wide powers to United States of America, regarding ratification, notification and deposit of instruments.

F. CONVENTION FOR THE CONSERVATION OF ANTARTIC SEALS

The convention has recalled the agreed measures for the conservation of Antarctic fauna and flora adopted under the Antarctic Treaty signed at Washington on December 1959. It also recognized the general concern about the vulnerability of Antarctic seals to commercial exploitation and the consequent need for effective conservation measures. The main object of protection, scientific study and rational use of Antarctic seals is to maintain a satisfactory balance with in the ecological system.

The convention has provided detail description regarding the applicability of the convention and it has mentioned the several communities of the seals. The contracting parties are under obligation to protect the seals mentioned in article I of the convention each contracting party shall adopt laws regulations and other measures including a permit system which is appropriate and necessary for the proper implementation of this convention.

Under the convention the contracting parties has to take measures with respect to the conservation, scientific study and rational and human use of seal resources. Again the state parties are under the responsibility to make measures to asses the following

1. permissible catch of seals
2. protected and unprotected species
3. To asses open and closed seasons, open and closed areas including the designation of reserves.
4. The designation of special areas where there shall be no disturbance of seals.

5. Limits relating to sex, size or age for each species and other relevant data’s which are necessary for the protection and preservation of seals\(^{349}\).

The contracting parties are empowered to permit the kill or capture seals in limited quantities and in conformity with the objectives and principles of this convention.

1. To provide indispensable food for men or dogs

2. To provide for scientific research

3. To provide specimen for museums, educational or cultural institutions\(^{350}\).

The state parties have to exchange the data, information and scientific advice regarding expeditions, total stocks and ecological system with in the convention area\(^{351}\).

Again the convention in its Annex I provided elaborate provisions regarding the permissible catch.

Again the Stock Holm declaration 1972 has laid down 26 principles where the second principle has recognized the importance of conservation of natural resources of earth including air, water, land, flora, and fauna, must be safe guarded for the benefit of present and future generations through careful planning and management. Similarly Rio declaration 1992 has established the convention on biological diversity 1992 and Agenda 21 which have provided effective and detailed provisions for the conservation of biological resources including the conservation of marine bio diversity. In addition many more conventions have directly and incidentally addressed the importance of

\(^{349}\) Article 3 of the convention

\(^{350}\) Article IV of the convention

\(^{351}\) Article V of the convention
conservation of marine bio diversity for the protection and conservation of marine environment\textsuperscript{352}.

Similarly in India there are several pieces of legislations that address the conservation of marine bio diversity because they are the part of our environment. Indian constitution places a duty on the states to direct its policies to protect and improve the environment which would include fisheries and other marine organisms. Further Environmental Protection Act 1986 makes it obligatory for the state government to take necessary steps for the protection of the marine biodiversity.

In 1987 the British enacted the Indian Fisheries Act, which was broadly based and legislated to provide for certain matters relating to fisheries. Indian fisheries Act 1897 continues to be the basis of laws relating to fisheries in India and most states have made this Act applicable to their states or have based their local laws on it. Again Wild Life Protection Act 1972 has not specifically identified the fisheries or any other marine species for the purpose of exclusive protection under this Act. However chapter IV of the Act allows for the declaration of such habitat as marine national parks or sanctuaries with in which entries and activities are prohibited or severely restricted\textsuperscript{353}.

\textsuperscript{352} Agreement concerning measures for the protection of the stocks of deep sea prawns and crabs, Oslo1952
International convention for the high seas of the north pacific ocean, Tokyo, 1952
Convention on the continental shelf, Geneva, 1958
Convention on the High Seas, Geneva 1958
North East Atlantic Fisheries convention, London 1959
Convention concerning the fishing in the black sea, Varna, 1959
Agreement concerning co operation in Marine fishing , Warsaw 1962
International convention for the conservation of Atlantic Tunas, Rio de Janeiro, 1966
Convention on the conservation of Atlantic Marine living resources, Canberra 1980
Atlantic treaty washing ton 1959
Convention on the conservation of the living resources of the south east Atlantic Rome 1969
The 8 regional seas programmes of UNEP. Etc.

\textsuperscript{353} The Marine National Park Gulf of Kutch, Gujarat
The Marine National Park Gulf of Manner TamilNadu
Biological Diversity Act 2002 has been enacted to give effect to the convention on the Biological diversity 1992, with the following objectives of sustainable use and equitable share of the available resources there by achieving the conservation of biological diversity.

The Act has established National Bio Diversity authority, state bio diversity Board and the local bio diversity committee. Again the National Bio diversity Authority may constitute a committee to deal with the agro biodiversity problems. Further the Act made provisions for the establishment of National as well as state bio diversity Fund. However under the Act Local Biodiversity committee can also be established as per the need. All these boards, local authorities, and National authority are under the surveillance of the central government hence they have to follow the directions given by the central government. In addition the Forest Conservation Act 1980 has incidentally addressed the problems relating to the conservation of marine biodiversity.

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Mahatma Gandhi marine Park, Andaman and Nicobar Is lands
Pulicat bird sanctuary
Nalbund chilka sanctuary, Assam
Bhitarkanika sanctuary, orissa
Gahirmatha Marine Wild life sanctuary, Orissa
VI. CONCLUSION

One should appreciate the commitment of Indian Government to abate the pollution through its various legislations, regulations, and Notification. But it is not enough for the government to notify laws that are to be complyed with. Now the policy elements seek a shift form making laws, towards actual implementation. Hence a positive attitude from each and every bit of the society is essential, for the prevention of pollution. In addition, wide consultation should be held with those who will ultimately implement the policy. Further, the pollution particularly affects the poor, on the other side various developmental activities contribute significantly to the various kinds of pollution and scientific, technological advancement and developmental activities are also one of the main sources of pollution. Therefore the government needs to ensure that, its policies should be based on a set of principles that harmonize the economic development and environmental imperatives.

In recent years, the rapid growth of the electronics and IT sectors in India has given rise to the issue of e-waste management, which is now becoming a major problem. This is elaborated by the liberalized import of huge amounts of IT related equipments to cater for the needs of the booming software export and knowledge processing and outsourcing business. Toxic links which is a Delhi based NGO estimated that India alone produces more then 1, 50,000 tones of e-waste annually. Similarly another NGO Sahas has stated that just the city of Bangalore alone generated around 80,000 tones of e-waste every year. The e-waste typically from hard ware comprises of aluminum, cadmium, mercury, brominates flame retardants, complex plastic blends and huge quantities of lead. Unfortunately in India there are no specific environmental laws and guidelines to regulate
the e-waste. However several provisions from the existing laws are applicable to the e-waste. Basically e-wastes are solid waste with hazardous nature. Hence the Hazardous Waste Management Rules and Municipal Solid Waste Management and Handling Rules 2000. But now it needs separate or special reference. In other words growing usage of electronic objects result in to the e-waste generation and hence existing legislations are not sufficient to govern the e-waste, hence the establishment of new and sophisticated laws are in urgent need.

The international regime regarding the land based source of marine pollution is too week and has provided huge discretion to the states with out forwarding minimum standards. Such soft laws may be because of the negative understanding of the concept of state sovereignty or because of the overestimation of the assimilative capacity of the marine. Hence especially for the purpose of protection and preservation of the marine environment each nation should have to consider the concept of global village and have to respect the thought of Secretary General Maurice F. Strong who called the states and convinced them, that the humanity demands a degree of enlightened political will on the part of people and nations to save the planet from environmental degradation.

The regional conventions have failed to provide proper protection to the regional seas because these conventions have presupposes the existence of international standards. But in practice there is no any such international organization or international convention which can put forward the framework or standard to exercise the discretion conferred by the regional as well as international convention. Further states have always willing to frame soft laws since they have to balance between the effective waste management and proper utilization of land. Hence always there is a threat of abuse of the discretion
conferred by these conventions, may be this is the reason for the increased marine pollution due to the land based sources in general and land based solid waste in particular.

In the past few decades, international regional and national regulation over shipping matters such as navigational safety. Vessel source pollution and maritime security have grown to such an extent that the global shipping industry today faces a litany of costly regulatory rules.

Despite the proliferation of regulations over shipping, many international instruments which prescribe pollution control measures are still not effectively enforced and adhered to, best example is Annex IV of MARPOL 73/78 deals with the provisions governing the marine pollution by sewage and annex V deals with the provisions relating to the protection of maritime area from the pollution due to garbage. This annex is optional so it means though the MARPOL 73/78 is an international agreement but has failed to achieve its purpose. Indeed most obvious weakness of the regulatory system appears to be its failure to ensure effective enforcement of, and compliance with the relevant rules and standards. Consequently many sub standard low cost ships are running by irresponsible operators still posing significant threat to the human lives and marine environment. This has led to coastal and port states to impose more stringent regulation on ships entering or coming near their waters.

In recent years, the frequent occurrences of ship pollution incidents, both international and accidental have raised questions as to why these incidents continue to occur despite the existence of numerous rules and practices relating to proper surveys by flag states and delegated classification societies, ship vetting by the oil industry,
supervision by insurers and inspections by port state control authorities. The inescapable conclusion appears to be that the prevailing international rules and standards, primarily those enacted by the IMO have not been adequately enforced and complied with.

Again the contemporary structural realities with in which the maritime trading system operates have great room for inadequate implementation and enforcement of the relevant pollution control rules.

Hence eradication of sub-standard shipping needs the effective enforcement system. Again the Transboundary movement of hazardous waste, dumping from passenger ships and cargo ships, oil pollution, accidents, deliberate dumping, incineration at sea are further adds the marine pollution. This problem is largely due to the fact that the international regime formation, process which generated the relevant regulations often fails to lay down optimum conditions for compliance and effectiveness. In particular the regulatory process at the IMO which is the primary global forum for regulating ship safety and pollution issues often omits to address the ship operator’s lack of incentives to install or practice adequate safety and pollution control features.

Further, hardly MARPOL V addressed vessel based solid waste but that annex is optional, this shows the ignorance at global level towards the vessel based solid waste management. Such kind of ignorance may be because of exaggeration of the assimilative capacity of the oceans. But if such ignorance continues then it will harm the marine environment and by 2025 pollution go beyond the assimilative capacity of the ocean.

The 20th Century represents probably the culmination of human development in many respects. In maritime resource, research sector, the establishment of modern petroleum industry and its subsequent development, expansion, installation offshore
devices, instruments etc. are certainly one of great success stories of our generation. On the other hand one more significant development during this span of time is the global environmental challenge and movement. In fact the global environmental movements have posed enormous challenges to the off shore installations and also to other industries.

In fact, the offshore installations have brought both the best and worst results on the society as well as on environment. One side these installations have contributed enormously to the world economy, growth and for higher standard of living. On the other side it has left profound adverse impact on the global environment. Hence, there is an emergent need for the formulation of specific legislations at various levels, that is to say, international, regional and national level. Further UNCLOS 1982, has conferred huge range of discretion to the states to formulate their own rules and regulations in accordance with the Socio-economic conditions of that country. Such kind of discretion gives room for the formulation of laws with varied standards and freedom to pollute more. In addition all regional conventions presuppose the existence of specific international standards which is a big question. UNEP Regional Seas Program concentrated on the re-affirmation of existing provisions of UNCLOS – III instead of establishing more straight and effective regulations than that of UNCLOS III. Hence especially the legislations to regulate the marine pollution due to sea bed activities are too weak, to regulate the said area. According to an estimation, presently 8% of the oceans are used for many purposes but according to an anticipation by 2025 more than 50% of the oceans would be useful for many purposes hence this area needs more stringent, specific norms at all levels.
Today’s biodiversity is the result of billions of years of evolution, natural processes, and recently human activity. Before the advent of Homo sapiens, the earth’s biodiversity was much greater than what it is today. Human activity has had a tremendous impact on biodiversity due to use of earth’s resources and exponential population growth. The richest sources of biodiversity on earth are found in oceans.

In the present scenario the protection and preservation of marine biodiversity is not only an ethical responsibility but it is inevitable for the survival of the species on the earth. Because it is important for the existence of self purification capacity of the marine, production of oxygen, leveling the temperature, waste decomposition etc. Again it helps to understand how life evolved and continues to evolve. It also provides an understanding on how eco system works and how we can help to maintain them for our own benefit. In addition it contributes significantly to the socio economic development of the human community. Since, in the early 1980’s increasing attention has been paid to the importance of conservation of marine biodiversity. Many marine biologist believe that we are in the midst of a mass extinction because the rate of species loss is higher now then ever before. The global destruction of coral reef’s mangroves and other rich habitats has become a hot issue being addressed by conservations, organizations at various levels. The various conventions including UNCLOS 1982, Biodiversity convention 1992, have effectively addressed the problems relating to the conservation of marine biodiversity. These conventions have forwarded many more approaches like determination of allowable catch, prior authorization for the exploitation of fishing resources and the states have to take effective measures to prevent over exploitation of living resources and also to restoration of population which can produce minimum sustainable use. Again 1992
earth summit where the world leaders agreed on a comprehensive strategy for sustainable development that meets our needs and ensures the Earth’s resources for future generation. These agreements obligate the countries to take effective steps for the conservation of marine biodiversity through the developing tools like sustainable development, sharing of the benefits and international co-operation.