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The International Regulation of the Maritime Transportation of Hazardous Cargo

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THE INTERNATIONAL REGULATION OF THE MARITIME TRANSPORTATION OF HAZARDOUS CARGO

BY:

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ABSTRACT

This paper examines the subject of the international regulation of the maritime transport of hazardous cargo. For the scope of this paper, hazardous cargo includes all that material which is carried by vessels for market and as waste with the exception of oil. The study examines the trend of the regulatory process by reviewing the development of concern, international agreements, codes and the International Maritime Organization.
ACKNOWLEDGEMENTS

I will return to sea as a Naval Officer with a much better appreciation and understanding of the marine environment and its legal, political, physical, and resource aspects thanks to my time at the University of Rhode Island enrolled in the Marine Affairs Program.

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I. INTRODUCTION

For the first half of the twentieth century, regulation of shipping was normally confined to preserving human life and marine property, purposes generally believed to be best served by national measures. Since 1945 our perception of the ocean is no longer merely as a surface area, but as a three dimensional extension of human society, with resources to be conserved and harvested and as a natural environment to be preserved. The interest in the preservation of the marine environment from ship generated pollution is truly a common interest which is shared by the world community as a whole.¹

In 1990 the United Nations Environment Programme (UNEP) published a report by the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP)² which summarized the state of marine pollution in the world oceans and reviewed the health of the oceans.³ The report addressed the "Transportation of Hazardous Substances". A brief summary of that section will aid the reader in understanding the focus of this paper.

Hazardous cargoes are transported at sea by dry-bulk carriers (such as sulphur, fertilizers) or by liquid-bulk tankers (such as


² GESAMP is an international, interdisciplinary group of scientists and engineers who are sponsored by the U.N. and seven specialized agencies including the U.N. Environment Program, Food and Agriculture Organizations, World Health Organization, World Meteorological Organization, International Maritime Organization, and International Atomic Energy Agency. These work in close association with experts in special working groups.

petrochemicals, caustic soda solution, sulfuric acid). Most of the more hazardous chemicals (such as pesticides, weed killers, tetraethyl lead) are carried by container vessels and as packaged cargo on general dry-cargo ships.

The volume of packaged hazardous material transported by vessel continues to increase, most of it moving in intermodal freight containers. In 1981 approximately 7.5 million containers measured in twenty foot equivalent units (TEUs) passed through U.S. ports. That number increased to approximately 13.5 million TEUs in 1988.4

The movement of bulk chemicals in tankers has more than doubled in the past years, approximately 25 million tons in 1985. More than 80 per cent of the total tonnage is made up of 22 products. About half the bulk are 18 petrochemical products (of which nearly 60 per cent is methanol, xylene, ethylene glycol, benzene and styrene) and the other half are caustic soda, phosphoric acid and sulfuric acid.5 Additionally, industrialized nations shipped approximately three million tons of wastes to less developed nations between 1986 and 1988.6

While the transportation of oil at sea is well documented, similar information is not generally available for other hazardous substances, which vary in character, are produced by many different

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4Senate Subcommittee Hearings (Committee on Appropriations on H.R. 5229): Appropriations for the DOT/Related Agencies for FY ending September 1991 and other purposes.
5GESAMP Report, p.22.
6Peter Obsteller, "Toward a Working Solution to Global Pollution: Importing CERCLA to Regulate the Export of Hazardous Waste," The Yale Journal of International Law Volume 16 Number 1 pp.73-125 at 77.
industries, and number several thousand distinct formulations. These problems are even greater when the substances being transported are mixtures of hazardous wastes.

International concern for this subject has increased over the last two decades as a result of the growing amount of hazardous cargoes on the sea and the threat to the environment. This is evidenced by the numerous codes and conventions which are in force, awaiting ratification, and those under development.

A. HAZARDOUS CARGO DEFINED

In international agreements, there are many terms used for hazardous cargoes including: dangerous goods, harmful agents, harmful substance and noxious liquid substances, substances other than oil, noxious substances and hazardous substance, hazardous waste. The documents using these terms will be examined further in the study.

In this paper, hazardous cargoes shall be defined as any cargo which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea. 7

B. SCOPE OF THE PAPER

This paper examines trends in the maritime transportation of hazardous cargoes. It also provides a broad overview of international regulations governing the marine transportation of hazardous cargo and the prevention of pollution by hazardous cargo of the marine environment. While oil is a significant hazard to the marine environment, it is not considered in the scope of this paper; however, the subject has been treated extensively in other literature.  

The paper does not categorize and list any of the hundreds of hazardous cargoes, nor does it describe specific procedures for the carriage of these cargoes by vessel. Rather, the paper reviews the development of concern, international conventions and organizations involved with the regulatory process.

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8 For example:

9 For specific technical information regarding individual hazardous substances the reader may refer to the conventions and codes addressed in this study.
II. INTERNATIONAL REGULATIONS FOR THE
MARITIME TRANSPORTATION OF HAZARDOUS CARGO

A. DEVELOPMENT OF CONCERN

Why is there a need for regulation? Just as increased vehicular traffic has resulted in driving laws, and increased transportation of hazardous cargo by trucks has resulted in additional risks and necessary regulations, the same can be said of maritime traffic and the carriage of hazardous cargoes. Maritime transportation of hazardous cargoes has increased significantly in the last fifty years. In 1937, 375 million tons of cargo was loaded and unloaded in maritime ports throughout the world.\(^\text{10}\) In 1959 the total world seaborne trade was estimated at 990 million tons.\(^\text{11}\) In 1970 that number increased to an estimated 2545 million tons and in 1989 to an estimated 3877 million tons.\(^\text{12}\) The 1991 volume of world seaborne trade hit a record of 4250 million tons.\(^\text{13}\) It is estimated that over 50 percent of all goods transported can be classified as dangerous goods, produced by oil, chemical and nuclear industries.\(^\text{14}\) The increase in chemical related industries and increase in their demand will lead to an increase in their


\(^{14}\) Mankabady, p.83.
transportation by sea in bulk and packaged form. In the 1987 world merchant fleet there were 886 ships of 100 gross tons or over, adding up to 9 percent of the share of gross tonnage of cargo carried, dedicated to the transportation of chemicals.  

Because of the risks involved in the maritime transportation of hazardous cargoes such as chemicals to the crew, vessel and environment, there exists the need for regulations. Vessels have always carried hazardous cargoes of one kind or another ranging from grains to explosives to chemicals to petroleum products. The British Merchant Shipping Act of 1894 contained a section titled "Dangerous Goods and Carriage of Cattle" which prohibited emigrant ships from carrying explosives that would endanger passengers. Another section required that explosives must be marked with the sender's name.  

The International Convention of Safety of Life at Sea (SOLAS) 1914, which never came into force, would have prohibited the carriage of goods which were likely to endanger passengers or the safety of the ship. The 1929 SOLAS Convention, which entered force in 1933, was essentially the same as the 1914 Convention and left the determination of dangerous goods and precautions to each state.


17136 LTS 81.
The 1948 SOLAS Convention\textsuperscript{18} recognized the increased sea traffic and increased goods being classified as dangerous. It contained a section on the "Carriage of Grain and Dangerous Goods" which included a requirement for identification on the basis of properties and characteristics, a need for international uniformity and a marking system with colors and symbols. This Convention entered force in 1958. It signaled an understanding that international regulations were needed for worldwide maritime traffic and the associated increase in the carriage of hazardous cargoes.

Why is there a need for an international approach to regulation rather than individual domestic approaches? The shipping industry today carries more than 90 percent of world trade.\textsuperscript{19} The fact that it is a worldwide trade necessitates some consensus on regulation to preclude the slowing of trade and economic losses to individual states.

Up to twenty or thirty years ago the shipping industry had been largely the province of the major industrialized nations. There has been a growth in new national flags, with developing countries operating a higher proportion of the shipping carrying the cargo in and out of their ports.\textsuperscript{20} Additionally, a high proportion of the tonnage owned by owners in industrialized countries is operated under flags of convenience, such as those of

\textsuperscript{18}Unites Nations Treaty Series 113.
\textsuperscript{19}Grey, p.177.
\textsuperscript{20}Ibid., p.183.
Liberia or Panama. 21 A ship may have a U.S. owner, be mortgaged to a German bank, operated under the Liberian flag by managers from Singapore using a Philippine crew under Indian officers. The implication of this might be seen in the danger with the difficulty of having numerous domestic regulations for the transportation of hazardous cargoes in both the areas of safety and in tracing responsibility in case of accidents.

B. EVOLVING CONCEPT OF THE LAW OF THE SEA

Before addressing agreements which apply entirely to the safe carriage of hazardous cargo, it is important to review four international conventions which provide a broad international regulatory regime under which the regulation of the maritime transportation of hazardous cargo can be considered. These conventions, in many ways, codify and reinforce on a broad, international level, regulations from other more specific conventions pertaining specifically to the safety of life at sea and the prevention of marine pollution from ships.

21 Ibid., p. 184.
The 1958 Convention states that ships of all States, coastal or not, enjoy the right of innocent passage through the territorial sea and that this passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State. Additionally, passage shall be in conformity with these articles and with other rules of international law. There is no mention of hazardous cargo or concern for the marine environment.

The Convention also states that the coastal State may take the necessary steps in its territorial sea to prevent passage which is not innocent and that foreign ships exercising the right of innocent passage shall comply with the coastal State's laws and other rules of international law, in particular, with such laws and regulations relating to transport and navigation. There was no mention of hazardous cargo and the marine environment in the territorial sea; however, this was addressed in the convention next examined.

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22 TIAS 5639; 15 UST 1607.
23 Ibid., Article 14.
24 Ibid., Article 16.
25 Ibid., Article 17.
In accordance with the 1958 High Seas Convention, States are required to take measures and ensure that their flag vessels meet generally accepted international standards to ensure safety at sea with regard to: the construction, equipment and seaworthiness of ships.\(^{27}\) This refers implicitly to the Safety of Life at Sea Conventions.

Additionally, the Convention requires cooperation by the States with the "competent international organizations" in taking measures for the prevention of pollution of the seas resulting from any activities with "radioactive materials or other harmful agents."\(^{28}\) In the Convention there was no indication of the meaning of "harmful agents." At this time, the U.N. agency, the International Maritime Consultative Organization (IMCO) was fast becoming the key competent international organization with regard to prevention of marine pollution.

On a domestic level, States must exercise control over their vessels which are engaged in the transportation of these hazardous cargoes. The Convention required each State to fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag, this adding up to a genuine link between the State and the ship. To do

\(^{26}\text{TIAS 5200; 13 UST 2313.}\)
\(^{27}\text{Ibid., Article 10.}\)
\(^{28}\text{Ibid., Article 25.}\)
so effectively requires the State to exercise its jurisdiction and control in administrative, technical and social matters over its ships.\textsuperscript{29} Neither the Convention, nor the IMCO had enforcement powers which left this responsibility to the flag State.

The key points of relevance of this Convention to this paper are: rights of the coastal state (with regard to innocent passage), generally accepted international standards for safety at sea, competent international organizations (the IMCO Convention entered into force in 1958), and the responsibility of states regarding their vessels carrying harmful agents.

\textbf{U.N. CONFERENCE ON THE HUMAN ENVIRONMENT (STOCKHOLM CONFERENCE)\textsuperscript{30}}

The Declaration on the Human Environment adopted by the U.N. Conference on the Human Environment held in June 1972 enumerated 25 principles, the following two of which relate to the marine environment. The Declaration tasks States to take all possible steps to prevent pollution by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.\textsuperscript{31} This is an example of the increasing public awareness of the early 1970's regarding damage to the marine environment.

\textsuperscript{29}\textit{ibid.}, Article 5.

\textsuperscript{30}\textit{I.L.M.} 1416 (1972).

\textsuperscript{31}\textit{ibid.}, Principles: Principle 7.
Additionally, States are to cooperate in the further development of international law regarding liability and compensation for the victims of pollution and other environmental damages caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction.\textsuperscript{32} This has been accomplished on an international level for damage caused by oil, but not for damage caused by other hazardous cargoes. An agreement regarding the latter types of cargo which is under development will be considered later in the study.

The Conference also adopted a series of recommendations, several of which address the subject of marine pollution. Governments, with the help of U.N. bodies such as GESAMP, are called upon to accept and implement available instruments on control of marine sources of marine pollution. Included in the recommendation are suggestions for acceptance and implementation of instruments on the control of the maritime sources of marine pollution and assurance that provisions for such instruments are complied with by flag State ships and by ships operating in areas under States' jurisdiction; control of dumping; and participation in the 1973 IMCO Conference on Marine Pollution and in the Conference on the Law of the Sea to begin in 1973.\textsuperscript{33} Also, the Secretary General is requested to make it possible for GESAMP to re-examine annually its "Review of Harmful Chemical Substances" and to assemble scientific data and provide advice on aspects of marine

\textsuperscript{32}Ibid., Principle 22.

\textsuperscript{33}Ibid., Action Plan for the Human Environment: Recommendation 86.
pollution.\textsuperscript{34}

\textbf{1982 U.N. CONVENTION ON THE LAW OF THE SEA} \textsuperscript{35}

Following the Truman Proclamation of 1945,\textsuperscript{36} when the U.S. asserted jurisdiction and control over the natural resources of its continental shelf and the establishment of conservation zones in the high seas contiguous to the coasts of the U.S., other countries claimed exclusive rights to their own shelves and to the superadjacent waters as well. During the 1970s, coastal States sovereign rights were extended to the living and non-living resources of the water column out to a range of 200 miles. Within the closed areas of these exclusive economic zones (EEZ) are most of the important commercial fishing grounds of the world, hydrocarbon resources, and a majority of the major ocean navigation routes. This closing of areas by a coastal State is referred to as "the ocean enclosure movement."\textsuperscript{37}

By ensuring the environmental quality of a State's EEZ, it can maximize the use of its resources. To accomplish this, a coastal State must protect and preserve the marine environment in its EEZ, rather than leaving it up to everyone by virtue of high seas

\begin{flushright}
\textsuperscript{34}\textit{Ibid.}, Recommendation 88.
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\textsuperscript{35}21 I.L.M. 1261 (1982). This reference will be further identified as UNCLOS III.
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\textsuperscript{36}\textit{Text, with the related executive order, reprinted in 40 AJIL 45 (1946 supp.).}
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\textsuperscript{37}\textit{Lewis M. Alexander, Navigational Restrictions Within the New LOS Context} (Peace Dale, Rhode Island: Offshore Consultants, Inc. 1986).
\end{flushright}
rights. International law acknowledges the jurisdictional rights of coastal States over their EEZs covering the area out to 200 miles from their baselines. If that is the case, what specific competences can a coastal State exercise within its offshore zones and what rules can it establish regarding the transport of hazardous cargoes by vessels through its jurisdictional zones? Issues such as the coastal State's authority in the EEZ are addressed in articles from Part V of the 1982 U.N. Convention on the Law of the Sea (UNCLOS III). The study now addresses these and other articles from the Convention which are related to the maritime transportation of hazardous cargoes.

Drafters of the Convention noted that developments since the 1958 and 1960 U.N. Conferences on the Law of the Sea in Geneva accentuated the need for a new convention. They recognized the desirability of establishing a legal order which promotes, among other things, the protection and preservation of the marine environment.

The 1982 LOS Convention embodies three approaches toward protection of the marine environment:

1) general rules setting out new environmental standards which place responsibilities on coastal, flag and port States;

2) "umbrella" rules for the IMO as the "competent international
organization" in this field; and
3) principles for technical cooperation and assistance.

The meaning of innocent passage was expanded upon over the 1958 definition to include, among other things, that passage shall be considered prejudicial to the coastal State if a foreign warship engages in "any act of willful and serious pollution contrary to this Convention." Additionally, the coastal State may adopt laws and regulations in respect of the preservation of their environment and the prevention, reduction and control of pollution.

With regard to innocent passage in the territorial seas, foreign ships carrying "inherently dangerous or noxious substances or materials" may be required by the coastal State to confine their passage to sea lanes and traffic separation schemes while exercising the right of innocent passage and they must carry documents and observe special precautionary measures established by international agreements. At the same time, the coastal States are not to hamper the innocent passage except in accordance with this Convention. In the 1970's major maritime powers, along with a number of other States whose exports and imports depended greatly on unimpeded maritime traffic, insisted that UNCLOS III establish a clear balance between, on the one hand, the right of the coastal

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40 UNCLOS III, Article 19. Meaning of Innocent Passage.
41 Ibid., Article 21. Laws and Regulations of the Coastal State Relating to Innocent Passage.
43 Ibid., Article 23. Foreign Nuclear Powered Ships and Ships Carrying Nuclear or other Inherently Dangerous or Noxious Substances.
44 Ibid., Article 24. Duties of the Coastal State.
State to apply and enforce regulations against foreign ships that they deem necessary to protect environmental interests and, on the other hand, the right of other States to protect the freedom of navigation against encroachments going beyond the reasonable need to protect the environment of the coastal States.45

Ships in transit through straits used for international navigation shall comply with international regulations regarding the prevention, reduction and control of pollution.46 States bordering straits used for international navigation may designate sea lanes and traffic separation schemes after proposals have been submitted to a competent international organization for adoption.47

Additionally, the State bordering a strait used for international navigation may adopt laws and regulations relating to transit passage to the prevent, reduce and control of pollution, in accordance with applicable international regulations regarding the discharge of "noxious substances."48 In balance, the State shall not hamper transit passage or innocent passage.49

The coastal State has rights and jurisdiction in accordance with the Convention with regard to the protection and preservation of the marine environment in its exclusive economic zone.50 The

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46 UNCLOS III, Article 39. Duties of Ships and Aircraft During Transit Passage.
48 Ibid., Article 42. Laws and Regulations of States Bordering Straits Relating to Transit Passage.
49 Ibid., Article 44. Duties of States Bordering Straits.
50 Ibid., Article 56. Rights, Jurisdiction, and Duties of the Coastal State in the Exclusive Economic Zone.

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coastal state may enforce its laws and regulations by measures such as boarding, inspection, arrest and judicial proceedings.\textsuperscript{51}

For vessels on the high seas, each State shall fix the conditions for granting its nationality to ships and there must exist a genuine link between ship and State.\textsuperscript{52} To ensure international uniformity to this, flag States are required to conform to generally accepted international regulations, procedures and practices with regard to: construction, equipment, seaworthiness, manning, training and periodic inspection of flag vessels.\textsuperscript{53}

UNCLOS III addressed the protection and preservation of the marine environment in broad terms citing an obligation of States to protect and preserve the marine environment.\textsuperscript{54} Additionally, responsibility is placed upon the individual States to take all measures necessary to ensure that activities under their jurisdiction or control are conducted as not to cause damage by pollution to other States and their environment such as: measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels.\textsuperscript{55}

\begin{flushleft}
\textsuperscript{51}Ibid., Article 73. Enforcement of Laws and Regulations of the Coastal State. \\
\textsuperscript{52}Ibid., Article 91. Nationality of Ships. \\
\textsuperscript{53}Ibid., Article 94. Duties of Flag State. \\
\textsuperscript{54}Ibid., Article 192. General Obligations (Protection and Preservation of the Marine Environment). \\
\textsuperscript{55}Ibid., Article 194. Measures to Prevent, Reduce and Control Pollution of the Marine Environment.
\end{flushleft}
In even broader terms, States have a duty not to transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another. Is this meant to include the transportation of hazardous waste?

Because of the global nature of the problems presented by the maritime transportation of hazardous cargoes, multilateral or international agreements are preferred over unilateral or bilateral measures. In order to accomplish this cooperation is needed and some organization is needed as a focal point. While enforcement lies with the individual States, "States shall cooperate on a global and/or regional basis, directly or through competent international organizations in developing international rules, standards and recommended practices and procedures." States are required to immediately notify other States which are likely to be damaged and also to notify the competent international organization. Coupled with this, States are to jointly develop and promote contingency plans for responding to marine pollution.

States shall directly, and through the competent international organization, assist developing States with regard to scientific and technical assistance. This is very important to developing

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56 Ibid., Article 195. Duty Not to Transfer Damage or Hazards or Transform One Type of Pollution into Another.
57 Ibid., Article 197. Cooperation on Global or Regional Basis.
58 Ibid., Article 198. Notification of Imminent or Actual Damage.
59 Ibid., Article 199. Contingency Plans Against Pollution.
60 Ibid., Article 202. Scientific and Technical Assistance to Developing States.
States who are striving to stay abreast of rapidly changing technological and regulatory changes in shipping.

UNCLOS III does not provide specific regulations to protect the marine environment from vessel pollution, rather it tasks States acting through the competent international organization or general diplomatic conference to establish international rules and standards, and to promote the adoption of routing systems designed to minimize a threat if necessary.61

These rules and standards include particular requirements for entry of foreign vessels into their ports or internal waters, and also require State vessels to cooperate with other states participating in a cooperative arrangement. Coastal States may adopt laws and regulations within their territorial sea providing they do not hamper innocent passage, and within their EEZ to include "special mandatory measures" for clearly defined areas of their EEZs after appropriate consultations through the competent international organization.62

Unfortunately, national enforcement is the weakest link in the chain of internationally promoted effort to deal effectively with marine pollution.63 In order to place the responsibility for enforcement of international regulations with the individual State, States shall ensure compliance of their flag vessels with applicable rules, standards, laws and regulations and effectively

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61 Ibid., Article 211. Pollution from Vessels.
62 Ibid.
63 Gold, p.198.
enforce them, wherever a violation occurs.\textsuperscript{64} They shall ensure that their vessels carry required certificates and are periodically inspected. Following a violation, the flag State shall provide for immediate investigation irrespective of the location, and the penalties provided for by the State shall be adequate in severity to discourage violations wherever they occur.

Additional enforcement rights are empowered to port States. Even if a vessel is voluntarily within a port, the port State may undertake investigations and institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or EEZ.\textsuperscript{65} Further, when a State may take administrative measures to prevent a vessel from getting underway from their port if it determines that the vessel is in violation of rules and standards of seaworthiness and threatens the environment.\textsuperscript{66} They may permit the vessel to proceed to the nearest repair yard.

Coastal States also have enforcement rights.\textsuperscript{67} Vessels, under the right of innocent passage, may be passing through the territorial sea of a coastal State enroute to another State. The State whose waters are being transited has enforcement rights. If it believes a vessel in its territorial sea has violated laws and regulations of that State, that State may undertake physical

\textsuperscript{64} UNCLEOS III, Article 217. Enforcement by Flag States.
\textsuperscript{65} Ibid., Article 218. Enforcement by Port States.
\textsuperscript{66} Ibid., Article 219. Measures Relating to Seaworthiness of Vessels to Avoid Pollution.
\textsuperscript{67} Ibid., Article 220. Enforcement by Coastal States.
inspection of the vessel and may, where the evidence so warrants, institute proceedings, including detention of the vessel. If the State believes a vessel in its EEZ has committed a violation of applicable international rules and standards, that State may require the vessel to give information regarding its identity and port of registry, its last and its next port of call and other relevant information. If there is substantial discharge causing or threatening significant pollution, the State may undertake physical inspection of the vessel (if the vessel refused to give information or if the information supplied is in doubt). In the case of major damage or threat of major damage to the coastline or related interests of the coastal State, the State may institute proceedings, including detention of the vessel. The State shall allow the vessel to proceed after compliance with requirements for bonding or other appropriate financial security has been assured.

States have the right, in accordance with international law, to take and enforce measures beyond their territorial seas to protect their coastline and related interests from pollution or a threat of pollution after maritime casualties.68

There are safeguards in the Convention which provide a balance between the rights of coastal States and foreign vessels. Coastal States have inspection rights, but they are not to delay foreign vessels longer than is essential and shall limit inspection to the required documentation.69 Additional investigation may be done

68 Ibid., Article 221. Measures to Avoid Pollution Arising from Maritime Casualties.
69 Ibid., Article 226. Investigation of Foreign Vessels.
only if there is a discrepancy with the documentation. Even if a violation is discovered, release shall be made promptly subject to reasonable procedures such as bonding of other financial security. Release may be refused or made only to a repair yard if the vessel presents an unreasonable threat of damage to the marine environment. As an incentive for States to follow regulations, they shall be liable for damage or loss attributable to them arising from measures taken when such measures are unlawful or excessive.70

The key relevant points from the 1982 U.N. Convention on the Law of the Sea with respect to the maritime transportation of hazardous cargoes are as follows. First, it specifically refers to "inherently dangerous or noxious substances or materials"; however, it fails to define them or assign an organization to do so and leaves this up to other agreements. Second, the Convention repeatedly addresses measures and/or regulations which are to be established by international agreements, applicable to international regulations, or in accordance with international law. Implied here are international codes for the carriage of hazardous cargoes and international conventions. Third, it mentions cooperation through a competent international organization and general diplomatic conference to develop regulations. The Convention implicitly recognizes the IMO (although mentioned only

70 Ibid., Article 232. Liability of States Arising from Enforcement Measures.
once\textsuperscript{71}) as the legitimate international forum in which states are expected to develop new international standards and regulations.\textsuperscript{72} It is the International Maritime Organization (IMO), the international organization which plays a vital role in the regulation of maritime transportation of hazardous cargoes which this study next addressess.

C. THE ROLE OF THE INTERNATIONAL MARITIME ORGANIZATION IN THE REGULATION OF MARITIME TRANSPORTATION OF HAZARDOUS CARGO

BACKGROUND

The International Maritime Organization (IMO), known until 1982 as the International Maritime Consultative Organization (IMCO) was established as a Specialized Agency of the U.N. by the Convention on the Inter-Governmental Maritime Consultative Organization which was drafted in 1948 and entered into force in 1958.\textsuperscript{73} In accordance with the Convention, the functions of IMO are consultative and advisory. It is only empowered to consider and make recommendations, to convene conferences, and to provide the drafting of conventions for recommendation to governments and

\textsuperscript{71}UNCLOS III, Annex VIII, Article 2(2). List of Experts (Special Arbitration). This article states that "a list of experts shall be established and maintained in respect of, among other things, navigation, including pollution from vessels...and the list shall be drawn up and maintained...in the field of navigation, including pollution from vessels and by dumping, by the International Maritime Organization.

\textsuperscript{72}Gold, p.201.

\textsuperscript{73}289 UNTS 3.
international organizations. The Organization's main objective is to facilitate cooperation among governments on technical matters affecting international shipping, in order to achieve the highest practicable standards of maritime safety and efficiency or navigation.74 Throughout its evolution, the IMO's role has expanded significantly in the area of environmental protection.

As a Specialized Agency, the IMO functions as a separate and autonomous organization which controls its own membership and legislative and executive bodies, establishes its own budget, has its own secretariat, and reports to the Economic and Social Council (ECOSOC).75 ECOSOC is one of six principal organs of the U.N. and serves as the establishing body to negotiate the individual relationships of Specialized Agencies such as IMO with the U.N.

The three main organs of the IMO are the Assembly, the Council, and the Maritime Safety Committee. The two subsidiary bodies are the Legal Committee and the Marine Environmental Protection Committee (MEPC).

Prior to 1967, no permanent legal committee existed in the IMO. The Legal Committee was finally created by the IMO Assembly after the Torrey Canyon disaster and its legal complications. The Legal committee has examined a variety of legal issues, including the problems of liability and compensation for pollution damage and the rights of coastal states to take pollution prevention measures.


The committee generally provides studies and advice on legal problems dealt with by the Council.\textsuperscript{76}

In November 1973 the Assembly adopted a resolution which established the Marine Environment Protection Committee (MEPC) as a permanent subsidiary body of the Assembly to assist IMCO and other U.N. organizations concerning the prevention and control of marine pollution from ships.\textsuperscript{77} At the same time, the Assembly adopted a resolution which designated the MEPC to accept the functions assigned to the IMO by the International Convention for the Prevention of Pollution from Ships, 1973, and the Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil.\textsuperscript{78} At its first meeting in 1974, the MEPC determined that matters relating to technical conventions were its responsibility while those relating to legal conventions were the responsibility of the IMO Legal Committee.\textsuperscript{79}

The work products of the IMO include recommendations, codes and conventions. The most important work of the IMO is in the form of international conventions which represent formal legal commitments by national governments. The conventions are for marine safety, prevention of marine pollution, and liability and compensation. Several of these will be addressed in this study.

A number of important international standards and regulations

\textsuperscript{76} Gold, p.196.


\textsuperscript{79} Jude, p.572.
are in the form or recommendations adopted as resolutions by the
IMO Assembly. Since the first session in 1959, the Assembly has
adopted nearly 600 resolutions. The majority of these include
recommendations, mostly technical, which are connected with safety
at sea or the prevention of pollution from ships. While
recommendations are not mandatory, they may be effective in
achieving IMO's objectives. They may be used as essential
supplements to treaties. On the other hand, recommendations and
codes developed by the IMO are implemented by many States by means
of voluntary legislation.

Some of the important IMO recommendations on technical matters
are in the form of codes or guidelines. Although the application
of codes is generally voluntary, some require certification and are
similar in character to conventions. There are codes which have
been adopted by the IMO Marine Safety Council which subsequently
became mandatory for States party to conventions in accordance with
convention amendments. Some of these will be addressed in this
study.

81 Ibid.
"TACIT" AMENDMENT PROCEDURES

Article 40 of the Vienna Convention on the Law of Treaties states that to amend a multilateral treaty (unless the treaty specifies an amendment procedure), all contracting States have the right to the decision making, negotiation and conclusion of any agreement for the amendment of the treaty. Additionally, States already party to the treaty are not required to be bound to amending agreements. Therefore, change required as a result of technical advances may be unduly delayed if many States are involved in negotiations. States often have constitutional requirements that govern the entry into force of treaties and treaty amendments. These have contributed to the lengthy delays which generally have occurred between the time of adoption of amendments to a treaty and their entry into force under the practice of explicit acceptance. On average, it is said that about 5-8 years elapse before an IMO Convention enters into force.

With the constant addition of new hazards, there was concern that "treaty provisions could fall behind technological change and social needs and might well encourage some States to take unilateral actions which could be descriptive to international shipping." Recognizing this problem, the IMCO Assembly set up a working group which "focused attention on revising the amendment

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83 Gold, p.198.

84 Juda, pp.574-5.
procedure in technical conventions by allowing the Assembly to fix a date on which an amendment would come into force unless by a prior date, also fixed by the Assembly, a certain number or percentage of contracting governments rejected the amendment."\(^{85}\)

IMO noted that certain technical conventions "include special provisions of a purely technical nature which would require continuous review, e.g., a list of noxious substances to which control measures for prevention of pollution should apply."\(^{86}\)

In September 1972, the IMCO Legal Committee declared that there was unanimous agreement upon this principle of "tacit acceptance." The consensus favored such a procedure, but only for technical treaty provisions.\(^{87}\)

IMO has established two amendment procedures for the conventions for which it is the depository. First, an explicit acceptance procedure for the nontechnical provisions and second, the accelerated tacit acceptance procedures for amending the technical provisions of a convention or the technical annexes and appendices to a convention. This dual procedure has been utilized in the 1972 International Convention for Safe Containers, SOLAS 74, MARPOL 73, and others.\(^{88}\)

Assembly Resolution A.500(XII), adopted in 1981 by the IMO, recommends that conventions and amendments only be adopted "on the

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\(^{85}\) Ibid.


\(^{87}\) Juda, p.575.

\(^{88}\) Adede, p.214.
basis of clear and well documented demonstration of compelling need." 

INTERNATIONAL CONVENTION ON THE SAFETY OF LIFE AT SEA (SOLAS) 1960

The history of SOLAS 1960 can be traced back to 1914 when the first Convention was adopted as a result of the Titanic incident. The Convention was subsequently revised 1928 and entered into force in 1933. It was revised again in 1948 and entered into force in 1952. It was updated again resulting in the 1960 International Convention for the Safety of Life at Sea. Chapter VII of the 1960 SOLAS Convention is titled "Carriage of Dangerous Goods." The chapter stated that the carriage of dangerous goods is prohibited except in accordance with the provisions of this chapter. To define "dangerous goods" the Convention divided dangerous goods into 9 classes which are similar to the classes still in use.

The Convention tasked each Contracting Government to issue detailed instructions on the safe packing and stowage of specific dangerous goods or categories of them which shall include any precautions necessary in their relation to other cargo. Additional

90 IAS 5780; 16 UST 187.
91 Mankabady, p.29.
92 SOLAS 1960. Chapter VII, Regulation 2 (Classification).
regulations covered packing, marking and labeling, documents, temporary exceptions, stowage, and explosives in passenger ships. The Convention left the responsibility of specific instructions up to the individual state. This Convention was an important step which recognized the need for some degree of regulation in the carriage of hazardous cargoes. It is important to note that this Convention focused its concern on the safety of life at sea with regard to crew, vessel and cargo safety, and did not address the protection of the environment. This was to come at a later date as concern in this area grew with the increase in the transportation of hazardous cargoes and an awareness of the risks involved.

INTERNATIONAL CONVENTION ON THE SAFETY OF LIFE AT SEA (SOLAS) 1974

Numerous amendments to SOLAS 1960 proved unsuccessful due to the requirement of a two thirds ratification. Because of this, the IMO decided to adopt a new Convention incorporating the amendments and utilizing a "tacit acceptance" process for future amendments. The result was SOLAS 1974 which was designed to specify minimum standards for the construction, equipment and operation of ships.94

Chapter VII of the 1974 SOLAS Convention included further instructions on safe packing and stowage of specific goods or

93 14 I.L.M. 959 (1975). This reference will be further identified as SOLAS 1974.
94 Mankabady, pp. 29-30.
categories, including precautions necessary by the presence of other cargo. It stated that each Contracting Government shall issue, or cause to be issued, detailed instructions on safe packing and stowage of dangerous goods which shall include the precautions necessary in relation to other cargo. As in SOLAS 1960, this was a "recommendation" without the same legal force as the convention itself.

At the conclusion of the 1974 SOLAS Convention, the Conference noted that technical provisions related to the safety of life at sea would require revision, so the IMO was invited to pursue its work regarding a number of recommendations. Pertinent to this study is their recommendation regarding the development of international standards for the carriage of dangerous goods:

"The Conference, noting the rapid increase in the carriage of dangerous goods by different modes of transport, realizing the need to ensure the safe and economical transport of dangerous goods by unification of national and international rules governing the carriage, storage and handling of dangerous goods in all modes of transport, recommends that the Organization should continue its work in cooperation with other international organizations concerned with a view to adopting a self contained International Convention on the Carriage of Dangerous Goods by all Modes of Transport." It is interesting to note that the view was "to adopting a self contained international convention", or a legal, binding agreement. While this has not occurred, a code was developed by the IMO and will be reviewed in the next section.

SOLAS 1974 entered into force 25 May 1980. It has been

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95 SOLAS 1974, Attachment II, Resolution I.

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accepted by 111 States representing 97 percent of the world's tonnage.\textsuperscript{97}

\textbf{INTERNATIONAL MARITIME DANGEROUS GOODS CODE}

The Economic and Social Council of the General Assembly of the United Nations (ECOSOC) established a "Committee of Experts on the Transport of Dangerous Goods" whose 1956 Report considered international aspects based on existing national regulations and work by various organizations concerned with specific modes of transportation. This was not suitable for direct implementation since it lacked the detail required for modal (ship, aircraft, train) application.\textsuperscript{98}

In response, the IMCO's Maritime Safety Committee (MSC) established a Working Group of Experts to prepare a code based on ECOSOC recommendations and existing diverse maritime practice. The working group was later called the "Subcommittee on Dangerous Goods" and divided into subgroups to make all changes. The International Maritime Dangerous Goods (IMDG) Code\textsuperscript{99} was finally adopted by the IMCO Assembly in 1965 as a substantive resolution of

\textsuperscript{97}IMO News Number 2:1991.

\textsuperscript{98}Henry, pp.92-139.

\textsuperscript{99}International Maritime Dangerous Goods (IMDG) Code. 1990 Edition. Published by IMO London. Note: The IMDG Code may be viewed at any U.S. Coast Guard Marine Safety Office (MSO) or Captain of the Port Office.
It was adopted as a recommendation to members for the adoption of "regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships." The Code is equally linked to the 1960 SOLAS Convention and to Recommendation 56 of the 1960 SOLAS Conference, but does not form part of the Convention or possess any legal force. The code was recommended to governments for full adoption or for use as a basis for national legislation.

Since the IMDG Code was adopted as a resolution of the IMO Assembly it is only a recommendation and has no binding character. Any binding legal force depends on its incorporation into domestic law. While not a formal convention, the Code is still a comprehensive set of regulations adopted by international consensus and may legitimately claim to have the character of a "standard", even with regard to countries which have not incorporated it. This depends on whether it can be established that the Code's provisions have become a part of the customary international law relating to the carriage of dangerous goods by sea.101

The Code consists of five volumes which describe over one thousand substances which possess properties of a dangerous nature when carried by ship. It provides ready access to information relating to the method of packing, packaging, stowage, segregation, and handling of these substances.

The dangerous nature of the substances are defined with very
technical tables and listings which provide the properties, definitions, details of stowage and segregation, procedures which should be followed during loading and unloading, labels, special observations, emergency procedures, packing and stowage. The Code's list of dangerous goods is divided into nine classes as follows:\(^\text{102}\):

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Explosives – These are among the most dangerous of all goods carried by sea.</td>
</tr>
<tr>
<td>Class 2</td>
<td>Gases (compressed, liquefied or dissolved under pressure) – They may be poisonous, corrosive, inflammable, supporters of combustion (oxygen), or a combination of these. Some are much lighter than air (hydrogen) while others are much heavier (carbon dioxide).</td>
</tr>
<tr>
<td>Class 3</td>
<td>Inflammable liquids – Liquids which give off an inflammable vapor at or below 61°C (141°F).</td>
</tr>
<tr>
<td>Class 4</td>
<td>Inflammable solids – Substances liable to spontaneous combustion and substances emitting inflammable gases when wet.</td>
</tr>
<tr>
<td>Class 5</td>
<td>Oxidizing agents and Organic peroxides – Oxidizing agent substances which, although not necessarily combustible themselves, have the potential to increase the intensity of a fire by giving off oxygen; organic peroxides, most of which are combustible.</td>
</tr>
<tr>
<td>Class 6</td>
<td>Poisonous (toxic) and infectious substances – Poisonous substances which may cause death or serious injury if swallowed, inhaled or absorbed by skin contact; infectious substances which contain disease producing micro-organisms.</td>
</tr>
</tbody>
</table>

\(^{102}\) Mankabady, pp. 89-99.
Class 8  Corrosives - Substances which can damage living tissue and materials, in some cases very severely. Some give off irritating or harmful vapors and others are toxic or give off toxic gases. Some are inflammable or give off inflammable gases under certain conditions. Some attack metals and dissolve or corrode them.

Class 9  Miscellaneous dangerous substances - This class includes substances which do not come within any of the other classes. Examples include aerosol dispensers, some ammonium nitrate fertilizers, asbestos, and safety matches.

The practical value of the IMDG Code is that it enacts regulations relating to the carriage of such goods on board container ships, Ro-Ro vessels, Lash carriers and portable tanks; recommendations on medical first aid and safe handling in ports and harbors; emergency procedures in case of accident, and; provides manufacturers, shippers and packers with advice on terminology, packing and labeling.

In the Code there are a number of rules left up to the "competent authority" as determined by the individual State. The Code contains only minimum requirements beyond which the competent authority may impose stricter conditions.

The IMDG Code is divided into general and technical sections. Amendments to the general section require Assembly approval, while the technical section, which contains the specifications relating to substances, may be amended by a majority of the members of the MSC present and voting. This element of the Code allows new substances to be quickly included once the specifications have been developed, permitting the Code to be kept up to date.

The IMO MEPC's Subcommittee on the Carriage of Dangerous Goods
publishes and maintains the IMDG Code which is recognized as the worldwide standard for transportation of packaged hazardous materials by vessel. The Code will be further addressed as a vehicle for the regulation of hazardous cargoes for various agreements. Additionally, its later application to marine pollutants will be addressed.

The IMO has agreed that new additions to the Code should normally be made at intervals of not less than ten years and that substantial amendments should normally be adopted at intervals of not less than four years, and urgent substantial amendments to cover new substances at not less than two years.103

IMO'S ROLE IN THE PREVENTION OF MARINE POLLUTION

Interestingly, none of the original purposes of the IMO mentioned ocean pollution. At the time of the IMCO Convention's draft in 1948, this was not a major concern. However, the year after the Convention entered force the IMCO became heavily involved in the area of ocean pollution as it was delegated responsibilities by the 1954 International Convention for the Prevention of Pollution of the Sea by Oil.104 With the disaster of the Torrey Canyon, the IMCO "acquired an unintended prominence in pollution


104Juda, p.560.
issues and a de facto responsibility for regulatory actions." 105

Two months after the 1967 oil spill from the Torrey Canyon, an emergency session of the IMCO considered three categories of measures: 106 the prevention of pollution, remedial steps that could be taken to limit damage once spills has occurred, and changes in international law. An 18 point program was adopted by the IMCO to address these measures. Great Britain (the country calling for the emergency session) suggested that interest in ocean pollution should include pollution from hazardous cargoes other than oil. The program called for a general re-examination of maritime safety, with special consideration of regulations for ships carrying oil or other poisonous or dangerous cargoes. Significantly, prevention of pollution had become a factor independent of that of safety of life at sea and was to become a dominant future concern of IMCO. In the 1950s and 1960s, oil tankers were used to transport the increasing loads of bulk chemicals. Special tanker design and operating technology was created to fill this need. Due to concern for port safety, the United States started a program requiring foreign flag ships transporting especially dangerous chemicals and gases to comply with domestic safety and operating standards. Following a U.S. proposal, the IMO became involved in 1967 when the IMO's MSC established the Subcommittee on Ship Design and Equipment. The subcommittee's "terms of reference" included consideration of the

105 Gold, p.195.
106 Juda, p.562.
construction and equipment of ships carrying bulk cargoes of
dangerous chemical substances, other than petroleum and similar
inflammable products normally carried in tankers, and to recommend
suitable design criteria, construction standards and other safety
measures to minimize the risks involved.\textsuperscript{107}

At the Subcommittee's first sessions in 1968, international
safety standards were discussed due to concern that the release of
chemical products could lead to widespread pollution of the sea and
atmosphere with injury to crew and property.\textsuperscript{108} Over the next 3
years a Subcommittee Working Group developed the "Code for the
Construction and Equipment of Ships Carrying Dangerous Chemicals in
Bulk" (Bulk Chemical Code or BCH) which was adopted by the IMO
Assembly.\textsuperscript{109} The IMO invited all governments to accept the Code
as soon as possible. The Code provides an agreed international
standard for the safe carriage by sea of bulk chemicals by
prescribing the construction features of ships involved and the
equipment they should carry with regard to the nature of the
products involved.\textsuperscript{110}

In 1971 the IMCO Assembly amended the IMDG Code to include
cargoes which presented a serious hazard to the marine environment,
even if they did not endanger the ship and the crew. In March
1972, following several incidents involving the release of

\begin{footnotes}
\item[107] Mankabady, p.58.
\item[108] Ibid., p.59.
\item[109] IMO Assembly Resolution A.212(VI).
\item[110] "IBC, IGC and Other Initials," IMO News Number 2:1985 p.12.
\end{footnotes}
dangerous chemicals, the MSC adopted a resolution recommending
governments extend the existing voluntary reporting system for oil
spillage to include other pollutants.\footnote{Jude, p. 569.}

\textbf{INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM
SHIPS, 1973\footnote{12 I.L.M. 1319 (1973). This reference will be further identified as MARPOL.} AND THE 1978 PROTOCOL\footnote{17 I.L.M. 546 (1978).} (MARPOL 73/78)}

The establishment and development of the IMO as the U.N.
specialized agency responsible for shipping, has led to more
uniform governmental regulation of shipping with respect to
environmental risks, rather than relying solely on the private
sector for regulation. This has resulted in a number of important
marine pollution conventions covering both operational as well as
liability and compensation aspects.\footnote{Gold, p. 191.} The most significant
international agreement with regard to pollution of the marine
environment from hazardous cargo is the International Convention
for the Prevention of Pollution from Ships, 1973 (MARPOL).

IMCO Assembly Resolution A.176VI established the goal of
convening an international conference in 1973 for the purpose of
preparing a suitable international agreement for placing restraints
on the contamination of the sea, land, and air by ships, vessels,
and other equipment operating in the marine environment.\textsuperscript{115}

In 1973, the International Conference on Marine Pollution, convened by the IMCO in Brussels, adopted the MARPOL Convention. The parties to the Convention recognized the importance of the International Convention for the Prevention of Pollution of the Sea by Oil 1954, and further desired to achieve the complete elimination of intentional pollution and the minimization of accidental discharge into the marine environment by oil and other harmful substances.

A very rough estimate of the relative contribution of all potential pollutants from various human activities entering the sea is as follows has maritime transportation contributing 12 percent of all potential pollutants.\textsuperscript{116} MARPOL addresses pollution from maritime transportation through a Convention consisting of 20 articles and five technical annexes designed to control discharges of oil, noxious liquid substances, harmful packaged goods, sewage, and garbage from ships.

The Convention defined a "harmful substance" as "any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present Convention."\textsuperscript{117} Additionally, "organization" means the IMO.\textsuperscript{118}

\textsuperscript{115}Thompson, C., p.1-3.
\textsuperscript{116}GESAMP Report, p.88.
\textsuperscript{117}MARPOL, Article 2.
Violations to the Convention regulations\textsuperscript{119} are prohibited and flag States are required to cause proceedings to be taken as soon as possible if the flag State is satisfied that sufficient evidence is available. When a violation occurs, a Party may cause proceedings to be taken in accordance with their law, or furnish information and evidence to the flag State. Then the flag State is to promptly inform the Party providing the information and the IMO as to what action has been taken. Penalties shall be adequate in severity to discourage violations and shall be equally severe wherever the violation occurs.

The port State is provided with inspection powers.\textsuperscript{120} A certificate issued by the authority of a Party to the Convention shall be accepted by the other Parties and regarded as having the same validity as one issued by them. A ship required to hold a certificate is subject, while in the ports under the jurisdiction of a Party, to inspection which is limited to verifying that there is a valid certificate. If there are grounds for believing that the condition of the ship or its equipment does not correspond with the certificate, or if there is no valid certificate, the inspecting Party shall take steps to ensure that the ship does not sail until it can do so without presenting an unreasonable threat to the marine environment. The inspecting Party may allow the ship to proceed to the nearest repair yard. Prior to denying a foreign

\footnotesize{\textsuperscript{118}ibid.}  
\footnotesize{\textsuperscript{119}ibid., Article 4. Violation.}  
\footnotesize{\textsuperscript{120}ibid., Article 5. Certificates and Special Rules on Inspection of Ships.}
ship entry into one of its ports or taking action against a ship, the Party shall immediately inform the flag State.

Parties to the Convention shall cooperate in detection of violations and in enforcement. A ship to which the Convention applies, may be subject in any port, to inspection for the purpose of verifying whether the ship has discharged any harmful substances. If a violation is discovered, a report shall be forwarded to the flag State, and the flag State shall take initiate proceedings in accordance with its law as soon as possible. Additionally, a Party may inspect a ship if a request for an investigation is received from any Party providing sufficient evidence that the ship has discharged harmful substances or effluents containing such substances in any place.

All efforts shall be made to avoid undue delay to ships for any of the previously described regulations. When a ship is unduly detained, it shall be entitled to compensation for any loss or damage suffered. This provides a safeguard for the flag State and its vessel.

Reports of the actual or probable discharge of a harmful substance is to be made as soon as possible in accordance with Protocol I of the Convention. Reports are required whenever an incident involves: a discharge not permitted by the Convention; a discharge permitted by the Convention for the safety of ship or

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122 Ibid., Article 7. Undue Delay to Ships.

123 Ibid., Article 8. Reports on Incidents Involving Harmful Substances.
life, or as a result of damage to the ship; a discharge of a harmful substance to combat a specific pollution incident or for purposes of legitimate scientific research into pollution research; or, the probability of a discharge. Parties to the Convention are to provide the IMO their regulations which have been promulgated within the scope of the Convention.  

The Convention may be amended by any of several procedures. An amendment may be proposed by a Party, submitted to the IMO and circulated to all members of the IMO and Parties to the Convention. Amendments will be adopted by a two thirds majority of the Parties to the Convention present and voting. An amendment to an Article shall be deemed to have been accepted by two thirds of the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet.

An amendment to an Annex can be made in the manner just described. An amendment to an Annex's Appendix is accepted at the end of a selected period after its adoption, not less than ten months, unless within that period an objection is communicated to the IMO by not less than one third of the Parties or by the Parties the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet. This is the "tacit amendment" process.

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124 MARPOL Protocol I: Provisions Concerning Reports on Incidents Involving Harmful Substances (in accordance with Article 8 of the Convention), Article III, When to Make Reports.

125 MARPOL, Article 11. Communication of Information.

Amendments may also be made by a conference convened by the IMO upon the request of a Party. The conference must be agreed upon by at least one third of the Parties. Every amendment adopted by a Conference requires a two thirds majority of those present and voting. The amendment shall be deemed to have been accepted and enter into force as in the above discussed procedures. Any amendment, however made, shall enter into force six months after the date of its acceptance.

Parties to the Convention are to promote, in consultation with the IMO and other international bodies, with assistance and coordination by the Executive Director of the United Nations Environment Programme (UNEP), support for those Parties which require technical assistance for: training, supply of necessary equipment and facilities, the facilitation of other measures to prevent or mitigate pollution by ships, and the encouragement of research. This will aid developing States keep their shipping industry in line with international regulations.

The Convention requirements address five major categories of pollutants in the Annex. Annexes II and III apply to the scope of this paper. Annexes I and II are mandatory for all Parties to MARPOL and the other Annexes are optional.

- **Annex I** Prevention of pollution by oil
- **Annex II** Control of pollution by noxious liquid substances (chemicals) in bulk
- **Annex III** Prevention of pollution by hazardous substances in packaged form
- **Annex IV** Prevention of pollution by sewage from ships
- **Annex V** Prevention of pollution by garbage from ships

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127 Ibid., Article 17. Promotion of Technical Cooperation.
Before proceeding with a review of Annexes II and III, it is necessary to mention that the Convention was subsequently modified by the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships 1973, and the resulting agreement is known as MARPOL 73/78. The purpose of the Protocol of 1978 was to defer the application of Annex II to the Convention until certain technical problems were satisfactorily resolved. The Protocol also modified Article 11(1)(b) of the Convention concerning the communication of information from a Party to the IMO with regard to the State's list of authorized organizations acting in the administration of matters regarding ships carrying harmful substances. Added to "matters relating to design, construction and equipment" were matters relating to "operation". The 1978 Protocol did not change Annexes II or III.

The Convention entered into force in 1983 and has 64 contracting states as of April 1991.

Annex II provides a mechanism for identifying liquid substances carried in bulk which the Parties to the Convention regard as sufficiently harmful to merit control at sea. MARPOL attempts to control the releases of substances to the sea on the basis of the hazards they pose to the environment and to human health. With regard to the control of pollution by noxious liquid substances in bulk, Annex II relies on several lists of chemicals

128 MARPOL 1978 Protocol, Article III. Communication of Information.
129 "IMO's Conventions: Status on 1 April 91," IMO News Number 1:1991.
transported at sea which have been allocated to different pollution categories (and therefore are subject to different legal requirements) based on their hazardous properties.

A GESAMP working group sponsored by IMO and UNEP classifies annually the chemicals carried by ships. The system for listing has evolved from the initial list to lists and data supplied by member States, noting current or new materials to be shipped, and to other IMO group lists such as those of the "Subcommittee on Bulk Chemicals" and the "Subcommittee on the Carriage of Dangerous goods." 132

Listed materials are rated by GESAMP, and hazard profiles are developed according to criteria which considers: bioaccumulation, damage to living resources, hazard to human health (oral, skin contact, and inhalation), and reduction of amenities-ratings. The hazard profiles are taken by IMO and made available to the MEPC, and they are classified by the delegations into five categories by using the guidelines for categorization of noxious liquid substances: categories A, B, C, and D. Substances categorized as A are the most stringently controlled. 133

This system illustrates how worldwide scientific data can be offered to a standard-making group to produce practical determinations with technically justifiable bases. Toxicological information for a given material can be traced through the GESAMP

131 GESAMP Report, p.89.
hazard profiles and IMO categorization to the regulatory provisions contained in Annex II. The system allows shippers to anticipate the hazard profile rating that the material they want to ship will be assigned, and it provides guidance on how to properly prepare the material for shipping.\textsuperscript{134}

When liquid substances not yet categorized in the Annex are to be carried, Convention States involved shall agree on a provisional assessment using guidelines given in the Annex's appendix.\textsuperscript{135} Until a specific agreement has been reached, the substance shall be carried under the strictest conditions. As soon as possible within 90 days, the State desiring to carry the material shall notify the IMO, giving details and provisional assessment. The IMO will circulate the information to each Party who in turn has 90 days to forward comments back to the IMO. The IMO can then begin amendment procedures to include the new material in the appendix.

Annex II contains 13 regulations and 5 appendixes. The Annex, which entered force in 1987, requires that chemical tankers have certain pollution prevention equipment on board and follow specified procedures to reduce the pollutant discharges into the sea from normal shipboard operations. Ship design requirements reducing the likelihood of accidental discharges are also mandated.

\textsuperscript{134}Ibid., p.1-9.

\textsuperscript{135}MARPOL Annex II, Regulation 3. Categorization and Listing of Noxious Liquid Substances.
Annex II requirements include:\(^{136}\):

- Tank stripping equipment to minimize the amount of cargo remaining in cargo tanks after transfer.

- Cargo tank prewash after offloading certain cargoes, and the residues discharged to a reception facility.

- Underwater discharge outlets to facilitate the dispersal of noxious liquid substance discharges under controlled conditions.

- Procedures and Arrangements Manual with procedures for noxious liquid substance carriage, cargo transfer and tank stripping, prewashing and ventilation.

- Cargo record book of all internal and external ship transfers and discharges of cargo, and the operability of transfer and pollution-prevention equipment.

- Vessel certificates demonstrating that a vessel has been inspected and complies with applicable design, construction equipment and documentation requirements.

- Discharge limitations regarding minimum distance offshore, permissible products and concentrations, and other operating requirements for permitting discharge.

- Reception facilities (required terminals and ports) which normally receive and conduct commerce with vessels and have the ability to receive their wastes. Vessels may be denied entry to ports not having required certificates.

- Special areas/certain waters have been designated as "special areas", where discharges are prohibited or further limited. This designation is made by Annex I, II or V, and is not in force until IMO has determined that an adequate number of waste reception facilities are available. Currently the Mediterranean Sea, Baltic Sea, Black Sea, Persian Gulf and North Sea have been designated as special areas. An effort is underway to obtain this designation for the Wider Caribbean.

Annex II also requires States to issue detailed requirements on the design, construction, equipment and operation of ships which carry noxious liquid substances in bulk. These requirements must contain at least all of the provisions found in the previously cited sources.

reviewed Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH), as adopted by the IMO Assembly.  

Annex III provides a mechanism for regulating the prevention of pollution by harmful substances carried by sea in packaged forms, freight containers, portable tanks, or road and rail tank wagons. The Annex's eight regulations are similar to SOLAS Chapter VII and specific requirements include:

- Application to all ships carrying harmful substances in packaged forms and prohibits the carriage of such substances except in accordance with the Annex. Parties are required to issue detailed requirements to implement the Annex.
- Packaging for which the IMO has developed general guidance specifying packagings which are capable of surviving when immersed in the sea for a reasonable period of time to permit a recovery in coastal sea areas without the loss of contents. In practice, the system consisting of waterproof packaging inside freight containers would likely meet the criteria for survivability.
- Marking and Labeling which states that packages must be durably marked with the correct technical name and a distinctive label indicating that the contents are harmful.
- Documentation requires ships maintain a special manifest with the proper chemical name and location. It may be consolidated with the dangerous goods manifest required under Chapter VII of SOLAS, provided a clear distinction is made between dangerous goods and marine pollutants.
- Stowage requires stowage to minimize the hazards to the marine environment without impeding the safety of the crew and ship. Requirements in SOLAS Chapter VII, Part A, will take precedence when they conflict with Annex III stowage requirements.
- Quantity Limitations allows Parties to prohibit or impose quantity limitations on the carriage of certain very hazardous

137 MARPOL Annex II, Regulation 13. Requirements for Minimizing Accidental Pollution.
139 Committee on Foreign Relations Report, Annex III to MARPOL: Section by Section Analysis. 23 April 1991.
substances for scientific and technical reasons after consideration has been given to the characteristics of the ship, packaging and hazardous material. Because of the small quantities carried in packaged form as opposed to bulk, no party to MARPOL has identified a need to establish prohibitions or quantity limitations.

-Exceptions in which packaged harmful substances may be jettisoned only where necessary for the purpose of securing the safety of the ship or saving life at sea. Parties are required to take appropriate measures to regulate the washing of leakages overboard unless such measures would impair the safety of life or the ship.

-Notification requires the master or owner of the ship to give 24 hour advance notification to the port authority before loading or unloading certain harmful substances designated by the port State.

These eight brief regulations must be recognized as extensions of work conducted for years under the SOLAS Convention and are directly related to the IMDG Code and the work of the ECOSOC Committee of Experts on the Transport of Dangerous Goods. As per the IMDG Code, neither ECOSOC or IMO was able, prior to MARPOL, to determine whether materials which posed an environmental hazard or hazard to humans merited attention for the purpose of material carriage by sea. Annex III of MARPOL is an important bridge between transportation and environmental concerns. Resolution 19 of the 1973 IMO International Conference on Marine Pollution recommended that IMO examine the need to revise the IMDG Code to include harmful substances. The IMO Subcommittee on the Carriage of Dangerous Goods evaluated the pollution potential issue and decided, in November 1978, that polluting substances should be included in the IMDG Code and that substances which only present a hazard to the marine environment and are not mentioned in the code

\[140\text{Thompson, C., p.1-6.}\]
should be included in a Class 9 (miscellaneous dangerous substances).\textsuperscript{141}

In April 1989 the MSC adopted Amendment 25-89 to the IMDG Code which involved publication of a new Code.\textsuperscript{142} This 25th amendment to the Code is important in that it, for the first time, extends the application of the Code to marine pollutants. These have been added to the nine classes of cargoes to assist implementation of Annex III. That Annex lists requirements, but does not list specific substances. This amendment meets the Annex III requirement to identify the marine pollutants.

To help uniform implementation of Annex III, IMO has agreed to use the IMDG Code as a vehicle.\textsuperscript{143} 600 substances have been agreed upon and regulations for their carriage have been agreed upon and incorporated into the IMDG Code through amendment 25-89, which entered into force in January 1991.

In 1988 the MEPC approved a revised text of Annex III which defined harmful substances as "those which are identified as marine pollutants in the IMDG Code." They agreed that the pollutants listed in the IMDG Code will consist of those substances identified as Category A (the most harmful group) of Annex II.\textsuperscript{144} There is no change of substance in the revised text except that Annex III is more explicitly connected to the IMDG Code.

\textsuperscript{141}CDG XXIX/16, Annex 7, Nov. 16, 1978.


\textsuperscript{143}Ibid.

Annex III will become international law on 1 July 1992. It requires acceptance by 15 States whose combined fleets of merchant ships amount to 50% of world tonnage. There are currently 45 contracting states with a tonnage of 53% since the acceptance of the U.S. 145

THE INTERVENTION CONVENTION

The States adopting the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969146 agreed on a "Resolution on International Cooperation Concerning Pollutants Other Than Oil."147 In part the Resolution recommended "that the IMO intensify its work, in collaboration with all interested international organizations, on all aspects of pollution by agents other than oil." The result was the Protocol on Intervention on the High Seas in Cases of Marine Pollution by Substances Other Than Oil, 1973.148 The Protocol entered into force on 30 March 1983.

Before addressing the articles in the Intervention Convention Protocol, it is important to address the application of the term "high seas" in the contemporary world as it applies to the

146 1.L.M. 25 (1970). This reference will be further identified as the Intervention Convention.
148 1.L.M. 605 (1974). This reference will be further identified as the Intervention Convention Protocol.
exclusive economic zone (EEZ). The 1958 Convention on the High Seas defines "high seas" as all parts of the sea not included in the territorial sea or in the internal waters of a State.\textsuperscript{149} The Intervention Convention and its related Protocol were developed at a time when the seaward boundary of the territorial sea was 12 miles. The high seas started so close to a State's coastline that a convention such as the one addressed in this section was considered necessary. In light of the development of the 200 nautical mile EEZ and its attached jurisdictional rights as addressed in the 1982 U.N. Convention of the Law of the Sea, the high seas for the purpose of environmental protection still begins at the seaward boundary of the territorial sea. In accordance with UNCLOS III, all States enjoy the rights of freedom of the high seas in the EEZ such as navigation and overflight and other international lawful uses.\textsuperscript{150} Not included in these rights are permission to pollute the marine environment. The coastal State has jurisdiction to protect and preserve the marine environment in its EEZ.\textsuperscript{151}

For a long time a customary rule of international law operated according to which a ship outside internal or territorial waters of a foreign State was under the exclusive jurisdiction of a flag State.\textsuperscript{152} This became a treaty norm in the 1958 Geneva

\textsuperscript{149}TIAS 5200; 13 UST 2313. Article 1.

\textsuperscript{150}UNCLOS III, Article 58.

\textsuperscript{151}Ibid., Article 56.

Conventions addressed earlier in this study. With the establishment of the 200 mile EEZ, the sphere of jurisdiction of flag States declined while limits of jurisdiction of coastal States increased with respect to ensuring compliance with norms to prevent pollution.\textsuperscript{153} In view of the issue of the high seas just addressed, it is implicit to the author that the high seas for the purpose of intervention as related to the Intervention Convention and its Protocol includes the area within a coastal State's EEZ.

Parties to the Protocol may take measures on the high seas, or beyond their territorial sea as discussed above, to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of it by substances other than oil following upon a maritime casualty which may reasonably be expected to result in a major harmful consequences. An intervening Party has the burden of proving that a substance could reasonably pose a grave and imminent danger. A list of "substances other than oil" is to be established by the IMO and annexed to the Protocol. They are those substances "liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."\textsuperscript{154} As discussed earlier, the MEPC was established for this purpose by an IMO Assembly Resolution.

The provisions of the Intervention Convention, 1969 shall be applicable with regard to substances in the present Protocol to

\textsuperscript{153} ibid.

\textsuperscript{154} Intervention Convention Protocol. Article 1.
include an extension of the list of experts qualified to give
advice in relation to substances other than oil. 155

Any proposed amendments to the list shall be submitted to the
MEPC and Parties. It must then be adopted by a two thirds majority
of Parties present and voting. The amendment is considered to be
accepted after six months, unless an objection is made by at least
one third of the Parties to the Protocol. 156 This is an example
of the "tacit amendment" process.

Prior to initiating intervention measures, the intervening
Party must consult with other affected states, affected persons and
may consult with independent experts. However, if an extreme
emergency exists, the intervening State may take measures without
prior notification. 157

Measure taken shall be proportionate to the actual or
threatened damage. 158 Those measures taken by an intervening
state in violation of the Convention will require compensation. 159

The Convention entered into force in 1975 and has so far
obtained 54 ratifications. The Protocol entered into force in 1983
and has so far obtained 23 ratifications. What is missing from the
Protocol, is who shall be liable for the damages which initially
prompts the intervention.

155 Ibid., Article II.
156 Ibid., Article III.
157 Intervention Convention. Article III.
158 Ibid., Article V.
159 Ibid., Article VI.
As a result of the 1978 Amoco Cadiz disaster, rights under Article 221 of the 1982 U.N. Convention on the Law of the Sea are wider than those of the Intervention Convention. While the Intervention Convention refers to "grave and imminent danger from pollution or the threat of pollution", in accordance with Article 221, intervention can take place when there is merely "actual or threatened damage." Additionally, in UNCLOS III, the potentially injured State has no burden of proving that the polluting substances could pose "grave and imminent danger."\(^{160}\)

**OTHER IMO CODES**

In November 1975 the Assembly adopted the "Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk" (Gas Carrier Code or GC), again inviting all governments to accept as domestic regulations\(^ {161}\) as was done for the BCH Code in 1971. The Code provides and international standard for the safe carriage by sea in bulk of liquefied gases and certain other substances by prescribing the design and construction features of ships involved and the equipment they should carry so as to minimize the risk to the ship, its crew and the environment.\(^ {162}\)


\(^{161}\)Thompson, C., p.65.

\(^{162}\)"IBC, IGC and Other Initials," p.12.
The Gas and Chemical Codes completed a major portion of the IMO program to develop standards for ships transporting hazardous materials in bulk.

In 1976, the newly formed Subcommittee on Bulk Chemicals (BCH) completed work on an interim "Code for Existing Ships Carrying Liquified Gases in Bulk" for ships built before 1976. This Subcommittee was formed during 1975 to serve as the focal point for all of the IMO's activities concerning the bulk transportation of chemicals and liquified gases, including maritime safety and protection of the marine environment. BCH is responsible to both the MSC and the MEPC.\textsuperscript{163}

The three Codes just reviewed were arranged differently, making interpretation and application complicated. Additionally, they are only recommendations. In the late 1970s it was agreed that the Codes would be more effective if they were mandatory and that the best way to accomplish this would be with an amendment to SOLAS 1974.\textsuperscript{164}

Two new codes, the International Bulk Chemical (IBC) Code and the International Gas Carrier (IGC) Code, which were adopted by the MSC in 1983, had a different status than the three previously discussed codes. Their observance became mandatory for Parties to SOLAS 1974 when the 1983 amendments to the Convention entered into force in July 1986. The IBC Code has also been made mandatory

\textsuperscript{163}Thompson, C., p.72.

\textsuperscript{164}"IBC, IGC and Other Initials," p.13.
under MARPOL 73/78 as far as pollution aspects are concerned.\textsuperscript{165}

The purpose of the IBC Code is to provide an international standard for the safe carriage by sea in bulk of dangerous liquid chemicals by prescribing the design and construction standards of ships and the equipment they should carry so as to minimize the risk to the ship, crew and the environment, having regard to the nature of the products involved. The IBC Code is a companion document to the BCH Code. Additionally, the IGC Code is basically the same as the Gas Carrier Code.\textsuperscript{166}

At the 20th Session of the Subcommittee on Bulk Chemicals in October 1990\textsuperscript{167}, work began on amalgamating the lists of hazardous substances which are appended to Annex II of MARPOL with the two bulk chemical codes, the IBC and BCH Codes. The three lists are almost identical and it would be advantageous to combine them into a single composite list. Additionally, the Subcommittee prepared the first set of amendments to the International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk (IGC). It was submitted to the MSC for approval with a view to circulation and adoption. The Code was adopted by the IMO in 1983.

\textsuperscript{165}"IMO's Conventions and Other Treaty Instruments," \textit{IMO News} Number 4:1987 p.11.
\textsuperscript{166}"IBC, IGC and Other Initials", p.13.
\textsuperscript{167}"List of Chemicals to be Combined," \textit{IMO News} Number 1:1991.
D. CONCLUSION

This chapter has examined the need for regulation of the maritime transportation of hazardous cargoes. It has also examined the resultant international agreements, recommendations and codes. These have addressed the expanding rights of coastal states, maritime safety and the prevention of marine pollution with regard to the subject. The 1982 U.N. Convention on the Law of the Sea addressed the jurisdictional issues of coastal State, flag State and port State rights, while the SOLAS 1974 and MARPOL 73/78 Conventions specified exactly what the regulations are in order for the safe transportation of hazardous materials. These, in some cases, were supplemented by the various codes which were examined. No single regulation has been developed to govern the subject entirely, so each of the regulations examined must be applied in a comprehensive manner by States in their national legislation.

With the complexities of the hazardous materials being transported, the subject must be addressed from a scientific, rather than political viewpoint. Therefore, there is a vital need for an international organization such as the International Maritime Organization to develop and promote arrangements for the safe transportation of hazardous materials. The IMO is a body of member States and what the IMO decides or recommends is the consensus of its 134 member States. The tacit amendment process provides an accelerated procedure for bringing into force amendments to conventions for which the IMO is the depository.
Hazardous cargoes are not confined to those materials in transit for use in production, but must also include those materials which are being exported as hazardous waste. It is this concern that the next chapter addresses.
III. THE INTERNATIONAL REGIME FOR MARITIME TRANSPORTATION OF HAZARDOUS WASTE

A. DEVELOPMENT OF CONCERN

Every eight hours a new chemical is introduced and every year about 1000 of these enter into common use (an estimated 80,000 chemicals are on the market today). While chemicals have benefits, they also carry with them the problems of disposal as hazardous waste. Estimates of world wide volumes of hazardous waste range from 300 to 400 million tons per year with about 90 percent generated in industrialized countries.

The 1972 International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was an important step towards protecting the marine environment from the dumping of hazardous waste. It addressed deliberate disposal of harmful substances at sea; however, it does not prevent or control the transportation of hazardous wastes.

The moving and disposing of regular and hazardous waste cargoes is a global problem which has been increasing rapidly in both cost and complexity. Transported primarily from the industrial nations, the accumulation of wastes has demanded increased attention, particularly in its transborder aspects. More

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169 Ibid.

than 3,176,000 tons of wastes were shipped from industrialized countries to less developed countries between 1986 and 1988 and the actual figure is probably much higher.\footnote{Obstler, p.74.} In the case of Britain, the import of wastes has increased from about 5000 tons in 1981 to 83,000 tons in 1986.\footnote{Tolba, p.206.} These have obviously been imported via maritime transportation. Several countries have acted recently to discourage the flow of hazardous shipments.\footnote{Gerhard Von Glahn, Law Among Nations pp.1-119 at 186 (New York: Macmillan Publishing Company, 1986). Examples are: Togo which banned the import, sale, transport or storage of radioactive wastes; the Ivory Coast imposing penalties on persons importing wastes; and Nigeria passing a Harmful Waste Decree with life imprisonment for convicted violators. The Council of Ministers of the Organization of African Unity passed a 1988 resolution aimed at the importation of harmful wastes.}

The problems with the transfrontier shipment of hazardous waste are: 1) hazardous waste may be disposed of at unsuitable points, and 2) the greater the distance hazardous waste is transported, the greater the possibility that the producer cannot be identified, the nature of the waste becomes uncertain, and controls will break down.\footnote{David A. Trippier, "Waste Management and the Development of Standards," Marine Policy Volume 14 #3 May 1990 pp.215-218 at 217.} With the increase in the price of disposal and growing public concern, there have been cases of waste ships in search of ports, abandoning toxic waste or even dumping them.\footnote{Tolba, p.206.}

The Organization for Economic Co-operation and Development (OECD) has played an important role in the development of concern
for the transport of hazardous waste.\textsuperscript{176} Its work in waste management began in 1974 when, on behalf of OECD Member countries, their Environmental Committee created a Waste Management Policy Group. OECD Council Decision/Recommendations of February 1984 and June 1986, and a Decision of May 1988 resulted in the current legally binding obligations upon OECD Member countries with respect to exports of hazardous wastes to non-Member countries.\textsuperscript{177} These include notification and transportation procedures.

In June 1987 the Governing Council of the United Nations Environment Programme (UNEP) proceeded with development of a global convention on hazardous waste. Ongoing work in the OECD was specifically mentioned as providing a foundation for the global regime, and significant portions of the resultant convention addressed in the following section of this study were taken verbatim or are close paraphrases of the OECD draft international agreement.\textsuperscript{178}

UNEP had difficulty putting together a tough treaty on the trade in toxic wastes and shipment of hazardous wastes from one country to another and it encountered legal hurdles by several industrial nations, including the U.S., Japan and the United Kingdom.\textsuperscript{179} After more than a year of legal and technical


\textsuperscript{177}Ibid., p.202.

\textsuperscript{178}Ibid., p.202.

negotiations, the Global Convention on Control of Transboundary Movements of Hazardous Wastes was signed 22 March 1989, by 35 states and the European Economic Community at a meeting of 116 countries in Basel, Switzerland. Sensitive to criticism from environmentalists, UNEP's Mostafa Tolba responded that while the Basel treaty is a compromise it represented a realistic adjustment to widely divergent points of view in order to gain the support of highly industrialized free market and socialist countries and developing countries at different stages of development. He added that the important thing is to have a treaty which is a legally binding international agreement which can be strengthened and improved.

B. THE BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL, 1989

The Basel Convention (not yet in force) has been signed by 53 states and the EEC and ratified by 5 states. Twenty more states are in the process of ratification of accession.

Resolution 2 of the Conference invited Parties to the London
Dumping Convention, through the Secretary General of the IMO, to review that Convention with respect to revising it by including the dumping of hazardous and other wastes at sea in the light of the Basel convention.

Hazardous wastes are defined by the Convention as those listed in Annex I\textsuperscript{184} (Categories of Wastes to be Controlled). However, wastes are not considered as hazardous unless they do possess one of the characteristics referred to in Annex III\textsuperscript{185} (List of Hazardous Characteristics)\textsuperscript{186}. Additionally, hazardous wastes shall include those substances not covered by the Convention, but which are defined as hazardous waste by domestic legislation. Radioactive wastes are excluded from the scope of the Convention as they are covered by a separate agreement.

States must consent in writing prior to import of hazardous waste\textsuperscript{187}. Hazardous waste must be packaged, labeled, accompanied by movement documents, and transported in conformity with generally accepted and recognized international rules and standards in the field. Any movement must be covered by insurance, bond or other guarantee as required by the State of import or any State of

\begin{itemize}
\item \textsuperscript{184} Examples of waste product sources from the Annex: Clinical, wood preserving chemicals, organic solvent, cyanide, mineral oil, material contaminated with PCB/PCT/PBBs, paints, plasticizers, surface treatment of metals and plastics, residues from industrial disposal operations.
\item \textsuperscript{185} Examples of characteristics from the Annex: Explosive, flammable liquids and solids, spontaneous combustibles, oxidizing, poisonous (acute), infectious, corrosive, toxic.
\item \textsuperscript{186} Basel Convention, Article 1. Scope of the Convention.
\item \textsuperscript{187} Ibid., Article 4. General Obligations.
\end{itemize}
transit.\textsuperscript{188}

The Convention shall not affect the sovereignty of States over the territorial sea and the sovereign rights in their EEZ and continental shelves and the exercise by ships and aircraft of all States of their navigation rights and freedoms in accordance with international law.\textsuperscript{189} A tendency to restrict navigational freedoms may result from the Convention.\textsuperscript{190} While the Convention explicitly provides that it shall not affect the sovereign rights of States and the rights of ships and aircraft, the effectiveness of this assurance appears dependent on practical implementation of the basic rule of prior consent by the states concerned (upon notification of the state of export) to transit of such waste through areas under their national jurisdiction.

International cooperation between Parties is stressed, to include transfer of technology, management systems, development of technical guidelines and codes of practice.\textsuperscript{191} Parties are to adopt, as soon as practicable, a protocol concerning liability and compensation.\textsuperscript{192} The drafters of the Convention were unable to overcome the differences between developing and industrialized nations on this issue, so the Convention fails to provide any mechanism for liability and compensation and hold financially

\textsuperscript{188}Ibid., Article 6. Transboundary Movement Between Parties.
\textsuperscript{189}Ibid., Article 4. General Obligations.
\textsuperscript{190}Kwiatkowska, p.162.
\textsuperscript{191}Basel Convention, Article 10. International Cooperation.
\textsuperscript{192}Ibid., Article 12. Consultations on Liability.
accountable those responsible for damages.\textsuperscript{193}

Article 17 covers amendment of the Convention. The UNEP Conference chose not to utilize the "tacit amendment" procedure. Amendments are to be adopted at a meeting of the Parties at which they shall try to reach a consensus or adopt amendments by a three-fourths majority vote of the Parties present and submitted to all Parties for consideration. Adopted amendments shall enter force between Parties having accepted them.

Annexes to the Convention shall be restricted to scientific, technical and administrative matters.\textsuperscript{194} Except as may be provided in a subsequent protocol with respect to its annexes, the procedure for the proposal, adoption and entry into force of additional annexes shall be the same as that for amendments. In other words, a consensus or three fourths vote vice tacit approval.

It has been argued that in the case of developing countries, delay in governmental decision making may occur because of time needed for additional assessment of the ability of a State to comply with the requirements of a technical amendment because of technical, financial or manpower reasons.\textsuperscript{195} On the other hand, developing countries may favor tacit acceptance in order have some degree of control over the increasing number of hazardous wastes being exported and imported.

The Convention is the result of an often contentious struggle

\textsuperscript{193}\textsuperscript{193} Obstler, pp.96-97.
\textsuperscript{194}\textsuperscript{194} Ibid., Article 18.
\textsuperscript{195}\textsuperscript{195} Adede, p.208.
between less developed and industrialized States. The less developed States were seeking significant restrictions while the industrialized States pushed to keep open the option of waste exports. It has been argued that the result was a compromise treaty that is long on rhetoric and short on substance and effectiveness.\textsuperscript{196} The end result of the Convention will be the reduction and regulation of hazardous waste being carried by vessels, leading to a reduced risk of pollution to the marine environment.

A new section on wastes is to be added to the IMDG code for dealing with transport of hazardous waste which will assist in compliance with the Basel Convention.\textsuperscript{197} The Basel Convention is of concern to IMO since the movement of such substances has often been made in ships. The Sub-Committee on the Carriage of Dangerous Goods prepared the text of a new section for the general introduction to the IMDG Code for inclusion in Amendment 26 to the Code. The purpose of the new section is to align the IMDG Code with the requirements of the Basel Convention. The text of the new draft Section 27 was referred to the Sub-committee on Containers and Cargoes which developed a similar Section 10 on the transport of solid wastes in bulk for inclusion in the Code for Solid Bulk Cargoes (BC Code). Amendment 26-91 was adopted by the MSC in May 1991 and will be implemented on 1 January 1993.\textsuperscript{198}

\textsuperscript{196} Obatler, p.94.


Empirical evidence suggests that in the years to come the U.S. and other industrialized nations will increase their exports of hazardous wastes for disposal. While a global ban may be the safest approach to protecting the marine environment from damage caused by hazardous waste cargo, for the present the Basel Convention provides control to some extent. While the absence of a mechanism for liability makes the Convention weak, there may be a remedy for this in the future if the Contracting Parties to the Basel Convention consider adoption of the draft liability and compensation convention for hazardous and noxious substances which is addressed in the next chapter of this study. Consideration of this would require close cooperation between UNEP and the IMO, and would result in uniformity of liability and compensation regulations for hazardous cargoes transported for both for market and as waste.

199 Obstler, p.124.
Even with safe vessel design, well trained crews, and navigational safety in place, there will be casualties which involve hazardous cargoes. These can usually be attributed to factors such as negligence or honest mistake. An example which included both of these was the casualty on 31 October 1984 to the tankship S.S. Puerto Rican when she suffered fires and explosions 8.5 miles west of San Francisco. The U.S. Coast Guard concluded that the captain failed to use all reasonable means to account for a discrepancy after being notified of it. Additionally, a corroded area existed and was not detected during a number of previous internal inspections which illustrates practical limitations inherent in the inspection of large, complex tank vessels by visual methods, rather than a lack of adequate inspection requirements.

The best intentions and strictly followed procedures will not always prevent accidents. As a result, questions of liability will arise. Rules covering liability for loss or damage to cargo carried by vessels have existed for many years. However, the rules do not address specific hazardous cargoes or their damage to the marine environment. They are designed primarily for


compensation upon loss or damage to the cargo. Examples of these are the International Convention on Civil Liability for Oil Pollution Damage (CLC) 1969\textsuperscript{202} and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (IOPCF or Fund Convention) 1971,\textsuperscript{203} both of which create a liability that requires compensation only in the case of oil damage. In light of that, as long ago as April 1975, the IMCO Legal Committee discussed the topic of civil liability for pollution damage from substances other than oil and decided to include it in its future work program.\textsuperscript{204}

Liability for hazardous and noxious substances was on the agenda of the 32nd Conference of the Comite Maritime International (CMI) held in Montreal in 1989. The IMO had requested the CMI to study the issue and the CMI's subsequent study formed a basis for an IMO draft in 1982.\textsuperscript{205}

The IMO convened an International Conference in April 1984 on Liability and Compensation for Damage in Connexion with the Carriage of Certain Substances by Sea.\textsuperscript{206} The purpose was to consider three treaty instruments: a Protocol to revise the International Convention on Civil Liability for Oil Pollution

\textsuperscript{202}9 I.L.M. 45 (1969).

\textsuperscript{203}11 I.L.M. 284 (1972).

\textsuperscript{204}Juda, p.582.


For a detailed examination of the background and development of the HNS Convention starting with debate at the 1969 Diplomatic Conference which adopted the International Convention on Civil Liability for Oil Pollution, see Menkabady pp.351-373.

The draft HNS Convention defines a "hazardous substance" as "any substance listed in the Annex to the Convention when carried without any intermediate form of containment in a hold or a tank which is a structural part of a ship or in a tank or container permanently fixed in or on a ship." This implies that the Convention as drafted is for bulk carriage of hazardous substances only, not packaged or contained materials. At the IMO Legal Committee's recent 63rd Session, the committee considered the issue of the definition of HNS substances. Most of the delegations favored a definition which referred to existing IMO instruments such as MARPOL 73/78, IMDG Code, IBC and IGC Codes, and others.

The list of hazardous substances shall be maintained by the

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210 HNS Convention, Article 1. Definitions.

IMO and the "tacit" amendment procedure is used for the list.\(^{212}\)
The draft defines "damage" as "loss of life or personal injury on board or outside the ship, caused by those substances, and any other loss or damage caused by those hazardous substances" and the phrase "any other" implies damage to the marine environment.\(^{213}\)

The HNS draft applies to "the territorial sea and areas which, in accordance with international law, the coastal State has sovereign rights over natural resources."\(^{214}\) This implies the inclusion of the exclusive economic zone (EEZ) and continental shelf of a state.

The draft states that, "the owner at the time of an incident of a ship carrying hazardous substances as cargo shall be liable for damage caused by any such substance during its carriage by sea...."\(^{215}\) The "owner" of a vessel is defined as the person or persons registered as the owner.\(^{216}\) In the case of a ship owned by a State and operated by a company which in that State is registered as the ship's operator, "owner" shall mean such company.

The owner is required to maintain compulsory insurance in the sums fixed by applying the limits of liability prescribed by the

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\(^{212}\) HNS Convention, Article Y. List of Hazardous Substances-Amendment Procedures.

\(^{213}\) Ibid., Article 1. Definitions.

\(^{214}\) Ibid., Article 2. Scope of Application.

\(^{215}\) Ibid., Article 3. Liability of the Owner.

\(^{216}\) Ibid.
Convention to cover the liability for damage. 217

There are two alternatives given prescribing limitation of liability of the shipowner. 218 The first alternative applies the provisions of the 1976 Convention on Limitation of Liability for Maritime Claims (LLMC). 219 The LLMC, which entered into force in 1986, raised the limits of liability from an earlier instrument, in some cases up to 300 percent. The LLMC declares that a person will not be able to limit liability only if "it is proved that the loss resulted from personal act or omission, committed with the intent to cause such a loss, or recklessly and with knowledge that such a loss would probably result." 220 It specifies limits for claims for loss of life or personal injury and for property claims (such as damage to other ships, property or harbor works). Levels are determined by applying "units of account" which correspond to various tonnage ranges. The units of account are the Special Drawing Rights as defined by the International Monetary Fund and converted into the national currency of the State in which limitation is sought. 221

The second alternative for limitation of liability uses gross tonnage calculations for the determination. This is calculated in respect of claims for loss of life or injury, increasing in units

219 16 I.L.M. 606 (1976). Further referred to as LLMC.
221 LLMC, Article 8.
of account as tonnage increases in a method similar to the first alternative, but at different levels. It is also calculated in respect of any other claims in the same manner. At the 63rd Session of the IMO Legal Committee in September 1990 there was general support that the HNS Convention should be independent of the LLMC.222

The IMO Legal Committee determined that supplemental compensation may be needed to assure that potential HNS victims receive adequate compensation. It stated that compensation provisions may be modeled after the 1971 Fund Convention and financing would likely be based on levies against bulk and large and/or hazardous packaged shipments.223 This mention of "packaged shipments" is in contrast to the earlier definition of hazardous substances in the draft Convention and implies that any future convention is likely to include both bulk and packaged hazardous cargoes.

"Shipper" is defined as the person on whose behalf, or by whom as a principal, the hazardous substances are delivered for carriage.224 Under the draft, the shipper shall be liable only if the damage exceeds the owner's liability or the owner is financially incapable of meeting the obligation.225 However, the shipper cannot limit liability if it is proved that damage resulted

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223 Ibid.
224 Ibid.
225 HNS Convention, Article 7. Liability of the Shipper.
from a personal act or omission, committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result, including his failure to inform the shipowner of the hazardous nature of the substance.\textsuperscript{226} The draft does require the shipper to maintain compulsory insurance of some kind in the sum to cover liability for damage under the Convention.\textsuperscript{227} The level of insurance will depend upon which alternative is decided upon for Article 8, Alternatives to Liability of the Shipper. Alternative I limits the as yet undecided number of units of account in respect to any one incident. Alternative II limits the units of account for each ton shipped within a specified tonnage range.

Interestingly, the term "noxious substance" is not defined in the draft convention. Why has so much time elapsed since the IMO Conference which presented the draft with nothing finalized for signature? While the diplomats from many States want protection for their shorelines and coastal resources, the task for the spreading the risk of liability for hazardous cargoes is extremely difficult. This is because the negotiations for the HNS Convention includes members from IMO diplomatic delegations, the insurance industry, shippers and shipowners. The goal of each group is to make its cost as low as possible. Additionally, delay may be due to the many hazardous substances which will be addressed by the convention.

\textsuperscript{226}Ibid., Article 8. Alternatives to Liability of the Shipper.

\textsuperscript{227}Ibid., Article 11A. Compulsory Insurance of the Shipper.
Whatever the difficulties, it is clear that some type of liability provisions must be adopted as they would fill a significant legal void. Work on the proposed convention will continue at the next session when a working group of technical experts will also meet to identify and classify the substances to which the convention will apply and to develop a sub-set of substances on which a levy should be assessed to finance any supplemental compensation system.\textsuperscript{228}

V. CONCLUSION

Until the 1950s, dangers to the coastline from ships were primarily limited to those from the carriage of explosives, oil and ammonium nitrate. However, as new methods of transportation were developed, new hazards have been introduced which traditional legislation was not designed to meet. From the time of the U.N. adoption of the IMO Convention in 1948 to its entry into force in 1958 there was an increase in the size of oil tankers as well as an increase in the transport of hazardous cargoes, such as the bulk transport of chemicals and liquified gas. As a result, the regulatory process governing the safe transport of these cargoes developed and is continuously under revision. The majority of the credit for this must go to the International Maritime Organization. The IMO is no longer a "consultative and advisory body", but a true regulatory agency has taken its place.

While initial concern was for safety of the vessel and crew as evidenced by the 1960 SOLAS Convention, concern for the marine environment soon shared equal attention. As a result of these concerns, the regulatory process for the maritime transportation of hazardous cargoes led to the numerous codes and conventions reviewed in this paper.

The law related to the problem of maritime pollution was developed by a small number of States with the IMO and resulted in

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230 Henry, p.142.
a series of operational and technical conventions which UNCLOS III codified this on a global level. 231 These Conventions included the Intervention Convention of 1969 and its Protocol of 1973, SOLAS 1974, and MARPOL 73/78. For various reasons, having nothing to do with the issues discussed in this study, some of the major maritime powers have refused to sign the 1982 U.N. Convention on the Law of the Sea. However, this does not mean that the provisions of the Convention related to rights, safety and environmental protection with regard to hazardous cargoes will be disregarded by them.

Any discussion of IMO Conventions must address the "tacit" acceptance procedure. In order to keep the IMO instruments current in light of rapid technological advances, the tacit acceptance procedure for changing technical provisions of conventions has been extremely successful. For an example of its effectiveness, the 1981 SOLAS amendment to SOLAS 1974 entered force in 1984, the 1983 amendment in 1986 and the 1988 amendment in 1989. In contrast, none of the amendments to SOLAS 1960 ever became international law. 232

A great advantage to the IMO approved codes addressed in this study is that they can be made mandatory under convention provisions, yet they are much easier to amend than conventions. This allows the regulatory process to keep pace with technological advances and the addition of new hazardous cargoes into shipping. Examples of codes mandatory to conventions are the IBC Code being


made mandatory for both MARPOL 73/78 and SOLAS 1974, and the BCH Code as a mandatory requirement under MARPOL 73/78. Those codes relate to ship design and construction requirements which must not be changed often. On the other hand, the requirements in the IMDG code must be constantly adapted to technological change as new hazardous substances are introduced. While the IMDG Code supplements the SOLAS Convention, Basel Convention, and is being considered for the HNS Convention, it is not part of those Conventions and therefore does not possess the legal, binding force of a convention. This binding legal force depends on incorporation into domestic law. Countries apply codes in different ways. They are required to implement them into national regulations if agreed upon by treaty, they can implement them into national regulations if they or the code is not party or part of a treaty, they can apply the code on a voluntary basis, and they can require foreign vessels to adhere to a code as a condition of entry to their ports.\textsuperscript{233} In the last case, the implication is that a State not complying with a code, even though it is not part of a treaty agreement, may be denied participation in a portion of international trade in hazardous cargo.

Due to the nature of international maritime trade, adherence to some form of international agreement on the carriage of hazardous materials is important. It will allow manufacturers, shippers and carriers all to work with the same set of rules. It will also allow nations to better enforce their own standards and

\textsuperscript{233}Mankabady, p.78.
to avoid conflict of regulations in the case of adjudication. The best way to achieve this is through universal acceptance regulations governing the transportation of hazardous materials. An example of this is the IMDG Code of which, as of 1987, some 47 States had partly or fully adopted.234

All States benefit from international agreements protecting the marine environment by regulating hazardous cargoes, but developing States may have difficulty paying for international anti-pollution measures while trying to develop their shipping industry. The answer lies with technical assistance and cooperation with developed States.235 As the membership of IMO grew, a growing number of members did not have the training and expertise of traditional maritime States. IMO's technical cooperation program concentrated on training senior personnel from these countries so that they could conduct their maritime affairs in an effective and independent manner.236 Provisions for technical cooperation are present in most of the agreements reviewed in this study.

While marine transportation of hazardous cargoes is to be done in accordance with various international agreements and codes as discussed in this study, there still has been damage to containers, loss of packages overboard, and inadequacy of labeling and lack of

234 "The Status of IMO Codes," IMO News Number 2:1987. Of the 47 Countries listed, including all of the major maritime powers, the only ones which had not implemented the IMDG Code in 1987 were Algeria, Cyprus, Mexico, Romania and Yugoslavia.


description of the goods carried, which has caused difficulty in initiating prompt action for salvage and clean-up operations. Sound management is the first step in risk reduction. This includes not only regulations for the transport of hazardous materials, but also in the enforcement of those regulations. The GESAMP report recommends tighter control over shipping movements and in the administration and enforcement of regulations on transport of hazardous cargoes is required. It reports that national enforcement is the weakest link in the chain of internationally promoted efforts to deal effectively with marine pollution. In some cases the flag state doctrine may be preventing effective implementation of internationally accepted rules and standards.

An international organization such as the IMO is only as effective as its member States want it to be. And international codes and conventions are only effective with domestic compliance and enforcement measures through national legislation.

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237 GESAMP Report, p.22.

238 See the Annex in this study for several examples of the United States efforts at compliance with international standards for the maritime transportation of hazardous cargoes.
ANNEX: U.S. MEASURES IN COMPLIANCE WITH THE INTERNATIONAL REGULATORY PROCESS

A. BACKGROUND

The transportation aspects of hazardous materials regulation was originally set up by the federal government in 1865 to protect railroads and railroad workers from explosions that could result from poorly identified packaged explosives and ammunition during the civil war.239 The evolving regulatory process resulted in the currently used Hazardous Material Regulations (HMR) which apply to the transportation of hazardous materials in commerce. They have their origins in the Explosives and Combustibles Act of 1908 and are issued currently in accordance with the Hazardous Materials Transportation Act (HMTA) of 1974, administered by the Department of Transportation (DOT) and found in the Code of Federal Regulations (CFR) Title 49. HMR govern the safety aspects of transportation including: requirements for classification of materials, packaging, hazard communication, transportation and handling, and incident reporting. This Annex will highlight the United States' measures in compliance with the international process with regard to the maritime transportation of hazardous cargo.

When the DOT was created in 1967 it embarked on a long range effort to simplify and improve regulations. Accomplishments have

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included the adoption of labels and placards in 1974 which were based on the U.N. Committee of Experts' Recommendations on the Transport of Dangerous Goods (U.N. Recommendations), development and distribution of an emergency response book, and adoption of identification numbers for HM in 1980 based on the U.N. Recommendations.

The DOT supports a uniform, global approach to the safe transportation of hazardous materials through participation in the work of international organizations which include the IMO. The U.S. participates in their work through the U.S. Department of State's Shipping Coordinating Committee (SCC). The U.S. Coast Guard (USCG) provides technical expertise to SCC, and with the U.S. Research and Special Programs Administration (RSPA), represents the DOT at sessions of the IMO's Subcommittee on the Carriage of Dangerous Goods.

B. HAZARDOUS MATERIALS REGULATIONS

A recent final rule of the DOT comprehensively revised the HMR based on the U.N. Recommendations and the RSPA's own initiative. It was effective on 1 October 1991. A main concern prior to this final rule was that the HMR differed from international regulations based on the U.N. Recommendations with respect to classification, hazard communication and packaging. The major difference was the

international use of performance oriented packaging standards and the U.S. use of design specifications for packaging. After 31 December 1990, most hazardous materials in international transportation was to be packaged in conformance with U.N. standards. Harmonizing domestic regulations with international regulations eliminates the need for dual compliance by U.S. firms and removes artificial barriers to international trade.

The following summarizes the major changes in the HMR.

1. The HM tables are now consolidated into one table. This identifies the hazard class (explosives, gases, liquids, solids, oxidizers, poisons, radioactive, corrosive, miscellaneous) or specifies that the material is forbidden in transportation; gives the proper shipping name or directs the user to the preferred proper shipping name; and specifies or references requirements pertaining to labeling, packaging and stowage aboard vessels.

2. U.S. customary units of measurement are replaced with standard international units.

3. Hazard class definitions, descriptions and numerical nomenclature are aligned generally with U.N. Recommendations.

4. Hazard communication and packaging requirements have been improved, simplified and in some instances made more restrictive.

5. Materials packaged under the IMDG Code generally are acceptable for inland transport away from a port area, for the first time.

6. 100 specifications for non bulk packagings are eliminated and replaced with 20 U.N. performance oriented packaging standards.

7. A vibration test has been added to address transportation rigors not taken into account by the U.N. tests.

8. Reuse of plastic and metal drums are linked to minimum thickness requirements as a substitute for the lack of performance tests in the U.N. standards.

9. Packaging manufacturers are required to notify their customers (shipper) in writing of any specification shortfalls or steps that the user must take to conform with the applicable specification.
C. INTERNATIONAL CODES

The USCG is continuously updating DOT requirements to comply with IMO recommendations. For example, it amended the table summarizing the minimum requirements for the carriage of liquid, liquified gas or compressed gas hazardous materials in bulk by tankship. These amendments assign additional carriage requirements, a higher pollution category, or both, to certain commodities already listed. These amendments are necessary to align the minimum requirements in the table with those approved by the IMO for inclusion in its chemical codes applicable to tankships. The amendments should result in a further reduction in maritime pollution from tankships. They became effective 7 January 1991.

D. ROLE OF THE UNITED STATES COAST GUARD

The U.S. Coast Guard (USCG) includes the Office of Marine Safety, Security and Environmental Protection which is its lead office in areas which include, but are not limited to: Environmental Protection, Shipment of Hazardous Materials, Vessel Safety, Vessel Inspections, Vessel Documentation, Vessel Investigations. The office's Technical Advisory Staff manages


the international program with emphasis on participation in international organizations and oversees functioning of U.S. Safety of Life at Sea (SOLAS) working groups to assure consistency of national policy. The office includes planning and economic advisory staffs, and several divisions as follows.

The Marine Environmental Protection Division responds to spills or threats of spills of oil or hazardous substances that involves both government and private resources. The Division develops, revises and oversees implementation of federal standards and procedures to reduce marine pollution and works with the Department of State to develop appropriate international standards. It also develops enforcement guidance for units to follow when inspecting vessels to ensure industry's compliance with applicable federal standards.

The Port Safety and Security Division stresses the prevention of accidents during transportation of dangerous cargo, prevention of spills which cause environmental damage from oil and hazardous chemicals and willful acts of sabotage and terrorism. They ensure that regulations are complied with by all U.S. and foreign vessels, and monitor transfers of dangerous cargoes.

The Merchant Vessel Inspection and Documentation Division ensures that vessels are in compliance with material and administrative requirements.

The Merchant Vessel Personnel Division ensures crews are manned in compliance with applicable requirements.

The Marine Investigation Division conducts casualty
investigations, maintains and administers an inventory of casualty information, periodically prepares casualty statistics, and conducts in depth marine safety evaluations.

The Marine Technical and Hazardous Materials Division (MTH) administers the federal program for assuring that commercial vessels are designed in accordance with safety and pollution abatement standards; develops domestic and international standards and requirements for commercial vessel design, operations, fire safety, human engineering, systems interface, marine nuclear application, arrangements and outfitting, and hazardous materials transportation; conducts casualty analysis and research and development to provide a basis for standards and regulatory action; provides technical support to the Office, and provides advice to marine industry on vessel safety and hazardous materials transportation. The Division represents the United States at U.N. and IMO meetings on vessel safety and hazardous materials transportation. MTH represents the United States internationally through the IMO. It provides delegates to six IMO subcommittees and presents United States position papers on technical issues affecting vessel safety, hazardous materials transportation by water and pollution abatement.

Policies and regulations concerning waterborne transportation safety of HM are developed by the Hazardous Materials Branch of the MTH Division. It has three sections which specialize in packaged cargo, bulk cargo and hazard evaluation.²⁴³

1. The Packaged Cargo staff is the primary point of contact for field units, industry and public. Its guiding regulations are found in Title 49 of the CFR and in the International Maritime Dangerous Goods (IMDG) Code.

2. The Bulk Cargo section provides technical assistance on bulk transportation of hazardous liquids, solids and liquefied gases, and conducts conceptual reviews of vapor recovery systems and novel vessel and tank designs. It also issues regulations as contained in Title 46 of the CFR.

3. The Hazard Evaluation section classifies bulk liquid chemicals transported by tank vessels, and develops comprehensive occupational safety and health programs for merchant marine personnel. It also does nearly all interim safety and marine pollution evaluations for worldwide tanker shipments of new chemicals. It also provides technical support such as the mathematical modeling of the dispersion of water insoluble chemicals and dense gases, ammonia spill modeling, the maintenance of cargo file products in the Marine Safety Information System and the maintenance of the Chemical Hazards Response Information System documents and database.

The Hazard Evaluation and Bulk Cargo sections work with the USCG's Chemical Transportation and Towing Safety Advisory Committees in developing domestic and international bulk hazardous materials standards.

For the United States marine industry to remain competitive in today's economic environment vessels must carry larger payloads,
with less maintenance and smaller crews. The industry is "pushing the envelope" of the force of the wind, the waves and the infinite number of everyday hazards associated with marine transportation. Designs that push the envelope today will become the standards of tomorrow and the United States Coast Guard (USCG) is mandated to monitor the safety aspects of these vessels. New vessels are made to established standards, often set by the American Bureau of Shipping and the American Society of Mechanical Engineers. Additional standards are from the Safety of Life at Sea (SOLAS) conventions which were established by the International Maritime Organization (IMO) and from the Marine Oil Pollution Conventions, both of which are referenced directly or adopted in the United States Code of Federal Regulations (CFR). The USCG participates in these developments.244

E. MARINE POLLUTION

Acceptance of the MARPOL convention obliges governments to make the requirements part of domestic law. In the United States, this was accomplished by the enactment of the Act to Prevent Pollution from Ships, Title 33 U.S. Code, sections 1901-1911245 and resulted in the development of regulations contained in Title 33 CFR and 46 CFR.


245 Jenkins, p.15.
As the United States enforcement agent for MARPOL, the USCG has the responsibility to ensure that U.S. ships and foreign ships visiting U.S. ports and operating on waters subject to United States jurisdiction comply with annexes adopted by this country. The USCG checks on MARPOL 73/78 compliance as part of its vessel boarding program. It also inspects facilities where cargo and waste is discharged. It investigates reports of illegal discharges and encourages the support of industry, the public and other government agencies. Increased use is being make of aerial surveillance to detect violators. In 1991, the USCG obtained 85 additional positions for MARPOL 73/78 promotion and enforcement.246

MARPOL 73/78 Annex II was ratified by the United States on 12 August 1980 and came into force on 6 April 1987.247

The Senate Committee on Foreign Relations, to which was referred Annex III, reported favorably without amendment and recommended that the Senate give its advice and consent for ratification. The Committee received letters of support for ratification from the Chemical Manufacturers Association, Dupont, Friends of the Earth/Environmental Policy Institute/Oceanic Society, and the Hazardous Materials Advisory Council. The United States Senate approved Annex III on 14 May 1991 and the Department of State prepared an instrument of ratification for the President's approval. With the U.S.'s acceptance, Annex III will enter into

246 ibid.


In the United States, incorporation of MARPOL requirements was accomplished by the enactment of the Act to Prevent Pollution from Ships, Title 33 U.S. Code which resulted in the development of regulations contained in Title 33 CFR.

President Reagan's 10 March 1983 Proclamation establishing the EEZ248 states, "The U.S. will continue to work through the IMO and other appropriate international organizations to develop uniform international measures for the protection of the marine environment while imposing no unreasonable burdens on commercial shipping."

F. HAZARDOUS WASTE


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