

CHAPTER-8

SUMMARY, CONCLUSION, AND SUGGESTIONS

8.1 Introduction:

Sustainable development is the order of the day. There is today a growing concern for our environment and a genuine fear that, if we do not change our ways right now, the damage we will inflict on our planet will render it incapable of sustaining, for future generations, the modern, industrial economy that much of human kind has grown accustomed to over the better part of the past two centuries. The earth's natural resources are under increasing pressure. Water shortages, loss of forests, air and water pollution and coastline degradation afflict many areas. How people preserve or abuse the environment could largely determine whether living standards improve or deteriorate. Without practicing sustainable development, humanity faces a deteriorating environment and may even invite ecological disaster. In the overall context of sustainable development, shipping is a very positive force, making a major contribution to global prosperity in a way that has only a relatively small negative impact on the global environment.

As seen, the problem of ship source pollution is only a part of the larger problem of pollution of the general environment. No doubt, it has attracted more attention and generated more organized concern at the National and International levels because the pollution caused from ships in the port limits directly affects coastal areas and this in turn affects in a direct and palpable way many interests of man, such as transportation, food production and even recreation. In other words, Marine pollution has Socio, Economic, Biological and Chemical effects. However, the degree to which humans are polluting and how it affects the world is a matter highly debated and has been a hot international topic for the past many years.

8.2 Summary of Findings:

As stated earlier, in spite of the fact that various technical standards for the design and construction of the vessel and equipments and discharge standards existing at various stages of the life cycle of a ship for the prevention and control of pollution from ships, the ship source pollution still continues and the ports are getting polluted. This means that the remedial measures taken hitherto for the prevention and control of ship source pollution

have been proved to be inadequate. Hence, this study has been made to examine all aspects of vessel source pollution.

The main focus of this research was to study in detail all the relevant activities that are causing or likely to cause pollution, carried out on board ships mainly on the operation stage of the ship's life cycle, and to prove the hypothesis that the Environmental Degradation resulting from those activities carried out, in and around Ports, is because of inadequately drafted laws, unsatisfactory management practices, lack of awareness, inadequate training imparted to the crew and officers of ships and laxity in enforcement of the formulated laws.

Accordingly, a detailed study was made by taking into account of the main objectives of this enquiry to overview the various aspects of ship-source pollution such as technical and operational standards, legal regimes, administrative and managerial control measures and to bring out the important lacunae or deficiencies in the existing system and to suggest an alternative mechanism by improving the existing system and/or using an integrated approach to prevent and control ship-source pollution so as to have only "Green ships and Cleaner Ports" in the years to come. The green ship technologies/ green ship initiatives taken up by individual countries in the recent past were also brought under the study. All the above details are covered under chapter II and III respectively.

The existing judicial controls over the ship born pollution, the implementation and compliance processes and the associated problems of the technical and operational standards and the liabilities and compensation when pollution occurs along with a few case laws were reviewed in the chapters four, five and six respectively of this inquiry.

A detailed case study conducted, to answer the research questions formed based on the objectives of this enquiry, on the trend of pollution spills that occurred all over the world (case study part-1, chapter-VII), for the last three decades (for the period 1970-2006), have undoubtedly confirmed the following:

1. The number of large spills, of size more than 700 tonnes, have decreased over the last 30 years
2. The average oil spills per year found decreasing gradually from 25.2 to 3.7 from the period 1970-79 to 2000-2006.
3. There was a drastic reduction of annual quantity of oil spilt from 1970s' to 2006.

Although the statistics of pollution incidents referred above are not restricted to ports only, the final conclusion arrived at generally shows the reduction in pollution from ships. This case study generally confirmed the fact that the changes made in the CDEM standards and/or the strict control measures taken during the operational stage of ships have reduced the average quantity of oil spilt during the said period. However, the ship born pollution continued as a menace. The study also brought out the following important factors:

- The percentage of pollution occurred during the loading / unloading operation of the ships had dropped from 36.4 to 28 and then to 9 for the period 1974-2006.
- The percentage of pollution caused due to bunkering operation had also reduced from 7.27 to 2 and then to nil for the same period.
- The percentage of pollution caused due to grounding of ships is increased from 3.09 to 19 and then to 34 and the percentage of pollution caused due to collision also has increased from 2.21 to 25 and then to 28 during the said period.
- Also the pollution due to hull failures has also increased gradually from 7.35 to 8 and further to 13 for the same period.

The above said factors clearly showed that either the improvements made in the CDEM standards were not adequate enough and /or there was lack of awareness and training imparted to the crew and officers of the ships which might have resulted in the increase of ship groundings and collisions. In fact, there were more than twelve incidents of minor collisions/groundings reported on the Indian coast only during the last monsoon season alone and the enquiries conducted by the representatives of Director General of Shipping, India have confirmed the facts that the main reasons for the above incidents were due to lack of awareness and training of the crew of the procedures and conventions.

As a corollary to the main study, the part-2 of the case study conducted (case study part-2, chapter-VII) to make a comparative study of the status of pollution in the seven major ports of India and in the ports of Australia, Baltic sea (Sweden and Denmark), European waters (UK, Portugal, Spain, France, Greece and Italy), Canada, UK waters and in Chittagong (Bangladesh) revealed that although there was a gradual reduction of pollution especially over the past ten years, the pollution from ships continued to be a problem.

As regards to the pollution study made in Indian ports, it was seen that the data, made available from the Indian Coast guard data base for the period 1982-2006, was not adequate enough to compare with the reported pollution incidents of ports abroad. However, from the data obtained from DG Shipping for the period 2004-2007, Tuticorin Port had maximum number of oil pollutions and New Mangalore port is the second. As regards to the quantity of oil spilt, Tuticorin port and Mumbai ports had maximum pollution discharges from ships. The comparison study made on ports abroad, the pollution of Australian ports, Baltic Ports, US ports, Mediterranean ports, European Ports, Canadian Ports etc showed reduction for the recent past years.

The part-2 of the case study further revealed the facts that most of the major oil spill accidents occurred in the world during the period 1967 to 2002 in European waters, spilling very large quantities of oil and causing big devastating effects to the coasts of those ports. Another important point which came out as an offshoot of the study is about the reported illegal discharges of oil in the Baltic sea ports of Denmark, Estonia, Finland, Latvia, Poland, Germany and Sweden. The study also revealed surprisingly that as per the annual reports of Maritime Coast Guard Agency (MCA) and the Advisory Committee on Protection of Sea (APCOTS), there were 1.5 accidents per month on an average in UK ports during the period 1992-1999. However, from 2000 onwards, the pollution incidents in the same ports were decreasing probably due to the strict enforcement and compliance measures taken by the government.

All the above described factors, vividly revealed through the detailed case studies done, proved the fact that in spite of the fact that though there existed a plethora of technical standards and operational discharge standards for the prevention and control of pollution from ships, ship source pollution incidents are still occurring in the ports of India and other countries, through various sources/reasons during the operation cycle of the ships, and the ports are suffering environmental degradation.

To examine the second part of the research question, the detailed study done on the existing national laws and the applicable international conventions governing the operational discharge standards, the enforcement and compliance processes, the problems associated with the compensation to be paid to the pollution victims and the civil and criminal liabilities in the form of fines and penalties described in chapters II to VI has brought out the following:

8.3 Findings of the Study- at international level:

As shipping is a global industry, all the necessary activities of the ship's life cycle should be regulated, controlled and monitored by international regulations. If the regulations vary from port to port or region to region, this industry can not run. In order to solve this problem, IMO was formed as the supreme body for promulgating and enacting various international conventions for ensuring the safety and seaworthiness of the ships and to prevent the pollution from them. IMO has powers only for the making and adopting various international conventions/ standards and guidelines meant for the safety, seaworthiness, pollution prevention and security etc. pertaining to ships. The powers for the implementation and enforcement actions and penalizing for the violations of the standards and or regulations/conventions are lying with other competent authorities like flag states and port states as seen in detail in the earlier chapters.

IMO has made several conventions and equipment and discharge standards since its inception meant for the prevention of pollution from ships. The study however, reveals the fact that, so far, most of the regulations or conventions of IMO were reactive type and not proactive type- that is to say that many IMO conventions and amendments were initiated only after the occurrences of major incidents/accidents or disasters. Various

amendments made in the convention MARPOL 73/78 after major ship accidents including the recent “Erika” and “Prestige” incidents bear testimony to the reactive acts of IMO.

The existing system of acceptance of IMO conventions and amendments by member countries is found not satisfactory. Due to this, it is surprising to see that many member countries of IMO have still not become parties to various Annexes of MARPOL 73/78 even after the lapse of decades since the convention came into force because the Annexes except I and II are not made compulsory. As per the existing system, it takes many years, sometimes even decades, for any IMO convention to come into force. Even before many member countries have become parties to them, amendments come. Otherwise, they may become technically outdated or overtaken by developments as happened in the case of Annex I and II of MARPOL 73/78 in the 1980s. Same is the case with Annex IV. Another difficulty seen is that unlike other national laws, the amendments do not replace the existing ones. This creates confusion and problems at many times for the enforcement of sanctions for violations as some countries would have agreed to the conventions but not agreed to the amendments and where as some countries would have agreed to both.

Another lacuna noticed in the MARPOL convention is that presently, cargo residues are not explicitly excluded from disposal as garbage under the overall definition of garbage in Annex V. However, residues of certain cargo substances may pose harm to the marine environment and may not be suitable for disposal at reception facilities equipped to handle general garbage because of their possible safety hazards. IMO has not set standards for air pollutants such as hydro carbons (HC), particulate matter (PM), airborne toxics and carbon monoxide (CO). Also, Annex VI does not specifically cover the emission of Green House Gases from ships.

IMO conventions were not developed with the aim of requiring criminal sanctions for non compliance. MARPOL does not clearly specify what form the sanctions should take. MARPOL 73/78 also distinguishes between the operational and accidental discharges and

sanctions are there for dealing with the operational discharges only. Also, within territorial seas MARPOL defence is not available.

The IMO regulations requiring the provision of reception facilities at ports, terminals and shipyards and such other places are presently directed at the government of each party to MARPOL 73/78 and as such they are not suitable as national regulations. The study revealed that many of the ports including ports of India are still not fully equipped with adequate reception facilities as required by IMO regulations. On its part, IMO has never felt able to blacklist or bring pressure upon the non compliant states which fail to provide adequate reception facilities. Also, IMO surveys have never been followed up for comprehensive analysis. The fact that the information submitted to IMO is rarely analysed and fed back to member states creates a natural lack of incentives to report.

National statistics from ports are required in a comprehensive and standardised form for the review and for making changes in the operational discharge standards. Present system of reporting of pollution incidents by ships and ports, obligation as per MARPOL convention, has proved to be inadequate and only very few states have reported to IMO, as revealed during study. Information and data about oil/chemicals discharged or spilt, other type of pollutants discharged, waste quantities generated and landed, even from developed countries, is sparse. As all Annexes, except Annexes I and II, of MARPOL 73/78, are not made mandatory there is no reliable data available for the discharges of pollutants, covered under other annexes, made from ships.

The enquiry further revealed that the type of sanctions applicable to various violations under the international Convention is a matter for determination by the individual Party and may be a function of several legal, political, and economic circumstances, subject to the strictures of article 4(a) of MARPOL 73/78. Further, there could be differences in the approach to sanctions in civil law and in common law jurisdictions. This sort of ambiguities will only lead to problems on the implementation and enforcement regimes.

Another problem faced with MARPOL 73/78 is that before prosecuting offences, some common concerns like jurisdiction, presentation of evidence, standards of proof of violation, the nature of sanctions imposed (administrative, civil and penal) and the rights of the assured etc are to be considered. Also, a Government seeking to proceed against a person accused of violating MARPOL 73/78 must first establish jurisdiction over the accused or any property that may be subject to seizure and forfeiture. This procedure is very lengthy and often does not produce adequate results. Government should provide a range of options to the enforcement authorities for the prosecution of violations like for example, at magistrate level, higher civil court level and at criminal court level. Hence, while amending the MARPOL 73/78 all the above deficiencies need to be corrected.

Another important problem noticed in the study is that many of the Flag States are not exercising proper Controls on the ships registered with them. Due to this, many smart owners are not registering their ships in their own countries but often go to various Flags of Convenience both for commercial and for other purposes. Flag states as they do not have offices at many ports, they generally contract their surveying out to local classification or non-exclusive marine surveyors. And there is a potentially unhealthy relationship between classification societies, the registers for which they survey and the ship owner due to which the quality of work suffers.

Further, it is seen that vessels of many flag states, especially open registries, seldom sail into their ports. Hence, any potential damage caused by these vessels would be to the marine environment of high seas or of the areas under the jurisdiction of other states. Moreover, many of the developing flag states lack the requisite manpower and financial resources to enforce standards vigorously. Those flag states mostly have the income from registration of ships. Due to this, unless some minimum standards are imposed on flag states by various regulatory instruments including MARPOL 73/78 and LOSC, sub-standard vessels will continue to exist with the possibility of pollution from them.

The repercussions flowing from the use of Flags of convenience are weak safety records, poor pollution control, inadequate or unsatisfactory training and crewing

conditions. The lack of proper Flag State supervision over safety and pollution standards is often identified to be one of the main causes of accidental collisions involving fleet of Flags of Convenience. High rate of intentional discharge violations committed by such fleets and their frequent detentions by PSC inspectors are also alarming. The issue of Flag of Convenience is a complex political and economic phenomenon. Therefore, it is very difficult to say whether the same can be permanently abolished or eradicated.

The alarming poor state of affairs of the ships registered under certain Flags of Convenience like Panama was observed during the study. This really makes one to ponder that many lacunae or deficiencies still exist in the present system.

Presently, no incentives or rewards are given to ships for zero pollution and emission or for no PSC bad reports. If the marine environment is to be protected, the existing system of regulation, compensation and punishment are not enough as evidenced from the study.

It was seen during the case study that fines and penalties imposed by various Port State Controls and Flag States for deficiencies under various categories and for violations of national laws and international conventions are varying considerably. The other observation noticed is the complexity of national laws/international laws existing on the punitive measures taken. Due to this, ships are polluting more at the ports of developing countries like Bangladesh, India and African countries as the fines and penalties imposed by them are very meagre.

The inspection authorities, as per the existing system, have no controls over the pollution from ships used for defence or security purposes and other smaller boats/fishing vessels not used for commercial purposes. The naval ships and the smaller vessels not used for commercial purposes definitely contribute to a major share of the vessels in most of the countries and as such to exclude them completely from the vessel source pollution regime is felt as not the right decision taken by the authorities concerned.

As far as the equipment standards are concerned, the compliance record of ships with vessel source pollution standards is fairly satisfactory. Even then, it is seen that a significant number of sub-standard ships are still operating in many parts of the world disregarding the IMO provisions on discharge and equipment standards. It is also seen from the past records that the imposition of equipment standards alone does not address the root causes of many accidents and pollution incidents. In fact, in spite of the stringent equipment standards maintained, poor maintenance and operation of the vessels and negligent navigation are found to be the root causes for most of the accidents and pollution incidents. Substandard ships or the poor quality ships, somehow or other, are still able to avoid retrofitting or maintenance requirements. These types of ships continue to ply in the regions where enforcement mechanisms are weak.

As per the requirements of international Convention three obligations are imposed on the coastal state, PSC and the flag state- make national laws based on international convention and enforce CDEM standards, provide Reception Facilities and Report to IMO by all the three parties. Enquiry revealed short comings in all the three obligations.

It was seen that Green ship technologies are to be incorporated at the design and construction stage of the ship to make green ships. Some of the Green ship initiatives taken by individual countries to make environmental friendly ships will not come to the limelight and accepted by others unless they are promoted by an international organization like IMO.

In this study, it was observed that many states belonging to the developed countries particularly US and EC have been resisting for the implementation of IMO's conventions and have been making their own regulations, perhaps for betterment. If this process of unilateral measures being taken by the countries continues, this would be a challenge to the international decision making bodies like IMO. The negative benefit can also result if the majority or say all Flag of Convenience countries that are having the maximum tonnage join together and start making their own regulations for their own convenience.

to impose adequate penalties if there is sufficient evidence, it remains doubtful if the majority of the flag states will ever observe these obligations. Also, what constitutes “sufficient evidence” as stated in the convention will depend on the incentives of the individual states to monitor and investigate violations. Past experience has shown that the procedures for the flag state investigations are lengthy and produced too few convictions. Where violators have been found to be guilty, the penalties imposed by the authorities have been manifestly inadequate. IMO does not have any enforcement authority to take meaningful action against recalcitrant flag states.

8.4 Findings of the Study - at National Level:

India is a signatory to the international conventions such as MARPOL 73/78 and its amendments relating to the prevention of pollution from ships. However, India has not made yet the national laws on Annexes III to VI. MS Act is very old and is mainly based on the UK Law on Merchant Shipping, 1931. The basic structure of the law as visualized by the 1958 Act has, therefore, been similar to that of the Commonwealth countries with certain essential modifications where special arrangements to suit Indian conditions were considered necessary. The main draw back is that the relevant sections of the MS Act regarding the construction requirements are applicable only to ships registered in India or only while any vessel is within India, including the territorial waters thereof.

The maritime industry has been highlighting the need to update India's Admiralty Laws to be responsive to the needs of the industry and to ensure that the maritime disputes are disposed off expeditiously and effectively. The need for developing a codified Act on Maritime law is better understood from the judgment made by the Supreme Court (SC) in *M.V. Elizabeth & Others Vs Harwan Investment and Trading Pvt. Ltd.*, (JT 1992(2)SC(5)). SC had advised on the need to codify and clarify the Admiralty Laws of the country. It also had advised to update these laws to serve the needs of the Shipping industry. However, The Admiralty Law of India is still in the womb.

Marine Zones Act, 1976, Coastal Zone Regulation Notification, 1991(amended to 1997) issued under the EP Act, 1986 do not specify clearly the enforcement jurisdiction.

Under this, the Central Government has unambiguous provisions to protect ecologically sensitive areas (Zone-1) and marine habitats from the threats of industrial development.

It is seen from the MS Act that the liability covered is only for the oil pollution damages. There is no regime existing for the HNS and bunker oil spills. As per the existing system, the compensation given for the pollution victims is through the High court and the procedure is very lengthy and cumbersome. A time limitation of three years for filing for the compensation is given in the MS Act. The claim amount is also limited to 130 SDRs for each ton of ship's tonnage or 14 million SDRs whichever is lower. This amount is very small while compared to the claim amount of other developed countries.

The Indian Ports Act, 1908 is very old and needs to be reviewed and amended based on the new developments that have taken place during the past many years. The fines imposed for the various offences as per this Act is meagre. Same is the case with The Major Ports Act, 1963 of India. Although the Coast Guard of India has been empowered to take penal actions against pollution, practically it is seen that over the past many years the work done by them is not noticeable unlike the work done by the Coast Guard of US.

While overviewing the legal regimes on the liability and compensation, it is observed that the insurance regime of The Marine Insurance Act of India, 1963 is not in tune with the rest of the world especially with respect to the coverage for liabilities to third parties. Presently, P&I clubs are covering the pollution liability.

In India, the Director General of Shipping (DGS) is the competent Maritime Authority to enforce PSC measures. The DGS through its Mercantile Marine Department located in various Indian ports, is responsible for the enforcement of the PSC measures through provisions of the Merchant Shipping Act, 1958. Section 342 governs the entry of foreign unsafe ships in Indian ports. However, it is seen that, in spite of having a strong legal mechanism, the PSC measures are not adequate in India. The rate of annual inspections of foreign ships calling in Indian ports is very less, mainly due to shortage of trained surveyors and related infrastructure with the DGS. There has been an increase in

incidents of groundings and sinking of old ships in and around Indian ports. As many as eight such incidents have been reported in the year 2004 alone and around twelve in the monsoon period of the year 2007.

Alang ship recycling yard in Gujarat has become the world's largest and open invitation to the ghost ships. The present insufficient inspection regime in India may not always obtain decontamination certificates from their flag states of ships coming to Alang for recycling unless pointed out by environmental NGOs, as seen in the past. It is worth to mention that the NGO organization GREENPEACE did that successfully in the recent case of the arrival of the French aircraft carrier 'Clemenceau' reportedly carrying nuclear waste, when the matter was reported by the Press in July 2004. The vessel 'Blue Lady' is another example.

Though the Government of India had good intentions to create maritime boards in each coastal state to protect the coastal area and to prevent and control pollution, it is seen that as on today there are only five maritime boards presently constituted. In spite of the strict guidelines given by CPCB and various other authorities including Supreme Court of India, it is worth to note at this stage that the Guide lines issued by IMO for the safe and environmental friendly operations at ship recycling units are not yet made mandatory. Further, it was evident during the visit that the many of the workers or persons exposed to Hazardous waste or handling hazardous waste trade at Alang, do not know details or consequences of the same due to lack of awareness. Another thing observed was that the Hazardous Waste Management Rules of India, 1989 with respect to ship recycling industries are not adequate, particularly with respect to the pollution from ships during recycling operations.

During the study, it was seen that Indian ports are equipped with reception facilities for handling only oily water and wastes and that too not for all types. Though India is having ship repair yards and refineries on both east coast and the west coast sides, the lack of reception facilities for handling wastes from ships coming for

loading/unloading/repair and dry docking purposes is really a problem faced by the Indian ships and other foreign ships coming to Indian ports.

The study further revealed that age of the vessel, particularly those of tankers, is one of the major contributing factors for causing pollution from ships. Many ports abroad have already started banning vessels which are old. In this connection, it is worth mentioning that through a circular issued on August 14, 2003, the DGS had decided to ban all crude oil carriers and product tankers¹, both foreign and Indian flag, which are more than 25 years old from entering Indian waters from April 1, 2004.

Further, all crude oil carriers and product tankers above 20 years old, which do not have the mandatory 'Condition Assessment Programme 2' (CAP 2)² rating for hull, machinery and cargo equipment either from a full member of the International Association of Classification Society (IACS) or the national registration body, Indian Register of Shipping (IRS), will also be banned from entering Indian shores. However, the circular applies to foreign and Indian flag ships when on international voyages to and from any Indian port, but does not cover gas carriers and dedicated chemical tankers. The age norms prescribed by the DG (Shipping), no doubt, will lead to further restricted availability of vessels which in turn will shoot up the freight rates. Nevertheless, this decision is very important as a first step in dealing with old sub-standard vessels causing problems in Indian ports.

8.5 Conclusions:

Based on the findings revealed during the study, the following conclusions have been arrived at:

1. The CDEM Standards and the Operational Standards based on the International Conventions have helped in reducing the ship source pollution for the past three

1. The DG (Shipping) has defined a crude oil tanker as an oil tanker engaged in the trade of carrying crude oil (Regulation 1 (29) of Annex I of MARPOL 73/78), while a product tanker means an oil tanker engaged in the trade of carrying oil other than crude oil (Regulation 1 (30) of Annex I of MARPOL 73/78).

2. Refer chapter 3 and MARPOL 73/78 for details.

decades. However, pollution from ships continues to be a menace. This has proved the fact that the operation standards were effective to certain extent.

2. It was seen that the pollution during operation activities and bunker operations have reduced; however, the pollution due to collisions/groundings and hull failures have increased. This fact shows that the CDEM standards enforcement regime is still lacking. The main area is found to be lack of quality maintenance of the ships, and due to lack of quality inspections done by the port state control and flag states. Further, the increase in the hull failures and pollution due to groundings/collisions are amounting to the lack of awareness and training of crew and officers regarding the conventions/national laws, use of procedures and equipments.
3. The national laws like Indian Ports Act, Major Ports Act, MS Act, Marine Zones Act, Indian Insurance Act, Liability and Compensation Act of India etc have been found not updated in line with the international standards.
4. The Maritime Admiralty Law of India is still in the womb. India is still following the Colonial laws of UK and Indian Penal Code, Indian Civil Code, Contract law of India etc.
5. It is seen that there exists certain lacunae in the existing laws, lapses in the administrative practices and in the implementation and enforcement regime.
6. The mandatory reporting system required by the international conventions by the port state, coastal state and the flag state are found not in order.
7. The Reception Facilities required to be maintained as obligations by all the states in all ports are not provided even by most of the developed countries. In India, no ports are having reception facilities other than for receiving oily water bilges/sludge.
8. The fines and penalties imposed by various countries are found varying considerably and also governed by different complex legal systems.
9. Countries like US and European communities have started making their own laws and have started criminal liabilities on the violators including the victimization of seafarers. This has amounted to unilateral actions being taken by those countries. This will lead to a lot of problems if IMO does not wake up to the present occasion.

10. The IMO conventions, for prevention of pollution, so far have been made mainly on reactive basis.
11. The existing system of coming into force of IMO conventions has been proved to be defective.
12. The inspection authorities, as per the existing system, have no control over the pollution from naval ships, other smaller/fishing vessels and inland vessels.
13. IMO Guidelines for the ship recycling industry is only optional.

8.6 Suggestions for improvement globally:

From the foregoing points, it is seen that there exist a lot of deficiencies or lacunae in the existing system. It is, therefore, felt necessary that deficiencies noticed must be rectified at the earliest for proceeding to an era of Green ships and zero pollution ships. The following suggestions are put forwarded for overcoming the existing challenges and improving the system.

The existing system of acceptance of various conventions and amendments of IMO should be reviewed and amended where necessary so that they should come into force either immediately or after a specific period of time after the adoption of the same like any other national laws. It is seen that the Tacit Acceptance system brought out by IMO was found not very satisfactory. It would be worthwhile to eliminate the minimum tonnage requirement. This method was earlier tried out for the OPRC Convention. All states must do their utmost to bring conventions into force as expeditiously as possible. Other alternate method would be that the Conventions and / or guidelines made by IMO on important subjects like safety, pollution, security etc should be made mandatory only as these are generally made after a lot of deliberations at tripartite level. As seen in the past with the Annexes of III to VI of MARPOL 73/78, there is always a tendency to avoid, bypass or at least delay the things made only optional. There can not be any leniency in this regard.

It is strongly felt that the present system of MARPOL 73/78 distinguishing between operational and accidental discharges should be taken out and all types of discharges of

pollutants from ships should be treated as pollution and necessary actions, both civil and criminal where found necessary, need to be taken against the polluters.

As seen under the deficiencies that many of the ports including those of developed countries are violating the obligation of providing reception facilities for the ships calling at there. All the ports and such other places should provide adequate reception facilities as specified by IMO. The Port States and Flag States should be empowered to implement the instructions of IMO in this regard. National laws must also be enacted by all countries for implementing IMO requirements with a clear provision for taking necessary actions for the breaches made, if any. If required, arrangements should be made at IMO level, with the help of other interests of shipping industry, to finance the poor underdeveloped countries for providing this basic infrastructure in ports.

The type of sanctions applicable to various violations under the Convention is a matter left for the discretion of the individual Party and may be a function of several legal, political, and economic circumstances, subject to the strictures of article 4(a) of MARPOL 73/78. Further, there could be differences in the approach to sanctions in civil law and in common law jurisdictions. As sanctions can be very effective as a compliance tool, it is necessary for States to prescribe necessary sanctions that are at least in harmony with applicable systems in neighbouring States or territories in order to avoid the perception that some States have less stringent sanctions than others. Otherwise this will amount to one way of suggesting a "safe haven" to the potential polluter.

It is felt that all States should adopt strict sanctions for such matters as witness tampering, suborning perjury, interference with law enforcement officials and similar offences. Sanctions for these types of violations must be treated as criminal and should thereby serve as an important tool in promoting truthfulness in reporting, monitoring and other regulatory requirements. It may be noted that merely providing for the imposition of sanctions in national legislation on its own will not achieve significant benefits. Such sanctions should be supported by effective technical procedures for gathering evidence.

The presently existing lengthy procedure of considering of various factors such as common concerns like jurisdiction, presentation of evidence, standards of proof of violation, the nature of sanctions imposed (administrative, civil and penal) and the rights of the assured etc before prosecuting offences often does not produce adequate results. Also a Government seeking to proceed against a person accused of violating MARPOL 73/78 must first establish jurisdiction over the accused or any property that may be subject to seizure and forfeiture. This procedure is to be suitably amended /modified so as to punish the offenders without wasting much time.

It is proposed that when developing the systems for prosecuting MARPOL offences, the Government should understand their own judicial, administrative and enforcement constraints and should provide a range of options to the enforcement authorities for the prosecution of violations like for example, at magistrate level, higher civil court level and at criminal court level. Hence, while amending the MARPOL 73/78 all the above deficiencies need to be corrected.

It is felt necessary that the guide lines given by IMO for the ship recycling industries must be made mandatory and proper implementation should be done by the concerned authorities at the earliest and made applicable to ship recycling units of all countries. National laws based on IMO guide lines should be enacted and implemented effectively and maintained continuously. In order to ensure that all necessary safety precautions are taken to protect the environment, Environmental Compliance Plan should be implemented in all ship recycling units and the strict enforcement of this should be inspected, recorded and violators should be punished by the competent authorities.

It is strongly felt that the internationally reputed NGOs like Green Peace, Blue water Network, Kust en Zee, Friends of Earth International and Basel Convention etc should work jointly instead of working individually and help both IMO and the Flag States for the proper and speedy implementation of various conventions and in punishing the polluters. Good NGOs like the ones mentioned above can definitely work like catalysts in

spreading awareness globally and in coordinating work with other authorities to prevent ship-source pollution.

It is proposed that the cargo residues should be explicitly excluded from disposal as garbage under the overall definition of garbage in Annex V as residues of certain cargo substances may pose harm to the marine environment and may not be suitable for disposal at reception facilities equipped to handle general garbage because of their possible safety hazards. Further, IMO has to set standards for air pollutants such as hydrocarbons (HC), particulate matter (PM), airborne toxics and carbon monoxide (CO). Also, the emission of Green House Gases from ships should be covered in Annex VI. IMO should also make Annexes III to VI mandatory.

Currently, green shipping initiatives taken by the individual countries, as explained in chapter II, are piecemeal, and there is a need for incentives to be properly articulated and presented as an accessible package. The shipping industry has become very paper heavy and is already reacting to 'over-regulation'. Consolidation of green initiatives by some form of IMO-endorsed accreditation package could be the ideal solution. IMO is industry driven and encourages self-regulation. Therefore, there is no reason why IMO should not welcome a new global initiative. NGOs could be catalysts in promoting the initiatives globally and coordinating with IMO. Environmental awareness courses for seafarers play a vital role and can help making this dream a reality.

It is proposed that in the coming years, Green house gas emissions should be high on the agenda. Plea should also be made for clean shipping and not for clean ships. Since ships have a long life, look at solutions for clean shipping on existing ships as well and enhance the clean ship network. Also promote exchange of information on clean shipping. Another important factor to be considered is that the environmental parameters should also be included in the design parameters of new ships. Development in clean ships will speed up with subsidies for green technologies. It is worth to remember the famous quote "Even the longest march starts with one step".

The Global Ballast water Management (Glo Ballast) programme initiated by IMO should be completed at the earliest. Similarly, the conventions for bunker oil spillages and the control of harmful anti fouling systems should be implemented at the earliest.

Dealing with the sub-standard ships and the eradication of the same from the market is a challenging task ahead. It is high time that consumer action be taken against owners who continue to ply the sea with ships which should long have been sent to the scrap yard and against shippers who procure tonnage at bargain freight rates particularly for low value bulk cargoes; against charterers who pay lower daily hire for what are little more than deathtraps for the crews who sail them; and against insurers who turn a blind eye and issue cover without inspection in the knowledge that ship insured is over the hill. Cargo insurers should insert contractual clauses in the insurance policies requiring cargo owners to use ships associated with quality flags and classification societies. Discrimination against substandard ships should be marketed by all the stake holders like, owners, charterers, managers, insurers, cargo interests, classification societies, Port State Control, Flag States etc. of the shipping industry.

Under the existing international compensation regimes, the cargo interests incur potential liability for secondary compensation payable under the CLC/FUND and HNSC regimes as revealed in the study. Strict liability is attached to the ship owners and no primary liability is attached to the charterer of the ship or the owner of the particular cargo involved in the incident for any damage caused. CLC/Fund 92 is to be revised to introduce concrete disincentives against substandard shipping by reviewing ship owners' right of limitation, cargo interests' liability for employing substandard vessels causing serious pollution and the non ship owners' de facto immunity upon compensation claims.

It is strongly felt that the contractual obligations regarding release and indemnity clauses of classification societies to be reviewed and amended where necessary. In this connection, it is interesting to note that the European countries have started looking at the responsibility of the classification societies. Accordingly, after the 'ERIKA' and 'PRESTIGE' incidents, the classification societies RINA and ABS respectively were

blamed and the rules of the European Directive concerning class have been strengthened to include stricter quality criteria in relation to 'switching of class' and to enhance the Community powers to suspend the recognition of the societies which fail to meet the relevant standards. IMO and IACS should take initiatives in this direction.

In order to have strict enforcement compliance, it is proposed that the Flag States should assign the inspection work only to the reputed classification societies and also insist that the inspections done on their behalf are carried out only by the exclusive surveyors of the society. Flag States including open registries should strictly adhere to their duties and obligations under LOSC and IMO Conventions. Establishment of IMO audit programme on flag state implementation should be enforced earliest.

Another important point proposed for consideration is fixing the differential shipping dues for ships. Differentiated fairway and harbour dues have proven to be very effective way of enhancing the environmental performance of vessels.

Annual reports of leading classification societies and regional Port State Control MOUs revealed the facts that many deficiencies under various categories are caused due to lack of proper awareness of the systems and procedures and codes that are in use. Although the STCW Code and the ISM Code have been in use for quite some time, it is high time to review properly, the adequacy of the various training programmes designed by IMO in line with STCW Code and conducted by various approved training institutes and take necessary corrective actions to increase the competency of the officers and crew of the ships.

Maintenance of Waste Management Plan should be made mandatory on board all types of ships. This is all the more important onboard cruise ships. It is felt that poor communications presently existing between the various parties in the waste management chain must be improved.

It is a known fact that Cruise ships generate maximum amount of wastes and that too of different types. Although the International Council of Cruise Lines (ICCL) and other cruise industry associations developed and adapted waste management practices and procedures onboard on voluntary basis, the system failed in most of the cases. The ultimate goal is to have the waste management culture absorbed into every facet of cruise vessel operation. A fully integrated system beginning with the design of the vessel should address environmental issues at every step. Management practices for waste reduction should start before a product is selected. Ecopurchasing and packaging are vital to the success of any environmental program, as are strategies to change packaging, processes and management to optimize the resources used.

It is felt that the time has reached for IMO to convene all the interested parties and to consolidate, if possible, all the various conventions and amendments relating to ship-source pollution just like IMO has consolidated the sixty and odd Maritime legal Conventions into one. Present state of affairs is confusing as there are so many national and international rules and regulations on the subject concerned. Before taking any initiative in this regard, it is worth evaluating the inadequacies of the existing treaties, conventions and amendments as it is a known fact that deficiencies do exist in the Convention MARPOL 73/78. It is mostly due to this, advanced countries like US and European Countries do not want to follow MARPOL and have made their own directives and laws. The resort to 'Unilateral' actions, taken by states or a group of states as mentioned above, will have serious repercussions on the stability and uniformity of global maritime transportation system.

As seen over the years, the decision making at IMO level is dictated by a few wealthy and developed countries. Majority of the other member countries are plying the role of silent participants. It is high time that IMO should constitute a body consisting of selected technical, scientific, government and industry experts to advice the secretariat of IMO on contemporary challenges which need proper addressing. This body should be qualified to lay down guide lines for legislative proposals and to vet and evaluate such proposals. This amounts to the need for the enhancement of the secretariat's powers of IMO.

It is a known fact that PSC inspectors doing inspections for few hours on board ships can not bring out all the deficiencies existing in those ships. It is the responsibility of the staff of the ships, owners of ships, the classification society under which the ship is classed, and the Flag State to keep the vessels in good condition. The PSC inspectors are only complementing the inspection work of others mentioned above. However, ensure strong Port State Control measures, based on the risk assessment done in countries like Australia. Communicate the relevant information properly to all concerned.

Certification introduced by US Coast Guard (USCG) is another important work that can be adopted by other countries also for the zero pollution from ships. USCG has implemented an initiative on 1st January, 2001 to identify high-quality ships, and provide incentives to encourage quality shipping operations. This initiative is called Qualship- 21, which means quality shipping for the 21st century³. This provides few incentives for the well run, quality ships. Hundreds, perhaps thousands, of vessels are operated responsibly, and are typically found with few or no deficiencies. Aimed at non-US registered vessels that visit US ports, Qualship- 21, as the program is named, promises reductions in port state control examinations and streamlined inspection procedures to vessels meeting its criteria. Various criteria are fixed for considering the Qualship-21 certificate. There are a number of incentives given for Qualship- 21 vessels. All vessels in the program will receive a Qualship- 21 certificate and are listed on the Coast Guard's port state control website.

Another method to protect the marine environment is to apply "Quality Bench marking" and introduce an award for environment conscious ship operation as a possible condition to pave the way for an incentive system. In order to distinguish between clean and dirty operators, transport industry needs fixing of quality labels for the ships.

8.7 Suggestion for improvement at National level:

The Merchant Shipping Act of India, 1958 and its amendments 2002 and 2003 still do not cover all the annexes of MARPOL 73/78. Civil and Criminal liability regimes of

3. Qualship-21-taken from the website of US coast Guard.

Indian Merchant Shipping Act are not very clear. The same needs to be developed to deal with any type of pollution from ships.

The Admiralty Laws in India are based on the British Acts which are more than a century old. While the British Acts have been revised from time to time, the Admiralty Laws applicable to India remained unchanged. The Admiralty Law of India is still in the womb. Government of India should take up this issue on a priority basis.

It is felt that India should revise the existing regimes governing the liability and compensation with respect to pollution incidents. The existing claim amount of “130 SDRs for each tonne of ship’s tonnage or 14 million SDR whichever is lower” clause needs to be amended to catch up with the norms fixed for developed countries. Also the lengthy procedure of going through High Court needs to be simplified.

The Indian Ports Act, 1908 is very old and needs to be reviewed and amended based on the new developments that have taken place during the past many years. The fines imposed for the various offences as per this Act is meagre when compared to those imposed in other countries. Similarly, The Major Ports Act, 1963 of India also needs to be amended especially with respect to the sections concerning pollution and the powers of the Trust to make Indian ports cleaner. Further, The Marine Insurance Act of India, 1963 needs to be amended to match with the rest of the world especially with respect to the coverage for liabilities to third parties. Coverage for this should be made mandatory in the national law.

The national laws such as MS Act covering Liability and Compensation for pollution damages should be amended to increase the fines and penalties imposed by various Port State Controls and Flag States for deficiencies under various categories and for violations of national laws and international conventions equivalent to the ones imposed by the developed countries. This will also provide additional income for the development of adequate infrastructure.

It is strongly felt that, in order to have close monitoring of coastal areas, India needs to develop more strong Maritime Boards in all coastal states soon. Also, the Indian Coast Guard should wake up and carry out their operations like US Coast Guard.

The Hazardous Waste Management Rules of India, 1989 (as amended, May 2003) needs modifications to cover regulations with respect to the pollutions caused from ship recycling industry. The stoppage by SC of vessels 'Blue Lady' and 'Clemenceau' from coming to India for recycling at Alang shows the inadequacy of existing system. Further, The CPCB and SPCBs should take prompt actions against the violators as per the powers granted to them by the Water Act, 1974, Air Act, 1981 and the EP Act, 1986. It is also felt that the DGS should make necessary amendments at the earliest to ban the dedicated chemical tankers and gas tankers which are over 20 years old and not having the CAP-2 rating done from entering Indian shores.

In order to make the Indian ports cleaner and pollution free, it is necessary that India should comply with the IMO requirement of providing reception facilities for receiving all types of solid and liquid pollutants at all the major ports and the shipyards at the earliest.

It is felt necessary that there is an urgent need to consider promulgating strong PSC measures, on the lines of those adopted by the USA⁴. The alternate possible solutions could be that India may consider joining the Tokyo MOU like Australia and accordingly, enforce the target of inspecting at least 25 per cent of the foreign ships calling our ports annually. India may consider giving priority ratings to the foreign ships on the lines of the USA to send a strong message to FOC vessels. To achieve a 25 per cent inspection target,

4. In USA, ships can be inspected prior to entry in the port limits. The USCGPSC initiatives require all vessels of 1600 GRT or more to give advance notice of their arrival. The USCG then checks the vessel's details against its own records and that of its register and assigns points to each ship for compliance with international safety conventions. Upon the points rating, the ship is then categorized as Priority I, II or III. Priority I are the high risk vessels that require inspection before they are even allowed into port limits. Priority II ships though allowed to enter port must be inspected before they are allowed to load cargo or embark passengers. The legislative authority for the above powers is given to the USCG under the US Code.

the existing inspection regime under the DGS certainly needs to be augmented. To supplement the above augmentation, imparting training to the Indian Coast Guard personnel in surveying techniques to enable in- situ inspection by the Indian Coast Guard, under the overall co-ordination of the DGS could be considered.

In addition to carrying out amendments /modifications in the existing system as suggested above, an effective Integrated Management System (IMS) as described in detail in Annexure-B should be implemented onboard ships. This IMS consists of quality management system, safety management system and the environmental management system so as to prevent the pollution at the source itself and making every individual on board fully responsible for his work. Fixing the accountability and responsibility individually for the officers and crew onboard ships, for the various activities carried out onboard, is the primary task to be done to prevent pollution from ships.

Shipping is a unique and a global industry. There are many stake holders like ship owners, charterers, managers, ship builders, insurers, ship recycling yards, Flag States, Port States, recycling states, ports etc connected with this industry. Hence, any integrated approach taken for the prevention and control of pollution from ships should include all the stake holders of this industry. Zero pollution/emissions or very close to that from ships can be achieved only with the joint effort of all those mentioned above. Above all, it is the officers and crew working onboard ships who play an important role for the prevention of pollution from their ships and their willingness to change their mindset and strong determination to stop/prevent pollution from ships is the key factor.

The environment and the economic health of marine and coastal waters are linked at the individual, community, state, regional, national, and international levels as any major environmental impacts caused due to ship source pollution affects the society at large. The interdependence of the economy and the environment are widely recognized. It is a known fact that much progress has been made over the past three decades to enhance marine environmental quality and ocean resources, however, a lot more still remains to be done.

Today's challenge is how to maintain and continue to improve marine water quality in ports and in coastal waters as more people move to the coasts and the pressures of urbanization increase. Through education, partnerships, technological advances, research and personal responsibility, marine environmental quality should continue to improve, sustaining resources for generations to come. Hence, detailed studies on the pollutants described under Annexes III to VI are to be done to prevent the pollution of them from ships. IMO should take earliest initiative in making those annexes also mandatory.

As far as India is concerned, as revealed in the study, the national laws based on the international conventions including the Admiralty Law of India have to be amended/modified/enacted and implemented and enforced at the earliest. Civil liability and the criminal liability regimes should be reviewed and fines and penalties should be fixed in par with other developed countries. No doubt, while fixing criminal liabilities, sufficient care should be taken not to victimize of the seafarers as seen being done presently by many countries.

As shipping industry plays a major role, transporting more than ninety percentage of the cargo used by the human kind, zero pollution from ships is all the more important. Let "Green Ships and Cleaner Ports" should be the only slogan used by all in the shipping industry in the days and years to come.

At this juncture, it is worth to note the famous quote "It does not matter where on earth you live; everyone is utterly dependent on the existence of that lovely, living saltwater soup. There is plenty of water in the universe without life, but nowhere is there life without water. The living ocean drives planetary chemistry, governs climate and weather, and otherwise provides the cornerstone of the life support system for all creatures on our planet, from deep-sea starfish to desert sagerbrush. That's why the ocean matters. If the sea is sick, we will feel it. If it dies, we die. Our future and the state of the oceans are one."⁵

Earle, Sylvia A.1995. "Sea Change A Message of the Oceans". G.P Putman's sons.362p.