Regulation of the International Transport of Packaged Dangerous Goods: The Case for Legislative Integration in a World Convention

Mirsada Stasevic
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REGULATION OF THE INTERNATIONAL TRANSPORT OF PACKAGED DANGEROUS GOODS: THE CASE FOR LEGISLATIVE INTEGRATION IN A WORLD CONVENTION

By

Mirsada Stasevic

Submitted in partial fulfilment of the requirements for the degree of Master of Laws

at

Dalhousie University
Halifax, Nova Scotia
August, 1999

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DEDICATION

To:

My Parents

whose love and wisdom has guided me in searching for light

and

my son Darko

who is the light I have found.
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ABSTRACT

The multimodal transport of dangerous goods is a high risk enterprise for the participants, the public, and public and private property. This study examines the lack of congruency of safety and environmental protection rules which govern the international transport of dangerous goods, along with the concurrent progressive efforts of the international community to ensure global and inter-modal harmonization of these rules. It discusses their inadequacy and proposes a solution.

The analysis of the existing rules, fragmented along modal and geographical lines, shows that they do not sufficiently introduce the safety, environmental protection and liability considerations into the legal regime governing the international multimodal movement of dangerous good. Rather, they cause confusion and ignorance of carriers, shippers, packers, inspecting authorities and others with respect to the applicable preventive requirements and consequent liabilities. This situation also seriously impedes efficiency in the transport of dangerous goods.

The thesis argues that such a result is not acceptable when tested against the international community's principles and objectives in this field. The principles of sustainable development call upon international organizations and governments to cooperate, interrelate, coordinate and integrate in their law-making in the field of environmental protection. While the study recognizes the progressive consistency of safety and environmental protection rules, as a result of the United Nations' harmonization work embodied in the United Nations Recommendation on the Transport of Dangerous Goods, it argues that a further step needs to be taken to accelerate the process and to ensure their global uniformity and implementation.

The legislative step that this study proposes is the transformation of the U.N. Recommendations into a legally binding world convention on the transport of dangerous goods by all modes of transport. The thesis establishes the need and viability of the proposed solution based on the analysis of the existing system of norms, regulatory structure and policy premises. The proposed world convention, since it would contain a single set of rules combining mode-independent and mode-specific standards, capable of direct implementation, is expected to eliminate the confusion that exists under the present chaotic system.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADR</td>
<td>European Agreement Concerning Transport of Dangerous Goods by Road</td>
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<td>ADN</td>
<td>European Agreement Concerning Transport of Dangerous Goods by Inland Navigation</td>
</tr>
<tr>
<td>ADNR</td>
<td>Regulations on the Carriage of Substances on the Rhine</td>
</tr>
<tr>
<td>aff'd</td>
<td>affirmed</td>
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<tr>
<td>All. E.R</td>
<td>All English Reports</td>
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<tr>
<td>Am. J. Int’l. L.</td>
<td>American Journal of International Law</td>
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<tr>
<td>CEFIC</td>
<td>European Chemical Industry Council</td>
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<tr>
<td>cert. denied</td>
<td>Certiorary denied</td>
</tr>
<tr>
<td>CG/HCCS</td>
<td>Coordinating Group for Harmonization of Chemical Classification System</td>
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<tr>
<td>CIM</td>
<td>Uniform Rules Concerning the Contract for International Carriage of Goods</td>
</tr>
<tr>
<td>COGSA</td>
<td>Carriage of Goods by Sea Act (U.S.)</td>
</tr>
<tr>
<td>COTIF</td>
<td>Convention Concerning International Carriage by Rail</td>
</tr>
<tr>
<td>CRTD Convention</td>
<td>Convention on Civil Liability for Damage caused During Carriage of Dangerous Goods by Road, Rail, and Inland Navigation Vessels</td>
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<tr>
<td>Dalhousie L.J.</td>
<td>Dalhousie Law Journal</td>
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<tr>
<td>D.S.C.</td>
<td>United States District Court for the District of South Carolina</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>ECE</td>
<td>Economic Commission for Europe</td>
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<td>ECOSOC</td>
<td>United Nations Economic and Social Council</td>
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<td>EEC</td>
<td>European Economic Community</td>
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<td>Ed.</td>
<td>Editor/Edition</td>
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<td>Eds.</td>
<td>Editors</td>
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<td>EU</td>
<td>European Union</td>
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<td>F.Supp.</td>
<td>Federal Supplement</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GESAMP</td>
<td>Advisory body consisting of specialized experts nominated by the sponsoring agencies (IMO, FAO, UNESCO, WHO, IAEA, UN, UNEP)</td>
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<tr>
<td>H.L.</td>
<td>House of Lords</td>
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<td>Harv. L. Rev.</td>
<td>Harvard Law Review</td>
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<tr>
<td>HNS Convention</td>
<td>International Convention on Liability and Compensation for Damage in Connection with Carriage of Hazardous and Noxious Substances by Sea</td>
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<tr>
<td>IBC</td>
<td>Intermediate Bulk Containers</td>
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<tr>
<td>I.C.L.Q.</td>
<td>International Comparative Law Quarterly</td>
</tr>
<tr>
<td>ICC</td>
<td>International Chamber of Commerce</td>
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<tr>
<td>ICDM</td>
<td>International Confederation of Drum Manufacturers</td>
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<tr>
<td>ICHCA</td>
<td>International Cargo Handling Association</td>
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<tr>
<td>ICS</td>
<td>International Chamber of Shipping</td>
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<tr>
<td>ICIBCA</td>
<td>International Council of Intermediate Bulk Containers</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>IMO</td>
<td>International Maritime Association</td>
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<td>IOMC</td>
<td>Inter-Organization Program for the Sound Management of Chemicals</td>
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<tr>
<td>IPCS</td>
<td>International Program on Chemical Safety</td>
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<tr>
<td>IRU</td>
<td>International Road Transport Union</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standard Organization</td>
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<tr>
<td>ITC</td>
<td>Inland Transport Committee of UN/ECE</td>
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<tr>
<td>Ky.App</td>
<td>Kentucky Reports</td>
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<tr>
<td>Lloyd’s Rep.</td>
<td>Lloyd's Reports</td>
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<tr>
<td>MARPOL Convention</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
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<tr>
<td>MTO</td>
<td>Multimodal Transport Operator</td>
</tr>
<tr>
<td>NVOCC</td>
<td>Non Vessel Operating Common Carrier</td>
</tr>
<tr>
<td>OTIF</td>
<td>Intergovernmental Organisation for International Carriage by Rail</td>
</tr>
<tr>
<td>RID</td>
<td>International Regulations Concerning the Carriage of Dangerous Goods by Rail</td>
</tr>
<tr>
<td>S.D.N.Y.</td>
<td>United States District Court for the Southern District of New York</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<td>-----------------</td>
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<tr>
<td>SOLAS Convention</td>
<td>International Convention for the Safety of Life at Sea</td>
</tr>
<tr>
<td>U. Penn.Int’l.Econ.L.</td>
<td>University of Pennsylvania International Economy and Law</td>
</tr>
<tr>
<td>U.S.S.C.</td>
<td>United States Supreme Court</td>
</tr>
<tr>
<td>UN CETDG</td>
<td>United Nations Committee of Experts on the Transport of Dangerous Goods</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
</tr>
<tr>
<td>UNCHE</td>
<td>United Nations Conference on the Human Environment</td>
</tr>
<tr>
<td>MEPC</td>
<td>Maritime Environment Protection Committee</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environmental Program</td>
</tr>
<tr>
<td>UIC</td>
<td>International Union of Railways</td>
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<tr>
<td>UNID</td>
<td>United Nations Industrial Development Organization</td>
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<td>Wall.</td>
<td>Wallace’s Reports</td>
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<td>WHO</td>
<td>International Health Organization</td>
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<td>Yale L.J.</td>
<td>Yale Law Journal</td>
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INTRODUCTION

This study examines and analyses the regulatory system which governs the international multimodal transportation of dangerous goods, and establishes the need for improvement of the present system. The solution that the study offers is the transformation of the non-binding United Nations Recommendations on the Transport of Dangerous Goods into a binding world-wide convention.

The proposed solution is based on the analysis of the three relevant elements which affect the international transport of dangerous goods: the nature of, and the risks involved with the activity of the multimodal transport of dangerous goods; the international community’s objectives in this field; and the international regulatory system that governs the activity. Results of the analysis of these three elements demonstrate that, although the international community has agreed that the rules governing the activity need to be globally harmonized and applied, they remain fragmented and inconsistent.

The transport of dangerous goods is a typical example of a multi-disciplinary activity. It is a transport activity, the activity of the energy or chemical industries, and an environmental protection activity. Given its multi-disciplinary character, the transportation of dangerous goods is also a remarkable example of inter-organizational activities at the world, regional, and national levels where industry interests are being balanced against safety and environmental concerns.

The growing environmental awareness of the public, as well as concern with economic cost implications of accidents involving dangerous goods has given rise to the increased scientific research and knowledge on the impact of chemicals on human health.
from direct (accidents involving dangerous goods), and indirect (pollution) exposure. During the last two decades, worldwide concern with the risk posed by the increasing frequency of the movement of dangerous goods by all modes of transport has radically changed the methodology and scope of research, as well as the profile of participants involved in defining the risks that dangerous materials present.

These factors, coupled with the globalization of the world economy, the rapid increase in the production and transportation of chemicals, particularly by multimodal means, introduced a new and genuine approach to the setting of objectives to be achieved by legal instruments governing the transport of dangerous goods. This new philosophy promotes the necessity that environmental protection considerations be introduced into every kind of commercial activity. Furthermore, universality of the rules and instruments dealing with the transport of dangerous goods is viewed to be a synonym of their efficiency. As a result, these instruments are meant to capture the transport and the chemical industry’s commercial interests into an extensive legal and social landscape revolving around the notion of the global protection of “common values.” Legal recognition at the international level of the right to development subject to rights to safety and a healthy environment increasingly reduced and redefined the terms and conditions under which many commercial activities, including the transport of dangerous goods, can be lawfully performed. As a result, the historically unlimited freedom of the parties to trade off their commercial interests is being radically conditioned by the demand that the environment and safety are
safeguarded.

In the light of the foregoing it is safe to say that in the field of the transport of dangerous goods, the basic policy premise is that it is no longer wholly at the contracting parties' discretion to contract their duties, rights and responsibilities. Rather it is society at large that imposes on them strict standards of behavior, thus safeguarding wider public interests which can be endangered by their activities. In the same manner as the parties to the transport contract must comply with public requirements, because compliance makes their activities lawful from individual and social points of view, law-makers, courts, and all actors who create and interpret the respective rules must, nonetheless, follow the same line of reasoning.

As an outcome of this trend, different authoritative bodies have adopted numerous international instruments establishing standards for the world transport of dangerous goods. While one class of these instruments establishes and promotes technical standards and procedures for the safe and environmentally sound transport of dangerous goods, another class promotes uniform rules and procedures concerning the legal responsibilities. The first class of rules are technical treaties, regulations, and standards which constitute the body of public international law on the matter. The second category are rules which set uniform standards of liability and compensation for damage caused in the course of transporting dangerous goods, and amount to a body of international private law. The two categories of rules are, however, interrelated, with a notably increased contribution of the technical

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standards to the legal system governing the transport of dangerous goods. The technical standards first provide the frame within which the legitimacy to the hazardous activity can be established. Most regulations provide that the transport of dangerous goods is prohibited unless performed in full compliance with applicable requirements of these regulations. This means that the only key to make possible the carriage of dangerous goods is the observance of technical norms which set out the safety and environmental protection standards, thus ensuring precautionary approach in the protection of the environment. The transport of dangerous goods performed in violation of these standards can result in public prosecution and sentencing. Furthermore, the technical norms, which describe and classify dangerous goods in terms of the risk that they present, and then set out standards for their safe carriage, provide the frame of reference within which legal questions and disputes arising from the transport of dangerous goods between private interests can be resolved.

Existing international instruments and the inter-organizational activities concerned with the transport of dangerous goods clearly promote the new philosophy when defining the problems and set out the objectives to be achieved. The instruments governing the transportation of dangerous goods by any mode of transport seek to satisfy the following basic goals:

1. to prevent accidents to persons, material damage and damage to means of transport, populations, property and the environment in general, through worldwide harmonized safety standards and pollution prevention mechanisms;

2. to quickly and adequately compensate those who suffer damage from any

________________________________________
General for Research, 1994) at 74 -76.
accidents;

3. whilst imposing the above preventive and remedial standards and instruments, the legal instruments must set them as high as necessary to achieve their goals, but without imposing prohibitive costs on the participants in the transport operation and without discouraging technological progress and economic development. Moreover, worldwide harmonization must be sought to eliminate hindrances to international transport by simplifying transport, handling and checking formalities;

4. to coordinate worldwide activities of international organizations, to achieve the highest possible level of cooperation between scientific and supporting organizations and agencies in order to avoid overlapping or contradicting actions or/and standards;

5. because both safety and environment are considered to be problems with a global scope, the principles of coordination, cooperation, integration and interrelation as established by the United Nations Conference on the Environment and Development (UNCED) should inform the pursuit of the above aims.

Against this background, this thesis sets out to determine whether existing international law effectively and adequately accomplishes these goals in regards to international multimodal transport of dangerous goods. The leading criterion in making this determination is whether different international instruments first, consistently achieve the common ends and second, whether the obligations they put in place are imposed on those best able to bear them in light of the global character and complexity of both multimodal transport operation, and the dangerous character of the goods carried. If they are not, the likelihood that the international instruments will operate effectively is
substantially reduced.

More specifically, this study demonstrates the existence, and the principles of the new philosophy which shape the international community’s legislative action in the field of the transport of dangerous goods. Second, the study describes existing international rules dealing with the transport of dangerous goods by all modes of transport and evaluates them against these principles. Third, it establishes that the international conventions, particularly those of a private legal nature, have not, so far, made sturdy moves to affirm accepted principles. Fourth, the argument is developed that the lack of uniformity of administrative, safety and environmental regulations within and between the modes of transport obstructs the transformation of technical regulations into legal norms capable of bringing private-law rules within a broader legal concept bearing on safety and environmental protection. Finally the study advocates a self-contained world-wide Convention on the Multimodal Transport of Dangerous Goods by all Modes of Transport as a conditio sine qua non for building a conceptually and legally inclusive body of rules to deal with the transport of dangerous goods by all modes of transport.

Chapter 1 of this study introduces the basic elements of the technical and legal concepts of multimodal transport in general, and the transport of dangerous goods in particular. It also seeks to provide understanding of risks and their social and legal aspects associated with the transport of dangerous goods. This information is expected, besides providing a basic understanding of the integrated nature of multimodal transport operation itself, to support an understanding of the economic-socio-legal philosophy that has developed and influenced the policy and law-making process in the field of the
transport of dangerous goods. It also clarifies terms, definitions and existing concepts related to the transport of dangerous goods. The review of different definitional concepts assists in establishing the argument of this study that the failure to adopt a common definition of dangerous goods hampers the creation of shared legal concepts specifically dealing with "regulated" dangerous goods. For example, the private law definition of dangerous goods, because it assimilates the category of "regulated dangerous goods" into a common law generic definition of dangerous goods, determines the distribution of risks based on contract and common law concepts. These concepts, however, have not sufficiently evolved to follow conceptual and legal developments surrounding "regulated dangerous goods."

Chapter 2 explains the policy and institutional settings that are reflected in, and within which the existing international rules on the transport of dangerous goods have and/or should be developed. This chapter also seeks to add to an understanding of the impact of new developments emerging from the world conferences on the environment and development on the public international law-making process concerning safety and protection of the environment. Moreover, it portrays the way in which the relevant international bodies perform their regulatory and standard setting roles. This understanding helps place the proposal for the new convention under the heading of sustainable development of the transport and chemical industry.

Chapter 3 introduces and analyses the international rules which have been developed to prescribe safety and environmental protection standards and to distribute responsibilities for implementation of these standards to carriers and shippers engaged in the
sea, rail, and road transport of dangerous goods, as well as to allocate liabilities between them for consequences arising out of such transportation. In addition to these modal instruments, this part introduces and evaluates those international instruments which explicitly deal, or are relevant to, the multimodal transport of dangerous goods. In the body of the thesis the environmental and civil liability rules are discussed separately with the aim of establishing whether a legal position which has arisen in one segment of law can be developed and applied to an equal degree of effectiveness in another segment of the regulatory structure. Thus, for the purpose of the discussion, the international instruments dealing with the carriage of dangerous goods will be divided into two broad categories:

1. those dealing with safety and environmental protection
2. those dealing with liability and compensation issues

While the analyses conducted in chapters 1 and 2 serve to demonstrate the rationale behind the need that safety, environmental protection, and liability issues in the field of the transport of dangerous goods are dealt with at the global level, harmonized across the board, and fit into the same context, the analysis of relevant rules in chapter 3 discusses their fragmentation and inconsistency.

Chapter 4 examines contractual liabilities for damage caused by the transport of dangerous goods. The survey conducted in this chapter serves to support the thesis’ argument that, because of lack of legally binding set of rules to be applied uniformly and by all modes of transport, allocation of liability suffers from a great deal of uncertainty, in particular in multimodal transport. It shows that standards of due care to which shippers and carriers are held in civil law do not coincide with public standards. Findings
of this chapter strengthen the case for the proposed legislative step.

Chapter 5 pinpoints the strict liability regime's inconsistencies, which might create a problem for courts to determine the third party liability for damage, caused by the transport of dangerous goods.

Chapter 6 summarises the findings of the foregoing chapters, evaluates them, draws conclusions and offers a solution based upon them. The specific topics of evaluation and the proposed solution are chosen because of their relevance to safety, environmental protection, and the facilitation of transport, which are proclaimed objectives of the international community in this field. This last part of the thesis develops the principal argument of this study that all rules dealing with the transport of dangerous goods have to form a technically, functionally, and conceptually consistent system, carrying the same objectives, namely the safety of people and property and environmental protection. This can be achieved by transposing the existing system of safety and environmental protection rules into a single, uniform set of rules applicable to all participants in the transportation chain regardless of the mode of transport and the legal jurisdiction in which they are operating. The concluding part of the thesis proposes that the United Nations Recommendation on the Transport of Dangerous Goods be transformed into an international convention. This chapter also establishes the viability of the proposed solution, given both the level of evolution of the existing regulatory and institutional structure and proclaimed commitments of the international community to work towards a highly uniform system in the field of the transport of dangerous goods.
CHAPTER 1
MULTIMODAL TRANSPORT OF DANGEROUS GOODS

1.1. General introduction

The aim of this part is to provide a brief insight into basic technical and legal elements of multimodal transportation, and to pinpoint those issues which decisively contribute to the legal, social and technical controversy associated with the multimodal movement of dangerous goods. The basic understanding of the technical and legal organization of multimodal transport operations in general that this chapter seeks to provide, should contribute to further defining the specific legal and technical controversy associated with the international multimodal transport of dangerous goods. More specifically, this part explains the elements of technical and legal integration of the transport industry as it relates to economic globalization, and analyses these elements against emerging environmental protection rules relative to the transport of dangerous goods.

The analysis is expected to support the underlying argument of this study that besides the very nature of the multimodal transport operation as described in this chapter, the global social risks attached to the transport of dangerous goods by all modes of transport, as elaborated in section 2 of this chapter, require consistency in all the legal instruments governing that particular activity.

1.2. Technical concepts of transport integration

The really crucial element of economic progress is not invention per se since so called "new technology" is usually based on old science, but innovation, whereby the old and new ideas, united with long-term experience, are put to work. The container
evolution is a good example of this process at work. Attempts to increase the efficiency of transport resulted in technological progress and change. One of the most remarkable technological developments in the field of transport has been the introduction of unitization, in particular containerization. It is evident that the ever increasing use of containers has facilitated and promoted the development of a "total - transport system" concept. It is to be emphasized that multimodal transport as a legal concept and container transport as a technical concept have, in principle, nothing to do with each other. Multimodal transport, however, presents the outcome of market requirements for transport integration and was brought about by the so-called container revolution.

Both the ideas to unitize the cargo and to move it by more than one mode of transport from the shipper's door to the receiver's place of business are not new and revolutionary but have been around for years before they fully came into practice. What was new and revolutionary was the development of techniques which facilitated the handling and movement of cargo between different modes, thus making the multimodal transport concept work. However, only with the development of adequate economic, commercial, and legal infrastructure did the multimodal transportation attain full justification.

Unlike containerization which is viewed largely in terms of revolutionary technological change in cargo handling, transport equipment, ports and terminal facilities, and means of transport, the focus of multimodal transport in general terms is the

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organisation of the transport industry and the synchronisation of the distribution system.

Multimodal transport is simply defined as the movement of one unit of cargo from shipper to consignee by at least two different modes of transport under a single contract, single rate and through liability. It is designed to transport the goods in the most cost- and time-efficient way possible. In order to achieve the objectives of multimodality, intensive cooperation and coordination among transportation modes which create the transport network are essential.

A transport network is defined by a set of links and nodes. Transport links are made up of transport routes, such as shipping lines, rail lines, airways, highways or navigable rivers. The nodes are intersection points of the network and connect the links in the system. The conventional function of both links and nodes in the transport network have changed in the multimodal transport concept. The transportation nodes are now not perceived as a final stop for a transport mode but rather as a link in the transportation chain which must be overcome quickly and efficiently.

The revolutionary technological change in transportation associated with containerization and other means of transport and equipment, has provided the necessary infrastructure for the various modes to allow the basic conditions for the flow of the unit of cargo by all modes. The quality of the transport network in the multimodal transport concept is not measured by single-mode potentialities but rather by the degree of connectivity between links or the relative contribution of the single element to the total system.

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2 Hayuth, Id., at 8.
3 Id.
4 Id.
successful movement of cargo in the total transport system can be achieved only in terms of the capacity of individual modes and carriers for interaction with other modes. As far as possible, the individual modes must be readily available, reliable, flexible and rapid, and any adverse impact on safety, the environment, or human life and health must be restricted to a minimum.\(^5\)

The dominance of the conventional, fragmented i.e. single-mode approach in the transport industry has been dispensed with by the integrated approach indicative of the total transport concept which measures all system components as they contribute to the continuous flow of goods through the entire transport chain from origin to destination. The flow of cargoes from production site to delivery point by more than one mode of transport involves a complex network system of links varying in length and capacity and employing multiple modes and participants. This demands a high degree of technical standardization, an appropriate information and communication network, as well as logistic support.

1.2.1. **Unitization**

One truck and one railway journey at each end of the sea voyage in the case of conventional break-bulk transport requires a piece of cargo to go through 33 "steps" of handling and transportation between leaving the seller’s loading platform and arriving at its destination. Only 5 of these steps are actual movements of goods: the other 28 concern the physical handling of the cargo.\(^6\) The pressure towards unitization has come in response to the needs of both shippers and carriers to achieve savings in transport cost per unit of goods

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through the elimination of the manual handling of individual packages at each stage of transfer, and also through the increased efficiency of vehicles and facilities. The shippers have introduced mechanised methods of handling their products in order to achieve economies of scale of distribution. Ship operators have been attracted to unitization as a way of reducing rapidly rising cargo handling costs in ports and also in shortening the time spent in the ports of loading and discharging break-bulk cargo.

Unitization of cargo is therefore a method of handling general cargo. The main characteristics of general cargo are heterogeneity of nature and diversity of shape. These have been major obstacles to the development of mechanical stowage. Mechanical stowage has become possible by the introduction of standardized units of suitable sizes and weights to permit the economical and efficient use of mechanical equipment. The greatest time-saving advantages of the unitization of cargo is generally achieved where a large number of carriers participate in multimodal transport operation and where the cargo is transferred at many different points.

All types of unitization are devised for the handling of a number of individual items as a single unit. However the objectives of this analysis are confined to the container system of unitisation since it is the most widely used means of multimodal transportation.

Containerization and palletization

At the point at which they became capable of penetrating all phases and means of transport without intermediate reloading and with the contents intact, containers have evolved from their initial function as a means of packaging to being a means of multi-modal
transportation. Containerization is now the common denominator of a growing multimodal transport system.

The definition of containers in the ISO Recommendation R-668 encompasses their main features:

(A) freight container is an article of transport equipment, a) of a permanent character and accordingly strong enough to be suitable for repeated use; (b) specially designated to facilitate the carriage of goods by one or more of modes of transport, without intermediate reloading; (c) fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another; (d) so designed as to be easy to fill and empty;

The term freight container includes neither vehicles nor conventional packaging.

Containers come in several types and sizes. They can be classified according to their size, the materials used in their construction and the nature of the commodity to be placed in them. There are containers for regular cargo as well as for refrigerated, perishable, and hazardous cargoes. As regards the size of containers the usual dimensions are twenty or forty feet long with the height and width of eight feet each.8

Although the container is the common denominator of the multimodal transport system which is a recent transport concept, the container itself is not a recent invention. Large containers of various kinds have been used as a means of packaging in inland and overseas distribution for many years. The origin of containers can be traced as far back as 1906 when an 18 x 8 x 8 ft. steel container was used in the North Atlantic trade between the

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7 The cargoes are classified as general cargoes if they are in packed form. Id.
United States of America and Europe. In Europe, London Midland and Scottish Railways first introduced containers in 1926.

Although the potentialities of the application of containers were recognised as long ago as 1931, the revolutionary conceptual metamorphosis from viewing them as only being the boxes and means of packaging to appreciating their capacity for a total integrated distribution system has been long delayed. With the improved economy of the Western World in the 1950s and 1960s and the stirring of some developing countries, particularly in South East Asia, the increased volumes of cargo which began moving internationally come up against the limitations of traditional cargo-handling methods, inefficient port facilities and an older and aging means of transport. The increased volume of cargo on one side and the physical handling of the break-bulk cargo on other side resulted in the slow turn around of ships, heavy congestion of ports, problems of the synchronisation of further distribution of cargo and consequently increase of the transport costs per unit of cargo.

Initially change came in the form of technological innovation: in cargo handling methods, in vehicle design, and in port facilities. With corresponding changes in all equipment and facilities used, such as specially equipped trucks, railroad cars, port installation and ships, the scene was set and ready for the conceptual development of the transportation system: integrated door-to-door transportation.

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9 UNCTAD Report, supra, note 6, at 12.
10 "The use of containers is another direction in which we think greater progress might be made. The great advantages of containers, particularly in minimising the risk of damage and in reducing the cost of handling are so obvious that it is a matter of some surprise to us that they are not more generally used." UK Royal Commission on Transport (Cmd. 3751,1971) at 43, paragraph. 153, quoted from K.M. Johnson, The Economics of Containerization (London: G.Allen & Unwin, 1971) at. 12.
11 R. De Wit, supra, note 1, at 5-10. See also, Y. Hayuth, supra, note 1.
12 Y.Hayuth., supra, note 1, at 12 -15.
It was clear that in order to achieve savings in transport costs per unit and effective service to shipper and consumers, continuous flow through the entire transport chain from origin to destination in the most cost and time effective way is essential. It is the two features, namely, suitability for standardisation and for accommodation of large quantities of goods, that turned the container from being the means of packaging to being the tool of the new transport concept - multimodality. Due to standardised form, a container may be carried by almost any mode of transport and easily transshipped between modes. Moreover due to its size, there is the possibility for large quantities of goods to be transshipped between modes.

Another way to convene cargo for multimodal movement is palletization of packaged goods for convenience of stuffing them into containers or as independent units. The following definition of the pallet appears in the European Convention on Customs Treatment of Pallets used in International Transport:

(A) device on the deck of which a quantity of goods can be assembled to form a unit of load for the purpose of transporting it, or of handling or stacking it with the assistance of mechanical appliances. This device is made up of two decks separated by bearers or of a single deck supported by feet; its overall height is reduced to a minimum compatible with handling by forklift trucks and pallet trucks.

The majority of pallets are constructed as to ensure repeated use, but so-called disposable or throw away pallets are structured to withstand at least one door-to-door journey. The shape and use of pallets seldom varies, certainly not as much as containers

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13 For further reading on the concept of multimodality see J.H. Mahoney, *International Freight Transportation*, (Westport, Eno Foundation for Transportation 1985), at 103-120. See also, R. De Wit, *supra*, note 1, at 1-17.

with respect to the uses to which may be put.\textsuperscript{15} Pallets are widely used in the multimodal transport of dangerous goods for consolidation of plastic and steel drums in which dangerous goods are packaged for transport.\textsuperscript{16}

1.3. Legal concepts: legislative integration

While technical integration of transport seems to work efficiently, the legal problems brought about by containerization are still far from finding acceptable solutions.\textsuperscript{17} The law on multimodal transport is characterised by vast differences between the rules governing different transport modes in respect of administrative and liability regimes. There have been several attempts to create a uniform liability regime for multimodal transport which would work despite this variety of modal liability regimes. One of them is the so-called network system of liability, which seeks to apply existing conventions without any modifications.\textsuperscript{18} When the location where the damage has occurred could not be pinpointed, the system is modified for cases of unlocalised loss or damage.\textsuperscript{19} The so-called uniform system operates on a separate level from unimodal conventions. All liability systems have been criticised, and several attempts have been made to either make mandatory rules, or to create model rules which the parties to a

\textsuperscript{15} UNCTAD Report, supra, note 6, at 12.
\textsuperscript{16} See generally Hazardous Cargo Bulletin, articles on palletisation of dangerous cargo.
\textsuperscript{17} The complexity of the legal problems involved with the multimodal transport has been expressed by Saul Sorkin as follows: “[T]he law travels with the cargo and changes as different modes and laws apply to different modes and as jurisdictional changes bring into play treaties, conventions and different law.” S. Sorkin, “Limited Liability in Multimodal Transport and the Effect of Deregulation,” (1989) 13 Mar. Law. 285, at 288.
\textsuperscript{18} So called a “pure network system.” See generally R. De Wit supra, note 1, at 138-141.
\textsuperscript{19} Id., at 141-143.
contract for multimodal carriage might incorporate into their contract.  The extraordinarily long and difficult negotiation of the United Nations Convention on International Multimodal Transport of Goods, which basically creates a uniform liability system, brought to light the difficulties of the problem, particularly with respect to the conflict of conventions. The United Nations Multimodal Convention is not yet in force, and it is not anticipated that it will enter into force for some considerable time. The above introduction indicates that technical and commercial integration of the transport operation embodied in the multimodal transport has modified the traditional transportation scene. The new commercial and technical practices brought about by multimodal transport have definitely composed a new and different structure in which the definition of goods and the role of a carrier and a shipper have assumed innovative and more complex forms. Shippers and carriers have not only had to adjust to dealing with the transport unit rather than with individual goods, but also to look at the transport operation in a more inclusive manner. International multimodal transport operators have to integrate the services provided by unimodal transport companies operating in different countries into efficient transport logistic and legal chains. To achieve this the transport operators have to offer multimodal contracts in their own name and to assume responsibility along the entire transport chain. Multimodal transport takes advantage of the developments in container based transport logistics to offer better and more cost-

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effective services for shippers. Moreover, multimodal transport offers a responsible relationship between the supplier of services and the shipper requiring the service.

The multimodal transport operator is not a simple intermediary or a shipper’s agent which organises the transport operation without accepting responsibility for the goods; it is an entity responsible to the shipper for the goods under its custody, from origin to destination. It is also responsible to the sub-contracted unimodal carriers that the goods are accurately described in the multimodal transport document, and are fit for carriage. In such a coherent multimodal transport approach, consistent information on the part of all concerned is a key element for the efficient performance of the multimodal system as a whole. This study argues that the international legal environment in which the activity of multimodal transport of dangerous goods operates is not appropriate to stimulate the coherent responsibility of all participants involved.

1.4. Transport of dangerous goods

This section introduces the risks associated with transporting dangerous goods and the effort of the international community to define them and to develop strategies to reduce or eliminate them. The development of more complex chemical products, followed by increased exposure, multiple hazards, and scientific uncertainties, has given rise to a change of methods for defining the risk and assessing its elements.

The fact that the chemical industry and related transportation services benefit individuals and society at large has never been challenged. Disastrous consequences of

Transport Conventions” (1983) 32 I.C.L.Q. at 121.
the transport accidents involving dangerous goods have made it clear, however, that the activity has to be subjected to stringent regulations if the risk is to be prevented. Accidents may take a heavy toll on people’s life, limb, property, and can irreparably harm the environment. The groups at risk are identical to groups which benefit from the transport activity: shippers who can lose their cargo without compensation and can be liable for other losses and damages; carriers who can have their vehicle and other shippers’ goods damaged and further be exposed to third party liability; the crew whose lives and health can be directly exposed to different risks; governments who often incur clean-up costs and restoration of environment; a variety of individual victims who might lose their lives, suffer personal injury, be resettled, lose their income, etc; fishermen who can lose income; the tourist industry which might lose customers; and the general public that might well be deprived of the use of pollution-free public goods such as beaches and parks. Yet, the legitimacy to the activity of the carriage of dangerous goods is not at stake, since it is considered to be essential for life. Rather than prohibiting the activity which is beneficial to the society and its members, the activity is permitted under stringent conditions established by detailed regulations provided it pays its way. The regulations developed to reduce the safety and environmental hazards, and to protect private interests, all attempt to evaluate and define the elements and classes of risks that they seek to prevent or to protect from.

This section explains the nature of risks associated with the transport of dangerous goods in general, and multimodal transport in particular. It also addresses the issue of the

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24 For accidents involving packaged dangerous goods see Appendix 2.
different definitions of dangerous goods and different methods of the evaluation of risks associated with them and the impact of such differences on the legal instruments and their concepts. The diversity of definitions of the same subject category, i.e., dangerous goods, developed for different purposes, reveals for this study a critically relevant fact: the existing legal regime, evolved with the aim of globally combating risks associated with the transport of dangerous goods, is in reality an inconsistent and fragmented set of instruments for dealing with the problem. The inconsistency and the limitations of different pieces of legislation in defining the risks is *prima facie* evidence of the fact that different social and technical standards are not coordinated towards common ends, but continue to promote their narrowly and separately defined purposes.

1.4.1. Specific risks related to the multimodal transport of dangerous goods

The world chemical industry has experienced phenomenal growth during the past four decades. Since the end of World War II the number of chemicals produced has multiplied twenty five times.\(^\text{25}\) Almost 11 million naturally occurring or man-made chemicals have been identified.\(^\text{26}\) About 100,000 chemicals are currently produced on a commercial basis, with 1,500 chemicals, however, accounting for 95 per cent of world chemical production. Approximately 1,000 new chemical substances enter the markets every year.\(^\text{27}\) World-wide sales reached $1,206 billion in 1991, with petrochemicals having the largest share of about 40 per cent. In the same year the chemical industry


accounted for 7 per cent of global GDP, and 9 per cent of international trade. The main geographical markets and production bases are Western Europe, the United States, and Japan, which together account for 90 per cent of world sales and output. The transport of chemicals and other hazardous goods is therefore an essential activity upon which many sectors of the chemical industry depend. The trends over the years in the transport of dangerous goods and materials go hand in hand with such economic developments: dangerous goods transportation is, and will be guided by the growth in international chemical trade. Today more than 50 per cent of all goods carried worldwide are considered as dangerous.

Transportation of chemicals in packaged form supersedes bulk transport due to changed logistic patterns, which in order to provide safe and efficient movement of cargo, favour container transport. The transport of dangerous goods in conventional, container, ro-ro, and similar ships has increased tremendously in the last decades. It is assumed that about 100 million tons of dangerous goods are shipped in containerized form, since more and more shippers realize that the additional protection of the cargo provided by

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30 The international community has recognized that containers provide an ideal haven for the movement of dangerous goods in packaged form. E. Gold., Handbook on Marine Pollution (Arevidal, Norway: Assurance Foreningen Card, 1985) at 50.
31 The progressive use of containers is due to a number of reasons, but most important is the shippers' and carriers' need to integrate door-to-door services through a multimodal transport operation. They provide reductions of handling costs, safety and reliability. See supra, section 1.2.
the container presents a considerable safety and economic advantage. For economic and safety reasons the unitization of general cargo in containers has become an accepted practice on all major trade routes between industrialized nations. Ship-turnaround times have been cut in half and cargo damages reduced.

Despite a great convenience provided by the container transport of dangerous goods, it is evident from reported incidents that there are many specific risks attached to the movement of packaged chemicals multimodally. The danger that some chemicals carried exclusively in packaged form pose to the environment and human health is not proportional to the magnitude of spill but rather to their inherent hazardous characteristics. Some explosives also carried exclusively in packaged form are able to produce explosions "en mass" with catastrophic consequences. The analysis of facts of reported incidents involving hazardous substances in packaged form indicates some points that make their transportation more complex and different from bulk transport of such goods. Packages containing hazardous substances may be lost at sea through adverse weather, collision grounding or accidents on board, or jettisoning in emergency situations to secure the safety of the ship and crew. Packages accidentally recovered by fisherman and other seafarers or washed ashore can, particularly if leaking, pose a risk to human health and the environment. Furthermore, the search, recovery of chemicals and

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33 Id.
the cleaning up is cumbersome, difficult, time consuming and expensive.\textsuperscript{37} In order for cargo to be moved multimodally it has to be packaged in bags, boxes, steel and plastic drums, cylinders, glass and plastic bottles, plastic and can gallons, stackable containers, and the like, and unitized in a single shipment in a pallet or stowed in a container or truck trailer and transported by different transport modes.\textsuperscript{38} This means that a single shipment of dangerous goods moves in different combinations of modes and through different countries. This also means that the same single shipment is being managed by many actors which participate in the preparation of the goods for shipment, carriage, handling, and delivery.

Unlike other cargoes moved multimodally, the objective to be achieved in moving the single unit of dangerous cargo is not only to efficiently move from one link to another, but to efficiently negotiate links and nodes avoiding risks attached to the movement of dangerous cargo. In order to achieve this task, it is of paramount importance that all participants in the transport chain, i.e., shippers, rail, road, sea carriers, are aware of the nature of the cargo they deal with. While the transfer from one to the next mode is carried out without handling the cargo itself, but just by moving the container, the cargo packed inside the container has to withstand the conditions of all modes

\textsuperscript{37} The following extravagant costly salvage operations can be mentioned:
1984: Recovery of chloride gas containers off Ijumuiden;
1984: Recovery of hexafluoride from \textit{Mont Louise}, off the Belgium coast;
1985: Recovery of anti-knock dopes, off Mogadishu, from \textit{Ariadne};
1986: Salvage of the \textit{Coaster Olaf} with a cargo of fly-ash containing substantial quantities of heavy metals, off Den Helder;
1987: Salvage of the \textit{Cason}, off Cape Finistere;
1992: Recovery of containers containing arsenic trioxide and magnesium phosphide from \textit{Santa Clara I}.

\textsuperscript{38} J.L. Alexander, “Packing: A Key to Safe Transport”, seminar paper published in \textit{The Carriage of Dangerous Goods in Containers by Sea} (sponsored by Forth Ports PLC and Centre for Maritime Studies,
Problems frequently occur, since only the shipper\textsuperscript{39} knows exactly what has been packed and the subsequent carriers have no means of knowledge or control over the packing of the container. Whatever cargo is stuffed into containers is hidden from visual inspection by the cargo handling personnel, and other links in the multimodal movement have to rely on the responsible behavior of the shipper and on its documentation.

Furthermore, fragmented international and national regulations often result in limited knowledge of the various conditions that may occur along the entire transport chain. There is no other explanation for the results of container checks made during road and rail transport showing that, on arrival in port, the cargo inside a container had already shifted, been crushed or upset or damaged in some other way.\textsuperscript{40} The accident on a later leg of transport, e.g., at sea, may well be a consequence of the inappropriate stowage or transport conditions of the previous phase of transport. Therefore, the shippers, the packers, sea-rail-road-air carriers, producers, and the providers of the means of transport and packaging, the vehicle's crew, public authorities and agencies involved with the transport of dangerous goods, should all be informed of the exact hazard that a particular cargo present and of the rules which are to be applied to prevent the particular hazard. In particular the international multimodal operator who arranges for the transport via a complex network of different

\textsuperscript{39} The shipper in this context means or includes the consignor, exporter, container packer, or any other person of similar involvement. In principle, its meaning most closely resembles that of "consignor" as defined in the United Nations Conventions on International Multimodal Transport. It should be noted also that multimodal transport operator is also in a position of a shipper towards its sub-contractors.

modes should be familiar with the different modes and the countries' of transit and
destination requirements as to classification, packing, marking, labelling, and
documenting of the shipment.

It would be logical to assume here that, in order to maximize multimodal
efficiency and to eliminate or reduce risk, an integrated and harmonized identification
and management of dangerous goods should be provided along the entire transport chain,
i.e., a uniform set of rules that would be applicable to one single unit of dangerous
shipment.

Recapping the physical movement of dangerous goods from a regulatory
perspective, it is obvious that despite the tremendous drive for international and
intermodal regulatory harmonization and coordination, the regime remains piecemeal,
single-mode oriented, and created by a vast and growing bureaucracy whose activities
overlap, contradict and make regulations user-non-friendly. In such a situation, it is not
surprising that surveys indicate that international regulations on the transportation of
dangerous goods are not observed, to a large extent. Over half the number of units
inspected were found to be deficient in some way. The majority of these deficiencies
concern the identification of containers, documentation, packaging and labelling, and bed
stowage of cargo inside containers.\textsuperscript{41} All deficiencies, although might not present a
violation of all mode-specific regulations, present the danger for all in the transport chain.

This is because, the multimodal transport of dangerous goods introduces intrinsic and

\textsuperscript{41} See Directoraat Generaal voor het Vervoer, \textit{International Inspection Program on the Transport of
Packaged Dangerous Goods in Containers, Final Report.} 1992. See also \textit{Reports on Incidents Involving
Dangerous Goods or Marine Pollutants in Packaged form Onboard Ships or in Port Areas}, submission by
potential danger by virtue of involvement of the "links" of the transport chain. Each member of this chain has the responsibility for the safe movement of the same single unit of transport.

Although the international community under the leadership of the United Nations and its agencies has made a sturdy move towards setting up uniform standards designed to govern all modes of transport of dangerous goods worldwide, the numerous national and international regulations are still confusing shippers and carriers. Work on the harmonization of laws of the transport of dangerous goods, is being hampered by its vast scope and by different national interests and needs.

1.4.2 Different definitions of dangerous goods

The safe and sound movement of dangerous goods from the origin to destination, can only be ensured if every member in the transportation chain knows their exact nature and handles them in conformity with rules developed for the safety purpose. For these reasons all regulations concerned with the transport of dangerous goods consider the determination of the nature of goods and informing other participants in the transportation chain as a prerequisite for their safe handling. The question is how the person responsible to pass information about the dangerous nature of goods defines them? The problem is two -fold. First there is no generic definition of dangerous goods to serve as a common ground for building a uniform safety, environmental protection,

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42 A FCL from Austria via Bremen to Japan may require the observance of fifteen national regulations, see Brünings, supra note 33, at 297.
and liability strategy.\textsuperscript{43} Second, there is no single list of specific dangerous goods applicable to all modes of transport, and employable by all legal sectors concerned with the transport of dangerous goods. Whilst the lack of one common generic definition discloses fragmentation of concepts dealing with transportation of dangerous goods, namely safety, environmental protection, and liability, the lack of a single list of specific dangerous goods indicates both fragmentation of concepts, and fragmented application of the safety standards in practice.\textsuperscript{44}

There exist a number of scientific and legal definitions and interpretations of the term "dangerous goods", all of them used in specific contexts, or for the purposes of particular technical or legal instruments. None of them is all-encompassing. The resulting numerous definitions and lists of dangerous materials have led to confusion and problems, particularly in terms of the distribution of responsibilities.

Attempts to define or to categorize such materials and to agree on a comprehensive international classification scheme or standard nomenclature has proven difficult. Typical hazardous substances defined \textit{stricto sensu} according to their physical properties are toxic, corrosive, ignitable, explosive, chemically reactive. The generic terms "hazardous cargo," "hazardous substances," "dangerous goods," "noxious and toxic substances" have all attempted to capture their properties and the risks that such properties carry.\textsuperscript{45} The term

\textsuperscript{43} It has already been established that the risks that dangerous goods pose, because of their multiplicity and conjunction of risks, must be looked upon not only in individual but also in social terms.

\textsuperscript{44} Shippers, carriers, packers, terminal workers, stevedores, consolidators and other participants are not concerned with generic definition of dangerous goods but with very specific descriptions of their properties and methods for their safe handling.

"toxicity" is described in terms of "hazardousness." A toxic substance is also defined as any material or chemical mixture, whether useful or intended to be discarded, which may present an unreasonable risk of injury to health or the environment. Potential injuries posed by such substances range from death, at one extreme, to disease and birth defects at the other. "Toxicity," then, is a biological measure of harmfulness.

Different policy-making and scientific bodies have also tried to encapsulate the definition of dangerous goods within a generic concept of dangerousness but eventually ended up with using a methodology of identification of risks and their classification under the two main headings, dangerous goods and pollutants. For example, in the proposal for the directive submitted by the European Commission to the European Council, substances and preparations were considered "dangerous" if they were explosive, oxidizing agents, easily flammable, flammable, toxic, harmful, corrosive, irritant, or dangerous to the environment, that is to say, if their use entailed or might entail immediate or delayed adverse effects on the environment.

National and international regulations concerned with the safety of people, protection of cargo and the general environment, rather than defining them, describe their physical hazardous properties and classify them according to their hazard. These instruments then go on to list the very

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46 The meaning of "toxic substances" is ambiguous. For example, M. Olga & L. Andrew, (1977) Federal Environmental Law: the User's Guide, at 37, includes seven substantive toxic-related definitions, including toxic pollutants, toxic substances, and toxic waste, among others.


49 See infra, Chapter 3, section 3.2.
large number of substances and articles according to the nature of their risk.

The particularly significant attempts to extract elements of "dangerousness" and, consequently, abstract them into a general definition, have been made within the field of environmental protection. For example, MARPOL makes a significant effort to define the deleterious properties of dangerous goods in terms of pollution, using an amended form of GESAMP's limited definition of pollution:

Pollution means the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazard to human health, hindrance to marine activities including fishing, impairment of quality for use of seawater and reduction of amenities.

The United Nations Convention on the Law of the Sea (UNLOS), and the International Convention for the Prevention of Pollution by Ships (MARPOL 1973/78), both identify substances as harmful to the marine environment if they, when introduced into the sea, are liable to cause pollution in terms of GESAMP's definition. Article 2(2) of MARPOL 1973/78 also employs polluting characteristics of substances carried in ships when generally defining their hazardous character:

Harmful substances means any substances which, if introduced into the sea,

GESAMP is an advisory body consisting of specialized experts nominated by the sponsoring agencies (IMO, FAO, UNESCO, WHO, IAEA, UN, UNEP) with the principal task of providing scientific advice on marine pollution problems to the sponsoring agencies and to the Intergovernmental Oceanographic Commission (IOC).


Article 1(4) UNCLOS follows GESAMP's definition including "harm to marine life."
are liable to create hazard to 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.

MARPOL 1973/78, goes further to specify vessel-carried polluting substances as follows: 1) oil; 2) noxious liquid substances carried in bulk; 3) harmful substances carried in packages, portable tanks, freight containers, or road or rail tank wagons, etc.; 4) sewage from ships; and 5) garbage from ships referring to the list of hazardous substances developed by the International Maritime Dangerous Goods Code (IMDG).

The 1973 Protocol Relating to the Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, uses a combined method to define harmful substances (other than oil): it refers to the specific list and defines them in terms of their liability to create environmental pollution. In Article 1(2) it defines substances other than oil as:

(a) those substances enumerated in a list which shall be established by an appropriate body designated by the Organization and which shall be annexed to the present Protocol.

(b) those other substances which 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.

So-called public or administrative conventions, aimed to impose safety standards under which dangerous goods may be transported, such as the Convention for the Safety of Life at Sea (SOLAS), Regulation Concerning the Carriage of Dangerous Goods by Rail

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the European Agreement Concerning the International Transport of Dangerous Goods (ADR) do not provide the definition of dangerous goods, but describe and classify them according to the risk that they pose in the course of transport. The definition of dangerous goods is based on evidence of their hazardous character measured in the light of the risk they pose to human life and health, public welfare, fauna, flora, and the general environment, the only reliable criteria for their definition. However, it is to be noted, that an understanding of the effects of chemical spills, although increased dramatically over the last decade, remains limited by uncertainties.

The inability of science in the field of chemical research to catch up with technological development and to identify the properties and the nature of the hazards of all chemicals which appear on the market, has determined the method of defining them for the purpose of transportation. The definition of hazardous substances for the purpose of their transport is therefore confined to the evaluation of the risk they present in general, and when transported, in particular. The risk assessment of chemicals is determined with regard to their physical characteristics i.e., explosivity, reactivity and flammability, their toxicological and environmental hazard, and with regard to the means of packaging and transport. On the basis of these fundamental criteria, dangerous goods are described, classified and defined accordingly. The goods whose properties are not identified or which are too dangerous to be...
carried - due to their dangerous properties or to their reactivity to transport conditions - are not listed in the regulations, and therefore are not allowed to be carried. Substances are classified on the basis of criteria and tests adopted within international instruments - regulations governing the modal transport of dangerous goods. There have been significant differences in test criteria, and therefore, in the outcomes between modal regulations. As a result, there is inconsistency in their allocation to the appropriate class, and therefore, in their definition.

Civil conventions which deal with the contractual and extra-contractual liabilities of the contractual parties, such as the Hague-Visby Rules, ⁵⁹ the Hamburg Rules, ⁶⁰ the United Nations Convention on the International Multimodal Transport Convention, ⁶¹ Convention on the Contract for the International Carriage of Goods by Road (CMR), ⁶² Convention Concerning International Carriage by Rail (COTIF), ⁶³ the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS), ⁶⁴ and the Convention on Civil Liability for Damage caused During Carriage of Dangerous Goods by Road, Rail, and Inland Navigation Vessels.

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⁵⁸ For a more detailed discussion of SOLAS see, infra, chapter 3, section 3.2.3.1.
are even less specific. They do not define the terms "goods of dangerous nature" or "dangerous goods." With the exception of COTIF, they provide the reference by which the dangerous goods can be defined for the purpose of allocation of liabilities to private interests. This way they permit the common law to establish a flexible test for the identification of such goods, and to assimilate the category of regulated dangerous goods into a private law generic definition of dangerous goods.

Private law instruments, with the exception of COTIF/CIM, do not confine the definition of dangerous goods but extend it to any cargo which can endanger interests of the contractual parties for reasons which are unrelated to their physical properties. It has been settled law at least since Chandris v. Isbrandsten Moller Co. Inc. that the word "dangerous" in the expression "goods of ... (a) dangerous nature" must be given a lato sensu interpretation, meaning that dangerous goods are not confined to goods of inflammable or explosive nature or their like, but should be given broad meaning. When a contract of carriage or a charterparty employs words "injurious, inflammable, or dangerous goods" the words are used by way of exemplification and not by way of restriction. As will

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66 The British Merchant Shipping Act, 1894 (U.K.) 57 & 58 Vic. c. 60, made an attempt to provide a list of such goods, referring to "aqua fortis, vitriol, naphtha, benzene, gunpowder, lucifer-matches, nitroglycerin, petroleum, any explosive within the meaning of the Explosive Act 1875, and any other goods of a dangerous nature" "Dangerous goods" as referred to in Article 4(6) of the Hague/Visby Rules use the expression, "Goods of an inflammable, explosive or dangerous nature," which seems narrower than the common law definition, which includes not only physically dangerous cargo, but also cargo which is, for example, susceptible of causing legal detention of the vessel.
68 In Chandris v. Isbrandsten –Moller Co. Inc. the question was whether turpentine was a dangerous cargo, when the charter party prohibited the shipment of "acids, explosives, arms, ammunition or other dangerous cargo." Mr. Justice Devlin applied the ejusdem generis rule to such a clause and found that turpentine was a dangerous cargo. See also Effort Shipping v. Linden Management SA (Giannis N.K) [1994] 2 Lloyd's Rep.
be seen later in this study the failure of private law instruments to make the distinction between "regulated" and other dangerous goods and to develop an effective concept of the allocation of liability for such goods, has led to an undifferentiated application of a general private law regime on "public dangerous goods." While the private law regime did recognize the category of dangerous goods, it did not specifically recognize the "subcategory" of "regulated dangerous goods". As a result the private law regime does not introduce some more specific regime for the regulated dangerous goods preferred on the ground that for these goods a "public law framework" exists to protect not only goods and life but also the general environment. This situation, according to the arguments of this study, reduces the desired capability of different rules to achieve common ends, namely, the safety of people, property, and the general environment.

The third party liability conventions, such as HNS and CRTD, were developed to protect the general public's interests. Their reference to the public law list of dangerous goods clearly indicates that they employ a *stricto sensu* definition of dangerous goods. The HNS and CRTD conventions do not attempt to provide all capturing legal definitions of dangerous goods. However, the declared purpose of these conventions and their explicit reference to dangerous goods described and listed in other legal instruments concerned with public safety and environmental protection, do not allow for extensive interpretations of what is meant by "dangerous goods" in the context of these conventions.

What is obvious from the above analysis of different definitions of dangerous goods

69 See Article 1(9) of CRTD and Article (1) (5) (iv) of HNS which refer to ADR and IMDG Code
is that there is no common generic definition of dangerous goods. Nor does there exist a single list of dangerous goods. It is, therefore, clear that the basic unifying element, namely a common definition of dangerous goods, needs to be developed, in order to unify the fragmented legal system. Such definition is possible to develop within the world convention which this study proposes. The definition contained in this convention might be a combination of two composite elements. First, a general definition would be accepted in the normative part of the convention, providing for a generic definition, and capturing all individual and social risks attached to the transport of dangerous goods.\textsuperscript{70} The second element of the definition would form part of regulations of specific substances. It would constitute the list of dangerous goods described in terms of specific hazards, and classified accordingly. Such a definition, besides helping to uniformly define the classes of interests that the convention would seek to protect, would help participants in the transport operation to rely on a harmonized and user-friendly set of regulations when determining the actual hazards of the substances being carried. Furthermore, such a definition would inform other pieces of law, such as private law, of the due care standards to be applied in the liability allocation context.

Presently, harmonization of the criteria for classification, labelling and, hence, defining of dangerous goods for transport is the ongoing task of the experts of international organizations.\textsuperscript{71} However, without a minimum consensus on principles between the concerned parties, namely, governments, industries and science, it is hard to direct the work respectively.

\textsuperscript{70} As MARPOL 73/78, SOLAS, UNCLOS and other environmental law conventions and scientific undertakings do.
of harmonization towards development of the convention. Their shared concern is voiced through diplomatic conferences, international and national organizations, non-governmental organizations, and industry associations. A consensus of all parties concerned with the problem is therefore imperative if internationally harmonized instruments are to be adopted.

The following chapter of this survey will further explore and evaluate the policy framework within which the harmonization of rules and the coordination, participation, and cooperation of all actors concerned with the transport of dangerous goods are identified as the international community’s primary policy objectives.

\[71\] For a more detailed discussion of the harmonization work see *infra*, chapter 3, section 3.2.4.1.
CHAPTER 2
TRANSPORT OF DANGEROUS GOODS: POLICY AND INSTITUTIONAL BACKGROUND

2.1. Introduction

This chapter identifies premises from which the international community proceeds in governing the transport of dangerous goods. Those premises are the principles, objectives, and relationships that have been applied through numerous international governmental and non-governmental organizations and industry associations, and that have found expression in numerous international provisions on the transport of dangerous goods.

The identification of the principles, strategies and forums that the international community has established to combat the risks attached to the transport of dangerous goods serves a double purpose. The first purpose of the policy background analysis is to provide elements for comparative evaluation of existing laws on the transport of dangerous goods against the international community’s principles and strategies.

This analysis will help to demonstrate the general controversy associated with the law on the transport of dangerous goods, i.e., inconsistency between the international community’s proclaimed objectives, and the law on the subject matter. While the majority of nations of the world have unequivocally spelled out the necessity for comprehensive and holistic way of law-making, interpretation and application, including a coordinated approach among all relevant actors and interests, the laws on the subject matter remain fragmented and piecemeal. The analysis also introduces the underlying policy theme that, the more homogeneous the regimes on the transport of dangerous goods and the less divergent their
interpretation, the greater their effectiveness with respect to safety, environmental protection and the economies of the transport and chemical industries. This theme supports the principal argument of the thesis that laws governing the transport of dangerous goods need to be unified in order for them to achieve common ends: safety of people, property and the environment, the just and prompt compensation of victims, and the facilitation of the activities of the transport and chemical industries.

An historical review of the international community's activities related to the topic of the transport of dangerous goods clearly identifies the three phases of their development. The first phase is related to maritime transport where the "protection reflex," prompted by the "post-catastrophic" syndrome, first emerged. This "safety reflex" urged the international community to collectively review the topic of navigational safety and develop numerous international instruments dealing with it. However, the international regulations for safety at sea in this first phase which took place from 1914, when the first SOLAS was negotiated, to the late 1960s, seems not to be a result of the global strategic initiative to protect global and universal values. The topic of safety, in this first phase, was viewed in relation to the packaging and labelling requirements of the cargo, and the vessel's equipment and operation, without any consideration for the protection of the marine environment.

The Torrey Canyon disaster in March 1967 brought about a change in attitudes and the introduction of new concepts in international law dealing with the transport of dangerous goods. After this disaster, the international community came to realize that there was a fundamental legal vacuum, and that there were no proper international rules to deal
with the pollution problem. Furthermore, the rapid increase in the international transportation of chemicals by all modes of transport brought about the need for the development of new criteria for the evaluation of the problems of transporting dangerous goods. The recognition of the vital and global importance of the marine environment made the safety of global transport of dangerous goods a highly relevant topic for marine pollution prevention. As an outcome of magnified environmental concerns, the complex and comprehensive policy, legal, and scientific system related to the topics of safety and marine pollution prevention were developed. The 1972 Stockholm Declaration of Principles on the Human Environment,¹ the United Nations Convention on the Law of the Sea (UNLOS),² and numerous International Maritime Organization’s safety and environmental standards were developed in this second phase to ensure a consistent follow-up of the international community objectives in the field of marine environmental protection. In particular, the Stockholm Conference adopted a Declaration enunciating a set of twenty six principles and an Action Plan³ containing 109 recommendations for environmental management.

The later UN Conference on Environment and Development (UNCED) in 1992⁴ can be said to have featured a law-making process in the third, contemporary, phase of the development of safety and environmental protection instruments. The Rio Conference

³ Supra, note 1 at 6-28.
produced two principal instruments, the Rio Declaration on Environment and Development and "Agenda 21" containing governing general principles and the program areas for the future action, developed with the aim of establishing a genuine "world partnership" to work towards sustainable development. It also was the first forum to pronounce the multiple interrelation between people's rights to development and their right to preserve the environment for their benefit and that of future generations.

The Rio Conference re-affirmed and further developed the notion that the environment can be effectively protected only if all relevant factors work in a global partnership towards the creation of an integrated legal mechanism to protect the environment. But it went further to consider the problem of carriage of dangerous goods in contexts of both the prevention of marine pollution and of chemical risks. It changed the perception of the direction in which the safety and international environmental instruments governing the transport of dangerous goods should continue to develop. The principal outcome of the Rio Conference is the creation of the sustainable development concept, defined in terms of the right of all people of the world to a healthy and productive development in harmony with nature.

The overriding importance which environmental protection has come to acquire, has also produced effects in relation to safety and liability issues. After the Rio Conference the safety, environment, liability, and the efficiency of transport are increasingly being considered to fit into the same context and to further the same objectives of sustainable development.

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The 1972 Stockholm Declaration of Principles on the Human Environment (UNCHE), the Rio Declaration on Environment and Development adopted by the UN Conference on Environment and Development (UNCED in 1992, may be said to have set the objectives and principles to govern the laws on the transport of dangerous goods. These two instruments of "soft law" established the framework for international action to provide guiding principles for the conclusion, interpretation or application of legally binding instruments (treaties) or non-legally binding instruments (declarations, resolutions or a set of guidelines) and for the establishment of appropriate institutional arrangements and viable funding mechanisms for obtaining the objectives defined. They have also laid down


6 *Supra*, note 1.
7 *Supra*, note 4.
8 *Agenda 21 and The Rio Declaration on Environment and Development* are major new examples of "soft law," based "on political agreement rather than on legally binding instruments." "Although not legally binding," "soft law" instruments "provide a basis for voluntary cooperation, which enables the action process to proceed expeditiously and paves the way for negotiation of binding agreements." M. Strong, "Beyond Rio: Prospects and Portents," (1993) 4 *Colo. J. Int'l Envtl. L. & Pol.* 21, at 33. Unlike "hard law," which comes mainly from custom or treaties, "soft law" relies "on general statements of principle. Soft law instruments focus on building consensus on a particular issue, while leaving more binding commitments for subsequent agreements." *Id.* at 31, n.30; It is important to recall that the term "soft law" is not exclusively referred to by international law scholars to principles found in a policy-instruments, but also to the secondary non-binding regulatory instruments such as guidelines, recommendations, standards, best practices, etc. Some scholars tend to classify them into the "hard law" category for they are widely accepted and incorporated by reference or otherwise into international and national binding instruments. For further comment related to a discussion of "hard" as opposed to "soft law" see *infra*, note 11; See also G. Palmer, "New Ways to Make International Environmental Law," (1992) 86 *Am. J. Int'l L.* at 259- 269.

9 The Expert Group on Identification of Principles of International Law for Sustainable Development states that the role principles might play in international law includes the following:

- to assist in the development of new legal instruments;
- to assist in the interpretation and application of treaty and other obligations;
- to establish norms of a substantive nature, such as Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration;
- to establish obligations of a procedural nature, such as the principle of informed decision-making, the principle of public participation; and
- to assist in the elaboration of detailed obligations (relating, e.g., to levels of emissions of pollutants, time frames for compliance etc.), such as the principle of common but differentiated responsibility. See *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development* (Geneva, Switzerland, September, 1995) U.N.Doc. 48. (1995).
responsibilities of the regulatory and other bodies for ensuring that international and national legal norms are compatible with these objectives and principles.\textsuperscript{10}

The following section traces the origin and patterns of the international community’s orientation towards creating integrated policy in the field of transport of dangerous goods. In addition, the attempt is made to define those legal principles and institutional forms which may be considered to be critical for the adoption, interpretation, and application of the international instruments governing the transport of dangerous goods by all modes. In this part of the study the relevant principles and recommendations of “soft law” and “hard law” instruments and their impact on the regulatory role of international bodies is reviewed.\textsuperscript{11}

2.2. Interface between the transport of toxic chemicals and sustainable transport development

The environmentally sound management of toxic chemicals is viewed as essential to prevent the continuation of the mistakes of the past. The chemical industry has developed without sufficient knowledge and consideration of its impact on human health.

\textsuperscript{10} The impact of these instruments on the law-making process in the field of transport of danger goods will be explained in more details in the following sections of this chapter.

\textsuperscript{11} The role of “soft” and “hard” law in the international law-making process is still an unsettled issue. As already established, more and more nations comply with and accept the principles set forth in global declarations, and thus the lines between "soft" and "hard" law grow vague. The general principles have often formed the basis for new legal agreements and have thereby been transformed into hard law. Detailed analysis and elaboration on the legal nature of “soft” and “hard” law is beyond the scope of this study. There is, however, a substantial bibliography dealing with the problem. For a good summary of the policy-oriented legal scholars on the issue of whether the international rules that are treaty-based are needed to “secure common values,” or non-treaty instruments assume the role of “hard law” because primary goals of the “hard law” cannot be achieved without the secondary means of non-treaty instruments. See R. Higgins, Problems and Process: International Law and How We Use It (Oxford: Clarendon Press, 1994). See also R. Higgins “Policy Considerations and the International Judicial Process”, (1968) 17 I.C.L.Q 58–84; P.W. Birnie and A.E. Boyle, International Law and the Environment (Oxford: Caledon Press, 1992) 251-299; P.W.Birnie, P. “The Role of International Law in Solving Certain Environmental Problems.” In: J.E. Carroll (ed.) International Environmental Diplomacy: The Management and Resolution of Transfrontier Environmental Problems (New York: Cambridge University Press, 1988); T. Gruchalla-Wesierski, “Framework for Understanding Soft Law,” (1984) 30 Mc.Gill L. Rev. 37-88; C.Chinkin, “The Challenge of Soft Law; Development and Change in International Law”, (1989) 38 I.C.L.Q.
and the environment. A precautionary principle was, in general, not applied that is, chemicals were not examined for health and environmental risks before being entered into production, transport and use. If a risk assessment was made, it was mostly with risk to human health and material goods in mind. The additional aspect of risk to the environment is a fairly recent consideration and methods for its assessment are still in the initial stages of development. The long-range effects of pollution, extending even to the fundamental chemical and physical processes of the earth's atmosphere and climate, are only just becoming understood and the importance of those effects is becoming recognized only recently as well.\textsuperscript{12}

At the same time, it is recognized that the use of chemicals is essential to the development process and to the promotion of human well being. Chemicals are extensively used by all societies, irrespective of their stage of development. However some very well known accidents in the course of their production, transport, use and disposal, accompanied with increased empirical and theoretical research, has made it clear that chemicals can take a heavy toll on human health and harm the environment.

Recognizing the socio-economic importance of the use, and therefore production and transport of chemicals on one side, and the risks associated with these activities on the other side, chapter 19, Paragraph 19.1. of Agenda 21 calls for equitable and orderly balance between environmental and developmental goals in the management of toxic chemicals. This goal is believed to be ensured through implementation of the sustainable development principles of the Rio Declaration. It states:

\textsuperscript{12} Report of the Conference of Industry, the Environment and Human Health: In Search of Harmonious
A substantial use of chemicals is essential to meet the social and economic goals of the world community and today's best practice demonstrates that they can be used widely in a cost-effective manner and with a high degree of safety. However, a great deal remains to be done to ensure the environmentally sound management of toxic chemicals, within the principles of sustainable development and improved quality of life for humankind.

Given the global scope of the problem, but the lack of sufficient scientific information for the assessment of risk entailed by the use of a great number of chemicals, the document recognizes that the fragmented and sectoral approach of the international community to identifying, assessing and preventing the risk should be eliminated.

The Rio principles in general and the program on toxic chemicals and the transport of dangerous goods in particular, are “aimed at integrated solutions.”\(^\text{13}\) They strive towards the "globalization or holistic treatment of the environment,”\(^\text{14}\) taking into account the need for development and the unhampered growth of the chemical and the transport industries. The program recognizes that these objectives can be best achieved if governments, international organizations, non-governmental organizations, industry, and the scientific world would apply the backbone concepts and principles of sustainable development, namely: the principle of interrelationship and integration,\(^\text{15}\) international coordination\(^\text{16}\) and cooperation, the precautionary principle, the polluter-pays principle.

This study advances the argument that achievement of the goal of sustainable

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\(^{14}\) *Id.*

\(^{15}\) The principle of interrelationship and integration is declared by principles 3 and 4 of the *Rio Declaration* and further developed in Chapter 19 of *Agenda 21* and presumes comprehensive and holistic way of law-making, interpretation and application, requiring a coordinated approach among all relevant actors and interests.

\(^{16}\) Chapter 39 of Agenda 21 refers to the two issues of coordination and consistency among international legal instruments and mechanisms. The former involves the need to clarify and strengthen their
development in the transport and production of dangerous goods requires a uniform and authoritative set of safety and environmental rules to be imposed by states on the industry. This assertion might seem unjust to the industry which has played an essential role in developing non-binding codes, guidelines and voluntary standards which it has implemented through its own instruction and control systems. However in advancing the proposal for binding instruments to govern safety and environmental standards by all modes of transport, this study establishes the need for an international legislative approach to the harmonization which would give the industry’s best voluntary practices and science’s initiatives the needed authority, and thus ensure their uniform enforcement. The principles of sustainable development when analyzed in a context of multimodal transport of dangerous goods supports this assertion.

The principles of interrelationship and integration in a context of multimodal transport of dangerous goods are self-explanatory; they require consistency within safety, environmental and liability rules and amongst them. According to this study, if this principle was to be applied to the multimodal transport of dangerous goods, it would entail that the same regulations should travel with a dangerous cargo regardless of jurisdiction and mode of transport. Any differences should be permitted based only on

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17 IMDG Code is a result of an industry initiative to bring about the harmonization of different national and industry’s voluntary safety standards and practices. It has actively participated in updating them. Another example is the chemical industry which has also brought about many voluntary approaches. It is worth mentioning European Chemical Industry Council (CEFIC) initiatives which, together with International Council of Chemical Association has developed a number of voluntary actions designated to improve environmental performance, such as Responsible Care Initiative, International Chemical Environment Program. They are aimed at preventing chemical transport incidents and responding effectively if and when they occur. Their Safety and Quality Assessment Systems (SQAS) apply to the performance of trucking, shipping and storage companies.
mode-specific technical conditions.\textsuperscript{18} This study argues that existing differences and conflict of these rules can only be avoided if technical standards are harmonized globally by means of a binding convention. The industries' vital role in setting safety and, lately, environmental standards and in implementing them through voluntary commitments, programs and agreements, along with its resources, skills, experience and technical cooperation should be used to nourish the uniform legislation and implementation of multimodal regulations.

The industry indeed plays an essential role in the international law and policy making process in the field of the transport of dangerous goods. The best example is participation of industry's associations in harmonizing the classification and labelling of chemicals which arose out of the Program area B within chapter 19 of Agenda 21.\textsuperscript{19} It should be mentioned here that these UN efforts, because they are a non-treaty initiative, are not backed by legal authority sufficient to make the harmonization fully effective in practice.\textsuperscript{20}

The principle of coordination and cooperation may be viewed as an implementing device for accomplishing sustainable development objectives in the field of transport of dangerous goods. The obligation of states to cooperate is embodied in the 27\textsuperscript{th} (the last) principle of the Rio Declaration.

States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this declaration and in the future development of international law in the field of

\textsuperscript{18} Sustainable development will be enhanced if competing legal rules strive as a first step towards compatibility, and as second step, towards mutual support. Conflict between rules should be avoided.

\textsuperscript{19} For the list of industry associations participating in the harmonization process see Appendix I.

\textsuperscript{20} For an impact of the UN harmonization work on creating a legal regime on the multimodal transport of dangerous goods is better explained in Chapter 3, section 3.2.4.1.
sustainable development.\textsuperscript{21}

After the Rio Conference coordination and cooperation in the field of the harmonization of safety and environmental standards applicable through the life-cycle of chemicals has been established. Coordination and cooperation is done among United Nations Committee of Experts on the Transport of Dangerous Goods (UN CETDG), the International Program on Chemical Safety (IPCS), \textsuperscript{22} the European Union (EU), and OECD. It has also been established among the Economic Commission for Europe (ECE), United Nations Environmental Program (UNEP), International Labor Organization (ILO), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Industrial Development Organization (UNIDO), and OECD on the Inter-organization Program for the Sound Management of Chemicals (IOMC) which includes harmonization of trade provisions. IPCS has been given the role of lead Coordinating Group.

To varying degrees, the program areas involve hazard assessment (based on the intrinsic properties of chemicals), risk assessment (including assessment of exposure), risk acceptability and risk management. Furthermore, Agenda 21, chapter 19, calls for a common scientific base to be provided for these activities in order for the international community to consistently legislate preventive measures applicable within the entire life-cycle of chemicals. In this respect, the document calls for major research efforts to be

\textsuperscript{21} \textit{Rio Declaration, supra}, note 4, Principle 27.

\textsuperscript{22} The IPCS is an inter-sectoral coordinated and scientifically based program with the WHO as executing agency. The IPCS, established in 1980, is a joint program of the cooperating organizations, ILO, WHO, and UNEP to implement activities related to chemical safety. The two main roles of the IPCS are: 1) to establish the scientific basis for the safe use of chemicals and 2) to strengthen national capabilities and capacities for chemical safety.
launched in order to improve methods of assessment of chemicals, as work progresses towards a common framework for risk assessment and the harmonization of the classification of chemicals for different sectors of application (production, use, transport). In accordance with the recommendations contained in the Program on toxic chemicals of Agenda 21, globally harmonized hazard assessment classification and labeling systems are being developed to be capable of intersectoral applications. The classification is based on the hazard assessment, i.e., the risk the chemicals pose to people's health and the environment. It builds on the comprehensive scheme for the safe transport of dangerous goods elaborated within the United Nations system in current use, (a scheme which mainly takes into account the acute hazards of chemicals).

As will be seen in the next section of this chapter, and in chapter 3, the work of the numerous bodies involved in regulating the transport of dangerous goods are being co-ordinated to meet this basic principle of the chemical safety program requirements. The final harmonized system because it embraces all aspects of classification, labelling and hazard communication both with regards to transport and the use of products is designated to assist international trade and to ensure safety and environmental protection. The present system is essential for the harmonization of multimodal safety requirements. However, it is not anticipated to become a binding safety instrument for states. It is left to the downstream, i.e., modal and national legislation to change their laws to enable industries to ensure the use of the system on a worldwide basis.

The concept of prevention of environmental harm, embodied in Principle 14 of the Rio declaration, is based on the idea that the protection of the environment is best achieved
through anticipatory measures to prevent harm rather than post-hoc efforts to repair or provide compensation for it. It may in fact be impossible to repair environmental harm once it has occurred. Furthermore, compensation is a poor substitute for clean air or water and can not make up for the loss of flora and fauna. The precautionary principle which is closely related to the principle of prevention\textsuperscript{23} indicates that lack of scientific certainty is no reason to postpone action to avoid potentially serious or irreversible harm to the environment. No single definition of the Precautionary Principle has prevailed and interpretations vary. However the general idea is that where there is a sufficient ground for believing that an activity or a product is likely to cause threat of serious and irreversible damage to health or the environment, measures must be taken to reduce or to prevent that activity. In the context of the transport of dangerous goods, the principle is to be interpreted that the activity should be restricted only to carriage in accordance with safety and environmental rules. In the multimodal transport of dangerous goods this can be attained only if one single set of mandatory rules follows the unit of dangerous cargo.\textsuperscript{24}

There is a connection between the principle of prevention of environmental harm and the polluter-pays principle promoted in Principle 16 of the Rio Declaration. According to the polluter-pays principle, it is important that the environmental costs of economic activities, including costs of prevention of potential harm, be internalized rather than imposed upon society at large. In the multimodal transport of dangerous goods this means that international instruments should be based on operational

\textsuperscript{23} Rio Declaration, supra note 4, Principle 15.
\textsuperscript{24} For precautionary principle see F.Cross “Paradoxical Perils of the Precautionary Principle” (1996) 53 W. & L. Law Review 851-925.
responsibility for liability to the parties suffering damage while enhancing positive attitudes towards safety. Existing liability instruments with the strict liability and compulsory financial insurance, while ensuring appropriate compensation to the victims must not lower the standards and practices in the movement of chemicals by sea. \(^{25}\) Although the precautionary principle is not capable of having direct effect in the laws of states, it presents guidelines for the law makers.

The principle, as construed in this study, informs the direction in which the safety and environmental regulations governing all modes transport should take. To eliminate the fragmented nature of safety and environmental standards, partly caused by the non-mandatory nature of multimodal standards, means to ensure that this principle is efficiently implemented. \(^{26}\) The legislative step proposed in this study, as discussed in chapters 4 and 5, has a potential of enhancing operational liability while improving the safety standards at the same time, the two aspects which are the core of both prevention and polluter pay principle.

2.3. Safety as a key to sustainable transport development

The care for safety of people and property during the transport of dangerous goods is not a recent phenomenon. Neither is the attempt of the international community to enhance both the safety and efficiency of transport through the harmonization of standards and compatibility of different national and modal rules a new one. The substantial body of national and international rules governing the handling of dangerous goods being

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\(^{26}\) For a discussion of an impact of fragmentation of safety regulations on their application to the strict liability concept see *infra*. Chapter 5.
transported has been developed to ensure that the lives of crews and other persons involved in the transport of dangerous goods, as well as property, are preserved. At the same time the international community has been making efforts to harmonize different national and international safety standards. These efforts demonstrate an awareness in the international community that, in order to make this type of carriage safer and more efficient, safety standards cannot be dealt with by the individual state and individual mode of transport, but only by the internationally harmonized body of rules applicable across the board. Only recently, however, did it become apparent that, given the unprecedented types of damages and the global consequences of accidents, the unsafe transport of dangerous goods is also detrimental to the environment and, therefore, to sustainable transport development. In addition, given the world-wide economic interests at stake, it has been realized that the rules providing for safety must be enforced on as broad a basis as possible so as to lessen the adverse effects on the competitiveness of national transport industries and to increase the efficiency of multimodal transport.

Since safety and environmental protection, are being increasingly viewed as two

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27 For a discussion of the harmonization efforts see infra, Chapter 3.2.4.1.
28 The OECD report on competitive advantages in shipping demonstrates the very substantial cost advantage which substandard operators obtain through non-observance of international rules and standards. Surveys published in the OECD report show that operating costs of a shipping company complying with all international safety standards are 10-50 per cent higher than those of substandard operation. Complying with good practice makes costs for 80-100 per cent higher than substandard maintenance. Maintaining a ship at maximum safety levels will require up to 300 per cent more expenditure. It is clear that non-compliance with or non- adoption of international standards provides competitive advantage. Related to this is the fact that 56 per cent of EC beneficially owned tonnage is now flagged out to the "new" maritime countries. OECD Report, Competitive Advantages Obtained by some Shipowners as a Result of Non-Observance of Applicable International Rules and Standards, OECD/GD/04, 1996.
sides of the same problem, safety norms, initially basically of a technical nature, are now being developed and evaluated against the background of well established principles of environmental law. Because the creation and implementation of international safety rules provide an adequate framework to minimize the risk of accidents, and therefore pollution, these rules are being regarded as a general asset towards environmental protection. Furthermore, because these rules now seek to protect general interests of the international community, principles of environmental law impose new powers and obligations on states to ensure the safe movement of dangerous goods. The principal objective laid down by the general principles is to ensure an integrated approach to preventing accidents, by surmounting the fragmented nature of the provisions and the various divergent interpretations.

The existing trends in international law on the transport of dangerous goods, which endeavor to eliminate fragmentation and inconsistency, are markedly influenced by the principles of the United Nations Conference on the Human Environment held at Stockholm from June 5 -16, 1972 (Stockholm Conference) and the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 (Rio Conference). Both conferences as discussed in the previous chapter, produced general principles, developed plans of action, and indicated basic institutional settings for the implementation of these

30 The UNCLOS calls upon the IMO to create the rules, standards, practices and procedures which prevent, reduce and control pollution from various sources. Furthermore, UNCLOS implicitly recognizes IMO as “the competent international organization” in respect of setting rules and standards, for the protection of the marine environment from vessel source pollution and for maintaining the safety of navigation. See infra, section 2.4.
principles in respect of environmental protection in general, and the protection of specific sectors.

While the Stockholm Conference considered the safe transport of dangerous goods exclusively in a context of marine pollution, the Rio Conference recognized that to reduce environmental risks attached to the transport of dangerous goods, international action must ensure the safe production, management, and transportation by all modes of transport of toxic chemicals. Because the Rio Conference had taken place in a situation where complex relationships between those issues were governed by diffuse powers and broken into a system of relations, it recognized the need to adopt a common interpretation of rules and to translate them into general principles.

2.4. Interface between safety at sea and protection of the marine environment

The maritime transport industry, under the leadership of IMO, has developed a fairly comprehensive set of safety rules which minimize the possibility for accidents involving the discharge of toxic substances into the marine environment to occur. However, not until the Stockholm Conference was the interrelation between safe transport of dangerous goods and the protection of marine environment considered at the global level. The Stockholm Conference called upon countries to work in partnership to prevent the seas being polluted by substances that could endanger human health, prove injurious to biological resources, and the life of marine organisms, or adversely affect uses of the seas.

At least three of the Principles incorporated in the Stockholm Declaration\textsuperscript{31} appear

to be relevant to the protection of the marine environment. Concentrating on those of most relevance to this survey, the first one to be noted is Principle 6:

The discharge of toxic substances or other substances and the release of heat in such quantities or concentrations as to exceed the capacity of the environment to render them harmless must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of all countries against pollution should be supported.32

Although formulated in very general terms, this text expresses the principle underlying the later treaty and non-treaty rules governing the protection of the marine environment from vessel-source pollution, including the rules on the safe transport of dangerous goods.

Principle 7 refers specifically to marine pollution in providing that:

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, damage amenities or to interfere with other legitimate uses of the sea.33

Principle 22 refers to liability and compensation for marine pollution damage:

States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction.34

The implementation of this last principle is embodied in the adoption of a number

only when principles of special importance are being proclaimed) laid down twenty-six disparate principles, addressing developmental as well as environmental issues...." Id. at 348; See also. M.K. Tolba ed., Evolving Environmental Perceptions: From Stockholm to Nairobi ( 1988) (reproducing the text of the Stockholm Declaration of 1972 and the Nairobi Declaration of 1982, along with statements of various nations attending these international environmental conferences).
33 Id.
34 Id.
of treaties on responsibility and liability for damage caused by transport accidents involving dangerous goods.35

Another significant instrument affecting regulatory process of safety standards is the United Nations Convention on the Law of the Sea (UNCLOS),36 which particularly in Part XII, imposes more specific obligations on states to respond to the problem of marine pollution at the global level.37 UNCLOS does not contain concrete marine pollution prevention standards, nor does it purport to be a substitute for special agreements. Rather, it aims at resolving the principal issues of determining the rights and duties of nation states in this regard. Its major objective is to determine states' competence regarding 1) the establishment of concrete legal instruments to prevent pollution of the marine environment, and 2) compliance with these rules, thus affirming the preventive and the remedial approaches to marine pollution. Under the Convention, states parties undertake obligations to protect and preserve the marine environment.38 States are obliged to take all necessary measures to prevent, reduce and control pollution of the marine environment from any source.39 The Convention invokes the IMO to create the rules, standards, practices and procedures so that its primary goal of order is achieved by the secondary means of treaty and

36 UNCLOS, supra, note 2.
38 UNCLOS, supra note 2, Article 197.
non-treaty instruments.\textsuperscript{40} Furthermore, states are called to cooperate at the global and regional levels to establish such rules and procedures which prevent, reduce and control pollution from various sources.\textsuperscript{41} States are directed, for such purposes, to act especially through competent international organisations or diplomatic conferences.\textsuperscript{42} Further, they are required to ensure that recourse is available, in accordance with their legal systems, for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction. States are required to co-operate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of, and compensation for damage, and the settlement of related disputes. They are also called to develop criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.\textsuperscript{43}

UNCLOS implicitly recognizes IMO as “the competent international organisation” in respect of setting rules and standards, for the protection of the marine environment from vessel source pollution and for maintaining the safety of navigation. It requires states to “conform to”, “give effect to”, “to implement”, “to take account of” “the relevant international regulations and standards adopted through the competent international organisation.” It also refers in different articles and contexts of marine environment protection to “the applicable international rules and standards”, “generally

\textsuperscript{39} \textit{Id.}, Article 194.
\textsuperscript{41} UNCLOS, \textit{supra}, note 2, Article 197.
\textsuperscript{42} UNCLOS, \textit{supra}, note 2, Article 211.
\textsuperscript{43} UNCLOS, \textit{supra}, note 2, Article 235.
accepted international standards", "generally accepted international regulations" or "global and regional rules standards and recommended practices and procedures".

By referring to the IMO safety rules in the marine pollution protection context, the UNCLOS incorporates these safety rules into the department of environmental law. While the Stockholm Conference invites states to prevent marine pollution without referring to a specific means of prevention, the UNCLOS specifically imposes upon states the obligation to protect the marine environment by, *inter alia*, applying existing technical rules and practices when transporting dangerous goods by sea. While the UNCLOS explicitly calls upon states parties to the Convention to protect the marine environment by establishing a comprehensive framework which builds upon existing law and negotiating of new agreements, it implicitly instructs states to work towards their general and global acceptance.

Following the general principles laid down at the Stockholm Conference and the subsequent entry in force of UNCLOS, the Rio Conference advanced a precautionary approach to dealing with the marine pollution problem, thus reinforcing the role of safety rules within the system. The Conference established a further link between protection of the seas from pollution and the safe transport of dangerous goods by integrating the topics of navigational safety, marine pollution prevention, and chemical safety aspects of transport of dangerous goods into the concept of sustainable development. The Rio Conference, which addressed the so-called second generation of environmental and development issues, reaffirmed the existing stand on questions of marine pollution and provided a common set of principles to govern the transport of dangerous goods and pollutants by all modes of
transport.

The text of chapter 17 of Agenda 21\(^44\) makes continuous reference to the UNCLOS as the basis for actions by states, thus making the interpretation of the UNCLOS provisions, which include IMO safety rules, subject to sustainable development principles. It commences with a significant statement:

International Law, as reflected in the provisions of the United Nations Convention of the Law of the Sea referred to in this chapter of Agenda 21, sets forth rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources.\(^45\)

In addition, the Rio Conference recognized that the scientific uncertainties regarding hazardous properties of chemical products transported by all modes of transport require the coordinated action of states, transport and chemical industries, governmental and non-governmental organizations and science, based on principles of sustainable development.\(^46\)

As chapter 3 of this study evidences, numerous international instruments have been developed to contribute to the protection of the marine environment. Most of the safety rules prohibit the transport of dangerous goods except in accordance with standards set out by these rules. Shippers and carriers are made responsible by virtue of public law for the violation of the safety standards and liable for damages so inflicted. However, these safety standards as well as standards of responsibility for their violation


\(45\) See Agenda 21, supra, note 44, Chapter 17.
are, despite international harmonisation efforts, still not consistently applied and interpreted within the sea mode of transport. Furthermore they are not consistent with rules which regulate the transport of dangerous goods by other modes of transport involved in the transportation chain. These inconsistencies, because they reduce navigational safety, increase the possibility for accidents and the subsequent discharge of toxic substances into the sea, and substantially decrease the capability of the transport and chemical industries to develop in a sustainable manner.

2.5. **Institutional background**

Most of the international rules and requirements in respect of the transport of dangerous goods have historically been developed to serve a particular mode's need for safety. As a result, a complex and diffuse network of authorities have been established at the modal level to govern the safety, environmental protection and liability standards. Realizing the multiple adverse impact of such fragmentation, the international community, urged by the Rio principles, has made a strong move towards bringing together international and regional organizations, inter-governmental and non-governmental organizations, experts and national authorities, with the aim of establishing world wide harmonized standards for the safe transport of dangerous goods by all modes of transport.

In order to offer an effective follow-up to chapter 19 of Agenda, 21 the ECOSOC Committee of Experts on the Transport of Dangerous Goods brought together a number of international and non-governmental organizations concerned with different modes of transport or different aspects of the problem (safety of transport, chemical safety,
protection of the environment, efficiency of transport).\(^{47}\)

The ECOSOC Committee of Experts on the Transport of Dangerous Goods itself is the center of the international unifying efforts. As a body of global scope, it produces "Recommendations on the Transport of Dangerous Goods" (also called the "Orange Book") that establish worldwide uniform standards for the safe transport of dangerous goods by all modes of transport. Beyond the global ECOSOC Committee of Experts, the subsidiary bodies of the Inland Transport Committee of UN/ECE are concerned with the harmonization of standards for road, rail and inland waterway transport of dangerous goods exclusively for Europe. These subsidiary bodies are (1) the Working Party on the Transport of Dangerous Goods (WP.15), responsible for the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) and the European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway (AND) and (2) The Joint Meeting of the WP.15. and the RID Safety Committee, the so-called RID/ADR Joint Meeting, which is responsible for ensuring harmonization between ADR and RID.\(^{48}\)

In addition to developing modal standards these bodies are responsible for the harmonization of these instruments standards with the UN Recommendation.\(^{49}\)

Harmonization of the International Maritime Dangerous Goods Code (IMDG Code), which supports a consistent application by all states signatories of the two world-wide maritime conventions, namely SOLAS and MARPOL, is undertaken by the International

\(^{47}\) See Appendix 1

\(^{48}\) The RID/ADR joint meeting is serviced jointly by the ECE secretariat and the secretariat of the Intergovernmental Organization for International Carriage By Rail (OTIF).
Maritime Organization and its subsidiary bodies. Particularly important work for the safe management of dangerous goods in sea transport has been performed by the Maritime Safety Committee (MSC), which plays a vital role in developing and updating the IMDG Code and other safety instruments. The Maritime Environment Protection Committee (MEPC), deals with the pollution and environmental aspects of dangerous cargo, while the Legal Committee develops instruments on third party liability for damage caused during the sea transport of dangerous goods.50

While IMO safety standards are accepted worldwide, countries that are not parties to RID/ADR develop their own set of safety rules to govern the rail and road movement of dangerous goods, incorporating to more or less extent the UN Recommendations.

The Rio Principles and Agenda 21, brought about the coordination and collaboration51 of activities among international organizations whose activities impinge on the transport of dangerous goods. This is reflected in the creation of new institutional arrangements between existing bodies such as the ILO, WHO, and the UNEP, to ensure that their work would complement, rather than duplicate or clash with existing agreements and instruments on the safe transport of dangerous goods.52 Collaboration on chemical safety

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49 For a discussion of the intermodal harmonization process see infra Chapter 3, Section 3.2.4.1.
50 IMO’s instruments dealing with the safety standards for the sea carriage of dangerous goods are reviewed in more detail in chapter 3, section 3.2.3.
51 Specifically, the drafters of Agenda 21 recommend that: Governments, through the cooperation of relevant international organizations and industry, where appropriate, should: (a) Strengthen and expand programs on chemical risk assessment within the United Nations systems; (b) Promote mechanisms to increase collaboration among Governments, industry, academia and relevant non-governmental organizations involved in the various aspects of risk assessment of chemicals and related processes, in particular the promoting and coordinating of research activities to improve understanding of the mechanisms of the action of toxic chemicals. Agenda 21, , note 44, chapter 19, paragraph 19.4.
52 Immediately before and at the time of the Rio Conference, in 1992, UNEP took an active role in promoting cooperation in all aspects of chemical risk assessment and management. Within the framework of IPCS, an intergovernmental meeting was in London in December 1991. Government-designated experts,
between these organizations in the IPCS has become the nucleus for international cooperation on environmentally sound management of toxic chemicals. Cooperation with other programs, such as those of the OECD, and the European Union (EU) and other regional and governmental chemical programs, has been promoted.

The role of harmonization of classification is being coordinated by the International Program on Sound Management of Chemicals (IOMC)\textsuperscript{53} coordinating group for harmonization of chemicals classification system. The IOMC itself report to the IFCS. The technical work for health and environmental hazard is being undertaken by the OECD, for hazard communication by ILO, and for physical standards by the UN.\textsuperscript{54} For the same purpose the Coordinating Group for Harmonization of Chemical Classification System (CG/HCCS) with a secretariat serviced by the ILO, was set up within the

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\textsuperscript{53} IOMC was established in 1995 to serve as a mechanism for coordinating efforts of intergovernmental organizations in the assessment and management of chemicals. The IOMC is a cooperative undertaking among six intergovernmental organizations (IPCS, UNEP, WHO, ILO, FAO, and OECD) which works together as partners to promote international work in the environmentally sound management of chemicals. The mandate of the IOMC is the coordination of the scientific and technical work carried out through the existing structures of the participating organizations, either individually or jointly. Inter-Organization Coordinating Committee (IOCC) composed of representatives of the participating organizations has been established to coordinate and foster joint planning of relevant activities of the Organizations. Coordination through the IOCC ensures full consultation among all those involved, with the aim to ensure effective implementation without duplication. In order to facilitate its work, the IOCC is creating an inventory of the chemical safety activities of the Participating Organizations which support the objectives and programs of chapter 19, \textit{Agenda 21}. Specific coordinating mechanisms have been or are in the process of being established, such as harmonization of classification of chemicals, information exchange on toxic chemicals and chemical risks, chemical risk evaluation and capacity building. These mechanisms provide a regular means for all interested bodies working in the respective areas to consult with each other on program plans and activities, and to discuss ways and means of ensuring that the activities are mutually supportive.

\textsuperscript{54} The UNCED decided to make increased efforts towards harmonization of classification and labelling of chemicals - a decision laid down in one of a total of six program areas on environmentally sound management of toxic chemicals contained in chapter 19 of \textit{Agenda 21}. This program area aims at preparing a globally harmonized classification and compatible labelling system (including relevant safety data sheets
framework of the IPCS. Furthermore, the decision to transfer the harmonization work in the area of physical hazards to the UN CETDG and to base the further discussion primarily on the UN Manual of Tests and Criteria is regarded as an important step to facilitate the harmonization process internationally.

Notable contributions to the ongoing world-wide harmonization of safety and environmental protection rules has also been made by non-governmental organizations which are actively involved in scientific and legal research on the subject. As well industry associations contribute their expertise and experience.

2.6. Policy and institutional background: conclusions

A general review of the international community's strategy developed for the purpose of reducing risks inherent in the movement of dangerous goods, demonstrates the widely accepted determination of states to further develop international law. The relevant policy oriented instruments, such as the 1972 Stockholm Declaration of principles on the Human Environment, and the Rio Principles, accompanied by the Agenda 21 spell out the principles to govern the present and future law-making process in the field of dangerous goods. They both call on states to build globally effective machinery for the technical, legal, and scientific cooperation between governments, industry, governmental, and non-governmental organizations. This is to ensure a coordinated approach to the safe

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56 A good example of industry participation in the work of harmonization is International Council of Chemical Association (ICCA) which initiated and accepted the program area on Sound Management of Chemicals to become one of priority items at the UNCED. CEFIC has been involved in harmonization through the Product Information Aspects Working Party (WP PIA) and in particular, through its two working parties on international harmonization. The group works within IOMC, UN, OECD and ILO.
management of dangerous goods and avoid the duplication and/or conflict of international rules. The ultimate objective, through a network of UN bodies, is to bring the existing rules into a harmonized system of classification and uniform technical standards for the transport of dangerous goods by all modes of transport. These documents make it clear that, in order for the transport and chemical industries to develop in a sustainable manner, the existing safety and environmental standards should be integrated, interrelated and made uniform across-the-board. This can be achieved through the coordination of all concurrent activities and through the cooperation of all actors that are or should be involved in the law-making process in this field. Chapter 19 of Agenda 21 declared that in the field of the transportation of dangerous goods, coordination, cooperation and interrelation between all relevant subjects through the UN system is taking place, and called for the trend to continue. Chapter 17 of Agenda 21 calls for the prevention of marine pollution and refers to UNCLOS, which imposes an obligation upon countries to uniformly enforce existing laws and to develop new laws which ensure the adequate prevention of accidents which can result in discharge of marine pollutants.

Yet, none of the policy instruments, including the Rio Declaration, indicate what means and through which form of normative conduct or rules the goals embodied in their principles are to be achieved. The decision as to the strategy for following up UNCED has been left to governments and international rule making bodies. Despite the evident progress achieved by the ECOSOC Committee of Experts in its harmonizing work, the subsequent analysis of the international law on the transport of dangerous goods

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There is a large number of NGSs contributing to the work of harmonization. For the list see Appendix I.
demonstrates that the UN Recommendations have not brought the required global uniformity in creating safety and environmental protection standards. Further they have not provided a sufficient level of integration within the normative and regulatory systems. The UNCED has been an impetus to an integrated approach and the cooperation between various organizations, secretariats, science and industry towards further developing safety and environmental protection.

However, it has to be noted that UNCED was not the beginning of the process by which different interests involved in the transport of dangerous goods have dealt with the risk arising from the activity. International cooperation in this field and the resulting rules progressed over time from a culture of punishment to compliance, to one of self regulation.\textsuperscript{57}

Because the introduction of mandatory instruments takes a long time to draft, negotiate, adopt and implement, industry self-regulation has always played a substantial role in preventing accidents. Opposition by industry interests to the introduction of mandatory rules is understandable. It comes from the belief that their own regimes or non-binding instruments are more than adequate to meet sustainable development objectives. For example, CEFIC Statement on Sustainable Development perceives industry's important role towards integrated approach while meeting sustainable development objectives by further developing voluntary industry commitments. Legislation is viewed as a means of achieving sustainable development only when

industry’s self-regulation cannot achieve desired tasks.\textsuperscript{58}

The ECOSOC Committee provides an umbrella and institutional basis for cooperation of all international, industry and science based forums and, therefore, has a far-reaching unifying scope. However, the final product that these forums create, i.e., UN Recommendations, because they are not binding \textit{per se}, allows for the fragmentation of safety and environmental protection rules to continue. This situation can lead to accidents with environmental implications that the policy instruments seek to prevent. Because the UN Recommendations are not part of national regulatory systems their violation cannot be considered a violation of mandatory regulations, unless explicitly incorporated into national legislation.\textsuperscript{59} If not implemented by national legislation, the UN Recommendations cannot be enforced by public authorities. Nor can they set standards of care to which shippers and carriers participating in a multimodal chain of transport are held to.\textsuperscript{60}

Opponents to this view would raise the argument that transforming the Recommendations into a convention would not change much of its legal force since the implementation of international instruments is still a voluntary act of states and no


\textsuperscript{59} A good example of the failure of non-mandatory standard to consistently follow through is a loss of 21 containers with Arsenic Trioxide from \textit{MV Santa Clara I}. In its report and recommendations, the Ports and Waterways Safety Act Board of Inquiry found that the cargo loss was caused by failure to respect IMO guidelines. The report further stated that if these guidelines were applied the loss may have prevented. Although the failure to apply the guidelines represented departure from good practice, it did not violate any regulation since neither Panama nor the U.S. has implemented IMO guidelines by regulations. Implementation of the IMO cargo securing guidelines in U.S. federal regulation was recommended. \textit{MV Santa Clara I Loss of Hazardous Material in the Atlantic Ocean Off the New Jersey Coast on 4 January 1992}, (United States Ports and Waterways Safety Act Board of Inquiry, 1992) at 1.

\textsuperscript{60} On the issue of the role of regulations in defining standards of due care see \textit{infra}, chapters 4 and 5.
international enforcing authority exists to impose on states obligations in this respect. When analyzed against the policy background discussed in this chapter, the argument is flawed in two respects.

First, states and industry have an international obligation to further develop international law to protect the environment. There has been enough evidence that non-compliance with safety and environmental standards leads to accidents.\(^{61}\) Non-compliance is often caused by the ignorance of participants in the transportation operation of standards applicable along the transportation chain. Inconsistency of international rules is one of the reasons for this.\(^{62}\) Therefore, while inconsistency of standards is detrimental to the prevention of accidents, members of the international community, including industry, have committed themselves at UNCED and UNCHE and UNCLOS to the highest possible standards of protection of the environment. Assuming that the international community is satisfied with the argument that the present fragmented system of regulations and the UN Recommendation are not sufficient tools to support environmental protection objectives, it has no alternative but to discharge its obligations and to take the next step which is to regulate actions having external implications. Second, the international community must not wait for a major accident to happen before taking the proposed legislative step. Previous experience informs us that existing international safety and environmental protection conventions are an outcome of a post-catastrophic shock in which the international community found itself unprepared.

to administratively and legally deal with the disastrous consequences of accidents.\textsuperscript{63}

In light of the foregoing, the thesis argues that regulation must not be brought to bear only after damage has occurred. Instead the risk must be assessed beforehand in order to eliminate the situation giving rise to danger. This is not to say that the legal regime cannot provide different degrees of regulations. Rather, general criteria have to be laid down with a view to preserving the system from inconsistency and instability.\textsuperscript{64}

The argument advanced in this study asserts that the desired uniformity would be provided only if the transformed UN Recommendations become part of the national regulatory systems of the world. The question is can the UN Recommendations ensure that their standards are implemented nationally and by all modes of transport?\textsuperscript{65} A negative answer to this question inevitably calls for a convention. A positive answer, however, questions the necessity of the existing modal instruments in their present forms since it would clearly demonstrate an overlap and, possibly, a conflict between them and the UN Recommendations, precisely the situation that the principle of sustainable development targets as an undesirable pattern of law-making in the field of environmental protection.

The present situation shows that although the UN Recommendations present a

\textsuperscript{62} See details of Santa Clara I accident, supra, note 59.
\textsuperscript{63} See infra, chapter 3, section 3.2.3. fn. 40.
\textsuperscript{64} "Safety cannot be a goal to be attained by means of programmes, minimum measures, or forms of protection making for varying degrees of effectiveness, but on the contrary, it is a higher value and, as such, must be incorporated into the legal system, going beyond the purely technical plane. Carriage of Dangerous Goods and Pollutants by Sea: the Safety Aspect (European Parliament, Directorate General for Research, 1994) at 68.
\textsuperscript{65} The possibility to transform the UN Recommendations into a convention will be further discussed in chapter 6.
basic scheme of provisions that would allow the uniform development of national and international regulations governing the various modes of transport, they have not achieved such a result.

Environmental concerns and increased use of multimodal transport have made obvious the principal drawback of law with respect to dangerous goods moved multimodally: there is no law consistently attached to a dangerous unit of cargo as it travels through different jurisdictions and changes modes of transport. Rather, it is subject to a variety of modal, national and international rules which differ with respect to their legal nature and the ends they seek to achieve. Such a state of fragmentation of international instruments governing dangerous goods is in conflict with the international community's proclaimed policy objectives in the subject matter.

The next chapter exemplifies the state of fragmentation between and within inland and the sea modes of transport.
CHAPTER 3

INTERNATIONAL LEGAL REGIME GOVERNING SAFETY AND ENVIRONMENTAL PROTECTION IN THE TRANSPORT OF DANGEROUS GOODS

3.1. Introduction

The transport of dangerous goods entails much higher and more diverse risks than the transport of ordinary goods. Multimodal transport of dangerous goods, because of modally different transport conditions and the number of actors involved with their handling, poses a greater risk than unimodal transport. This study argues that the safe and environmentally sustainable international multimodal transport of dangerous goods can only be ensured if, at least, four elements of the legal regime governing the activity function together. First, preventive standards in respect of classification, packaging, consignment and transporting procedure must be set in accordance with the latest technological developments and practices. ¹ They also must be known or easily ascertainable by their users, taking into account that they are not confined to one particular mode of transport. This requires their maximum congruity along the transportation chain.² Second, responsibility for the application of these preventive standards must be assigned to those in the transport chain best able to meet these standards.³ Third, adherence to these standards by the parties to the transport contract must be consistently enforced through the operation of different legal means, including

³ For example the shipper is in the best position to determine the nature of goods and to inform others. The carrier is in control of the transport unit, stowage, transport equipment, the crew and the transport operation.
liability instruments. Finally, the innocent victims of the transport accident must be provided with the opportunity to efficiently recover for the damage incurred. In other words to facilitate safe transport of dangerous goods both public and private rules must employ preventive and remedial approaches.

The variety of risks inherent in the transport of dangerous goods has been described earlier in this study. The safety and environmental standards are imposed in order to ensure that these risks are reduced to a minimum. The paramount consideration of these standards is to prevent harmful effects that could occur in the course of transportation. While the private and public rules concerned with the safe carriage of dangerous goods have the same objective, i.e., safe carriage of dangerous goods, there is a great difference between them in respect to the extent to which the rules prescribe shipper's and carriers' duties as well as the manner of their enforcement.

Public rules first develop and apply criteria which serve to identify, describe and classify dangerous characteristics of goods. Second, they set the manner in which the hazard inherent in the transport of such goods is to be communicated to those who perform the transport or handling of the dangerous goods. They prescribe documenting, labeling, marking, and placarding, establish the packaging requirements, and develop technical standards in respect of the transport operation itself, and the vehicle and transport equipment. Finally, they provide guidelines for the training requirements of those involved in the transport and handling of dangerous goods. The party found at fault

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4 See Bendickson, supra note 1, at 773.
5 For the discussion of the enforcement mechanisms see P.Birnie and E.Boyle, International Law and the Environment (Oxford, 1992). See also supra, chapters 4 and 5.
for not complying with these rules is, through the operation of the public law, penalized for putting the public's interests at risk and, also, must pay for all damage caused to public interests from its fault.

Breach of these standards in a private law context, however, although often used to define a minimum standard of due care, is not synonymous with the fault and does not necessarily result in liability. While in private law the compliance with the public standards are not synonymous with shippers' and carriers' civil liability, they nevertheless play an important role in setting the boundary for distribution of risks between the parties to the transport contract.7

In reality, while the two bodies of rules, i.e., private and public differ in respect of the effects they seek to create and differ also as to their enforcing mechanisms, their sectoral application is interconnected. It will be seen in the next chapter that a carrier's and a shipper's responsibilities, as established by the safety and environmental prevention rules, are an inescapable part of the liability distribution formula as incorporated within their private law contracts. The civil law institutions of courts and tribunals frequently refer to the public law instruments as setting the relevant international standards. Shippers' and carriers' responsibilities for liability under the private-law rules are, as a matter of principle, related to the failure of either party to comply with public law regulations in respect of preparing for transport, and the transporting of, dangerous goods.

This chapter establishes the inconsistency of the public safety and environmental protection regulations in respect to the mode of transport and legal jurisdictions. Based on

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6 See chapter 1, section 1.4. fn. 35, 36, 37.
this finding, it argues that the divergence of these standards impedes the application of safety and environmental standards in the multimodal movement of goods. Furthermore, these findings will support the argument raised in the next chapter that is, that safety and environmental standards, if they remain so fragmented, cannot significantly contribute to the consistent distribution of responsibilities between shippers and carriers in multimodal transport.

The analysis of legal instruments in this chapter indicates, however, that the safety and environmental protection regulations have, in technical terms, reached such a state of harmonization at the international modal and inter-modal level to make them transferable into an integral legal norm applicable to multimodality. Furthermore, this chapter demonstrates that the existing regulatory network, however fragmented, could be transformed within the UN structure to serve as an authoritative forum competent to perform the needed normative role.

In light of the foregoing, the following sections of this chapter proceed to introduce the safety and environmental protection rules as developed at the modal levels. In particular they describe the allocation of responsibilities to shippers and carriers for precautionary measures. Then it explores the possibility for these instruments to correspond with each other while attempting to achieve world-wide uniformity for multimodal application.

3.2. International rules concerned with safety and environmental protection

As already mentioned in chapter 1, dangerous goods, particularly toxic chemicals,

[footnote: For a detailed discussion of the private law concepts see *infra*, chapter 4.]
despite that they are understood to pose significant risk to the environment or to human health, have resisted precise definition. Scientists have found it difficult to determine exactly what kind of human and environmental harm is caused by particular toxic chemicals. As a result, international efforts and initiatives to control their safe transport are limited to the procedures and methodologies for measuring the risk the toxic chemicals pose and their designation to a particular class within the regulatory scheme for their special treatment in the course of transport. Efforts to identify the diverse risks they pose and to develop comprehensive regulatory responses have led to the conclusion of several significant treaties. Despite their fragmentation in respect to the mode of transport and geographical scope of application, these international treaties are a firm recognition of the global dimension of the problem.

That being the case, technical rules describing the properties of, and laying down the conditions under which the participants in the transport operation are required to move dangerous goods, have become vitally important.

Despite the high level of harmonization achieved at the international level, these rules still puzzle shippers and carriers participating in a multimodal transport operation. There are a number of reasons for this. First, international rules for the safe transport of dangerous goods have historically been developed to serve the needs of a particular mode of transport. Second, they are not enforced in the same way at the national level. Sometimes, because of their regional scope, the international rules are not applicable globally as for example, ADR and RID. Furthermore, some conventions, such as SOLAS, although of worldwide scope, delegate to national authorities responsibility for laying
down detailed safety and environmental protection rules, thus reducing their uniformity.

The next sections describe the safety and environmental protection rules and their basic concepts and structure as developed at the modal and multimodal level to ensure the safe transport of dangerous goods. Furthermore, they explain what role these safety rules play in environmental protection and in private liability contexts.

3.2.1. The road transport of dangerous goods

The harmonization of the safety provisions for the transport of dangerous goods by road has taken place only within Europe, where it is intended to replace the different domestic regulations by a single regime. The European Agreement Concerning the International Transport of Dangerous Goods (ADR) was developed after the Second World War from the European railway agreements for the international movement of dangerous goods, which date back to the 1890s. ADR is an agreement drawn up by the United Nations Economic Commission for Europe in Geneva, whereby most states in Europe, in the interest of uniformity and free trading, have agreed to common rules for the movement of dangerous goods by road across their frontiers and through their territories.

The Agreement was first signed in 1957, but the detailed rules, i.e. Annexes A and B, were not published until twelve years later in 1969 following the entry into force of the Agreement on 12 January, 1968, and after the annexes themselves were amended and up-dated on 29 July 1968. The Annexes are revised regularly, with the current edition effective from 1 January 1997.
3.2.1.1. European Agreement Concerning the International carriage of Dangerous Goods by Road (ADR)

ADR is an agreement between states, and there is no overall enforcing authority or penalties prescribed by it. In practice, states parties to the Agreement have enforcing authority, i.e., the authority to carry out inspections in order to ensure compliance with the Agreement. Non-compliance may then result in action by national authorities in accordance with their domestic legislation. Contracting parties to ADR incorporate its provisions into their domestic regulations. Member states of the European Union apply ADR through the "ADR Framework Directive" where the Annexes of the ADR framework directive, which are identical with those of the ADR, are made directly applicable to traffic throughout the EU.

While the ADR defines the responsibilities of the parties to the transport contract in respect of classification, packing, labeling, documenting and the carriage of dangerous goods, it is not concerned with their contractual liabilities for possible damage caused by non-compliance with the rules.

Although, ADR is basically a public law convention devised, primarily, to protect public interests, it is explicitly or implicitly referred to when defining dangerous goods and setting out the tests for the purpose of the application of the provisions of private liability conventions concerned with the transport of dangerous goods by road. Despite

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8 Directive 94/55/EC ("The ADR Framework Directive") on the approximation of laws of the Member States with regard to the transport of dangerous goods by road made the ADR directly applicable within European Union Member States.

9 For a definition of the "public interests" in respect of safety and a healthy environment, see chapter 2, sections 2.2. and 2.4.
the fact that ADR standards are used as a private law device to define contracting parties' standards of due care, the ADR remains a public law instrument. This is so because it imposes minimum safety conditions under which governments have agreed at international and national levels to maintain the activity lawful and have put their enforcing mechanisms into operation to ensure it.

The key Article which indicates the purpose of ADR is the second, which says in effect that, apart from some excessively dangerous goods, other dangerous goods may be moved internationally by road provided that the packaging and labeling are in accordance with Annex A, and that vehicle construction, equipment, and transport operation are in accordance with Annex B.\(^\text{10}\)

The rules in Annex A, Part I are about the identification of goods, their packaging and labeling, and the transport documents. They are the concern of the consignor of the goods. The system of classification of dangerous goods under ADR follows, as closely as possible, the Recommendations on the Transport of Dangerous Goods drawn up by the United Nations Economic and Social Council's Committee of Experts on the Transport of Dangerous Goods. Other rules in Part I cover the documentary aspect of the carriage of dangerous goods by road: a consignment note and a declaration to accompany the consignment, mixed packing, and the methods for classifying solutions and mixtures, including wastes. All ADR consignments must be accompanied by a transport document

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\(^\text{10}\) Annexes A and B have been regularly amended since the entry into force of the Agreement, in accordance with the procedure of Article 14 of ADR. The most recent edition of the Annexes includes all amendments up to January 1997. U.N. Publ. ECE/TRANS/115, Vol.1 (1997).
and a declaration. There is no special format for the Declaration although it must include specific details. Further, the consignor must give the carrier the necessary information in writing before the journey, in order for the carrier to take the necessary precautions.

ADR provides for some exceptions to the general packing, labeling and documenting requirements for the sake of unhampered multimodal movement of goods. Marginal 2006 (1) of ADR provides that when the vehicle carrying out a transport operation subject to the provisions of ADR is conveyed over a section of the journey otherwise than by road haulage, then any national or international regulations which, under the said section, govern the carriage of dangerous goods by the mode of transport used for conveying the road vehicle, shall alone be applicable to the said section of the journey. For example if part of an ADR journey comes under the International Maritime Dangerous Goods Code for a sea crossing, those rules additionally apply, and replace the equivalent ADR rules for that part of the journey. This is particularly relevant to multimodal operations between seaborne states in north-western Europe and Scandinavia.

Further exemptions from ADR rules relate to packaging, marking and labeling of ADR shipments which move multimodally. If an ADR journey precedes and follows carriage by sea or air, the goods shall be accepted for carriage under ADR even if the packages and intermediate bulk containers (IBC) are labeled in accordance with the sea

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12 ADR, marginal 2002.
13 ADR, marginal 2006.
or air mode rather than with ADR, but subject to the rules for classification and
documentation required by ADR, including the special statement: "Carriage under
marginal 2007 of ADR." This is particularly relevant to shipments from outside Europe
which are subsequently carried under ADR rules.14

The requirements of marginal 2008 also ensure that containerized ADR shipments
which are en route to a port for a sea journey, conform with the IMDG Code requirement
in respect of a packaging certificate.15

ADR requires that the driver must be given instructions in writing stating for each
substance or article carried: the name of the substance or article or group of goods, its
Class and its UN number, or for a group of goods the UN numbers of the goods for which
the instructions apply: the nature of the danger presented by the goods, together with the
measures to be applied for personal protection, and the immediate action to be taken in
the event of an accident.16 A set of instructions must be kept in the vehicle cab and be in
a language that the driver can understand.

Annex A, Part II consists of chapters for each Class of dangerous goods running
from 1 to 9. Apart from Class 7, which has a special format, the other chapters are laid
out in sections in similar fashion.

These are described by the UN substance identification number, followed by the
name, e.g., “sulphuric acid”, or by a generic term, e.g. “flammable liquid”, “toxic”,

14 ADR, marginal 2007.
15 The packaging certificate must be signed by the person responsible for packaging and a declaration must
be included to the effect that the goods are in a fit condition and properly stowed inside, etc., in accordance
with section 12 of the General Introduction (Volume I) of the International Maritime Dangerous Goods
Code.
16 ADR, marginal 10385.
“n.o.s”, i.e., "not otherwise specified", meaning that the particular material is not individually named and identified under a "single substance" number. In most classes, item numbers have sub-groups (a), (b) and (c) to denote high, medium, and low degrees of danger. These correspond to the UN Packing Groups I, II and III.

Annex A, Part III contains a number of Appendices, of which the more important for general operations are: A.5 for packaging; A.6 for IBCs and A.9 for labeling.\textsuperscript{17}

Annex B deals with the responsibilities of the carrier to provide and equip the vehicle, and to ensure, respecting the work of the driver, that the journey is carried out in the proper manner.

Annex B imposes on the carrier the duty to ensure that required documents are carried on the vehicle: transport document and declaration container packaging certificate; approval certificate for certain vehicles;\textsuperscript{18} driver training certificate;\textsuperscript{19} permit authorizing the transport operation\textsuperscript{20} in conformity with the rules in Appendix B.2; other

\textsuperscript{17} Rules for packaging of the various goods are given in the Class chapters of Annex A. UN approved packaging must generally be used, as described in Appendix A.5, but there are special rules for certain particularly dangerous goods in the Class chapter itself. Rules for IBCs, also to be UN approved, are given in Appendix A.6. Rules for marking the packages are also given in the Class chapters of Annex A. In general, these call for the marking of the UN number, preceded by the letters "UN" on all packages of dangerous goods. The Class chapters specify the labels that must be attached to the packages. The label formats are described in Appendix A.9. Class label and one or more secondary risk labels, e.g. flammable, and also toxic. It is the consignor's duty to provide and attach the labels to packages, containers and tanks.

\textsuperscript{18} Certain vehicles as listed in Appendix B.2 must be approved. This approval may be a type-approval obtained by the manufacturer for the "base" vehicle, i.e. before the load compartment or tank has been added, at the pre-production stage, by the submission of design details to the national authority. Annual approval certificates are then required, issued by the national authority to the effect that the vehicle conforms to the ADR rules and is in a roadworthy condition. Copies must be carried on the vehicle. (10 281 and 10 282).

\textsuperscript{19} This is the ADR certificate issued by the competent authority in each state to drivers of dangerous goods vehicles above 3.5 tons maximum weight, in quantities above those specified in the table at the start of Annex B (10 011). The driver has to attend a course approved by the authority in each State, and pass a written examination.

\textsuperscript{20} ADR, marginal 10 381.
vehicle features; fire extinguisher and vehicle equipment; supervision of vehicles; mixed loading; smoking; and handling. A series of Appendixes to Annex B express a variety of technical requirements to support these requirements.

3.2.2. Rail transport of dangerous goods

The safety regulations for the rail transport of dangerous goods are subject to unification at the international level only within Europe, where Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) apply. RID sets out the minimum standards for the safe transport of various types of dangerous goods traveling to or through the territory of a contracting state. RID is not a free-standing convention as ADR is, but it constitutes Annex I to the Uniform Rules concerning the Contract for the International Carriage of Goods by Rail (CIM), which forms Appendix B to the Convention Concerning International Carriage by Rail (COTIF).

Revisions of RID are made subject to article 19 of COTIF which provides for the competence of a Committee of Experts to take decisions on proposals for amendment.

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21 ADR, marginal 13410 220, 10 221 and 10 261.
22 ADR, marginal 13510240.
23 ADR, marginal 13610260.
24 ADR, marginal 13710321.
25 General rules to do with handling include: packages to be properly stowed on the vehicle, and secured in some way so that they cannot move in relation to each other, or to the walls of the vehicle; dangerous goods to be separated from others; toxic substances to be effectively separated from human or animal foodstuffs; crew not to open packages; vehicles to be cleaned in the event of leakage.
27 COTIF, Article 3, paragraph 1.

As of 1995 the following 37 states have ratified or acceded to COTIF: Albania, Algeria, Austria, Belgium, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iran, Iraq, Ireland, Italy, Lebanon, Liechtenstein, Luxembourg, Former Yugoslav Republic of Macedonia, Monaco, Morocco, the Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, United Kingdom.
Article 21 sets out the procedure for notifying the Member States by the Central Office established under COTIF and sets a twelve month period for coming into force of any amendment unless one third of them object within four months from the date of notification. Parties to the Convention guarantee to permit the carriage of goods meeting these standards through their territory, even when their own domestic requirements may be different. Discussions are under way to restructure RID and extend its scope, making it Appendix C to COTIF, which will in turn require amendment. Parties to COTIF have a duty to implement RID within their national borders in order to ensure the public need for safe transport of dangerous goods. This is achieved by giving to RID the force of law, and enabling the state to exercise authority over compliance. Furthermore, European Union “framework directives” make RID applicable to all dangerous goods traffic within the territory of the European Union.

RID served as a model for the subsequent agreement on the Carriage of Dangerous Goods by Road (ADR). At present RID and ADR retain their common base, and are revised together at joint meetings coordinated by the Inland Transport Committee of the UN/ECE, and then approved separately by rail and road experts. Additional requirements specific to either mode are also agreed upon at the level of the joint

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29 Articles 1 and 2 of COTIF contain institutional provisions concerning the Intergovernmental Organization for International Carriage by Rail (OTIF) with its headquarters in Bern. According to Art.2 of COTIF, the purpose of OTIF is to create, execute and further develop a uniform legal system for international carriage by rail.

30 Although the Working Group responsible for drafting the articles of the new Appendix is making reasonable progress, it seems unlikely that work will be entirely completed in this century. 18 Hazardous Cargo Bulletin, 1988, Vol. 10, at 8.

31 See, for example, UK International Conventions Act 1983, which gives RID the force of law.

meetings. The greatest possible degree of harmony with the United Nations Recommendations on the Transport of Dangerous Goods is the ongoing task of the joint meetings. Most of the provisions regarding classification, labeling, marking, documenting, as well as the format of ADR and RID are harmonized with each other and with the UN Recommendations. Some technical standards for packaging and IBCs still remain to be agreed upon. Vehicle and transport equipment standards, are subject to different requirements, depending on the mode of transport.

Since the basic structure and the aim of RID are almost identical to that of ADR, the introduction of RID focuses only on the unique features of rail carriage which distinguish this instrument from ADR and other modal instruments. While both instruments, RID and ADR, are drafted in the form of regulations setting safety standards for the transport of dangerous goods, their legal natures differ. RID forms part of another Convention, i.e., COTIF/CIM, whereas ADR is a free-standing convention with characteristics independent of any other legal instrument.

COTIF is the only private-law transport convention which incorporates public law technical rules on the transport of dangerous goods. The structure and the legal nature of COTIF is rather complex, because the convention tends to encompass all legal and technical aspects of the international transport of goods and passengers by rail, using Appendices and Annexes to regulate specific questions. Dangerous goods are dealt with as a category of goods which is not permitted for carriage, unless performed according to regulations which form part of the convention. Expressed in simple legal terms, COTIF, unlike other transport conventions, expressly makes the transport of dangerous goods by
rail subject to regulations set up by this convention.

COTIF stipulates that the carriage in international through traffic of goods shall be subject to CIM. According to article 3 of CIM, the rail carrier is obliged to carry any goods, provided that certain conditions are met and that goods do not fall within the category of articles not acceptable for carriage. Article 4(d) of CIM describes goods not acceptable for carriage by specifically referring to the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) which forms Annex 1 to CIM. Article 5 of CIM, however, permits the transport of dangerous goods under conditions laid down in the RID.

In light of the foregoing, it is safe to conclude that contractual relations between various parties involved in the contract of carriage have to be interpreted and applied, in respect of the definition of dangerous goods, by their packing, labeling, marking, documenting and transporting in terms of requirements laid down by RID. This is so, despite the fact that RID is concerned with ensuring safety, rather than with the relationship between the various parties involved in the contract of carriage. Depending on the circumstances, the interests of third parties may also be ruled by the COTIF, and the general law of obligations, or in continental law, by general provisions concerning tortious liability.

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33 CIM, Article 2.
34 The irregular, incorrect, and incomplete description of articles not acceptable for carriage or acceptable for carriage under certain conditions, or failure on the part of the consignor to observe the prescribed precautions in respect of articles acceptable subject to conditions provide the grounds for the railway to be relieved of liability for loss or damage resulting from the total or partial loss of goods. CIM, Article 36 paragraph 3(g). See infra, section. 3.2.2.1. of this chapter.
According to RID, railways have an obligation to refuse the carriage of dangerous goods, and if such goods are inadvertently carried, the carriage must be stopped and the goods is treated in accordance with the police regulations in the countries involved. This is the point at which RID modifies the private law characteristics of COTIF and assumes the role of an international public instrument.\footnote{CIM, Annex I, \textit{Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID)} (London: HMSO, 1993 ed.) at xxvii (Editorial Introduction)}

3.2.2.1. Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID)\footnote{Done at Bern, January 1959, 329 U.N.T.S. 3.}

The main philosophy behind the standards set out in the RID can be summarized as follows: a) the carriage of dangerous goods should not present a greater hazard than that of any other type of goods; b) the regulations should be as clear and easy to follow as possible; c) the standards should be as high as possible without imposing prohibitive costs on the manufacturer or consignor.\footnote{[1978] \textit{L.M.C.L.Q.} . 74-82.}

The structure of RID, as mentioned earlier is compatible with the ADR structure, and has provisions on the classification of dangerous goods, provisions for which the consignor of the goods is responsible: packaging requirements (including the use of packaging, intermediate bulk containers, tanks, containers and vehicles), and requirements for the construction and testing of packaging and consignment procedures (including labeling and describing goods in the transport documents), and provisions for which the carrier is responsible, i.e., rules for vehicle and the transport operation.

The COTIF/CIM/RID is a unique conglomerate of rules covering both aspects of
the transport of dangerous goods, namely private and public. Unlike the sea transport civil conventions, RID leaves no doubt as to the definition of dangerous goods and the technical standards applicable to their handling. They are both part of the same treaty instrument which in this way define all relevant terms for the transport of dangerous goods, making it consistently applicable to the distribution of shippers’ and carriers’ responsibilities for their safe carriage and for liabilities for any casualties.

3.2.3. Sea transport of dangerous goods

The international carriage of dangerous goods by sea is subject to a large body of rules, regulations, and recommended practices, embodied in many treaties, codes, guidelines, general principles, manuals, and the like, all of which are designed to create uniform standards for shipping safety and marine environmental protection. Maritime safety and environmental protection rules are mainly the result of the post-catastrophic syndrome. The Torrey Canyon incident of 1967 provided the necessary background and political pressure for states to merge the basically technical concept of safety at sea with a then newly emerging legal concept, the protection of the marine environment.39 It is to be noted, however, that "assimilation" did not assume any kind of structural forms. There still exist two bodies of rules for safety and for environmental protection embodied in the

38 Supra, note 37.
International Convention on the Safety of Life at Sea (SOLAS)\textsuperscript{40} and the International Convention for the Prevention of Pollution by Ships (MARPOL 73/78)\textsuperscript{41} respectively. The legal norms of these conventions are nourished by technical norms, the most relevant to this study being the International Maritime Dangerous Goods Code (IMDG).\textsuperscript{42} While SOLAS and MARPOL Conventions are the global binding instruments, the IMDG Code is a non-binding set of technical standards that facilitate the international community's uniform application of the obligations set out in the former Conventions. In practice, the IMDG Code, although developed as a model rule, is widely accepted and incorporated into the national laws of most maritime nations.

\textbf{3.2.3.1. International Convention for the Safety of Life at Sea (SOLAS)}

Like its counterparts in other modes, the SOLAS Convention sets out the rules for the safe transport of dangerous goods. Besides its administrative character which gives to it public law characteristics, SOLAS rules present guidelines for the application and interpretation of international liability conventions, particularly for determining the party liable to compensate for damage caused during the transport of dangerous goods. Both damage, and liability for damages caused by the transport of dangerous goods vary with regard to their nature, extent, causation and the parties involved. Whatever the case may be, the questions of liability and the burden of proof as to which party is liable for the damage cannot be resolved without reference to a standard of due diligence. This

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standard is formulated by reference to the statutory or customary rules related to specific obligations of parties for the safe management of dangerous goods in transport. These basically administrative conventions/regulations, therefore, may be considered to amount, together with civil liability conventions, to a body of rules on dangerous goods transport. The ultimate responsibility for the compensation of the costs of any accident rests on the party which acted in violation of the rules governing the transport of dangerous goods in respect of classification, packing, marking, labelling, transport equipment, or deficient consignment.

In comparison with other modes of transport, the development of regulations for maritime carriage was very late in coming. The regulations reflected the common concern for the safety of the ship and the life of the passengers. The early laws and conventions actually forbade the carriage of goods which by their nature, quantity and mode of stowage, were liable to endanger the lives of the passengers or the safety of the ship. While these early regulations seem to have established the principles, it left to each government the task of determining which goods were dangerous, and of setting forth the precautions to be taken in packaging and stowage. SOLAS 1948 established the need for international uniformity in safety standards, and recommended that packaging and marking systems should be developed using distinctive colors and symbols indicating the

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42 Assembly of IMO (IMCO) Resolution A. 81 (IV), 27 September 1965. See infra, section 3.2.3.3.
43 For a discussion of use of public standards to define the standard of care for the purpose of private law applications see infra, chapter 4.
45 The first international regulation attempting to govern the carriage of dangerous goods by see was the International Convention on the Safety of Life at Sea (SOLAS) 1914, which never came into force. See IMO Doc. Misc. 82(2). The 1929 SOLAS Convention was another attempt to revive the earlier Convention. The 1929 SOLAS entered into force in 1933.
kind of danger presented by each kind of good. The recommendations issued by the 1948 SOLAS Conference were formulated pending the establishment of IMO.\textsuperscript{46}

One of the first actions undertaken by IMO was to convene a new SOLAS Conference in 1960. This Conference adopted the 1960 SOLAS Convention.\textsuperscript{47} SOLAS 1960 specifically addressed, in its chapter VII, the subject of dangerous goods. Like previous SOLAS Conventions, the carriage of dangerous goods was prohibited, except in accordance with the convention. Chapter VII divided the various types of dangerous goods into nine classes. Since at that time the bulk of chemical products was carried in packaged form,\textsuperscript{48} provisions of chapter VII dealt with packaging, labeling, marking, documentary and stowage requirements, and the carriage of explosives on board passenger ships. The convention, however applied to both dangerous goods carried in bulk and those carried in packaged form. Goods in packaged form were defined as those carried in limited quantities and consumer sizes -drums, pallet loads, intermediate bulk containers, and ship-borne barges.

Chapter VII of SOLAS was supplemented by Resolution 56 of the Conference which recommended that governments parties to the Convention should adopt a uniform international code for the carriage of dangerous goods by sea. Besides issues of classification, marking, and labeling of the various goods, the code also was to take into account further issues of packaging, packing, container traffic, stowage and segregation.

\textsuperscript{46} See Recommendation 22 of the 1948 SOLAS Conference. The Conference recommended further study on the subject with the objective of drafting international regulation. See IMO Official Records, Doc. MSC II/10, of 30 September 1959. See also C.E.Henry, supra, note 45, n.8 at 118.
\textsuperscript{48} C. E. Henry, supra, note 45, at 93.
of incompatible substances. Such a code was adopted by the international community in 1965, and is commonly referred to as the International Maritime Dangerous Goods Code (IMDG).49

Chapter VII of SOLAS 1960 has since been replaced by chapter VII of SOLAS 1974.50 It is worth noting here that the 1974 SOLAS Conference took note of the increased multimodal transport of dangerous goods whose concept pivots around the container. It emphasized the need to ensure the safe51 and economic transport through the unification of national, regional and international rules governing their carriage, stowage and handling by all modes of transport. Resolution 1-II of the SOLAS Conference recommended continuing co-operation with the ECOSOC Committee of Experts with a view to adopting a "self contained International Convention on the Carriage of Dangerous Goods by all Modes of Transport."52

SOLAS 1974, which is based on the earlier conventions, and which has itself been amended respectively in 1978, 1981,1988, 1989, 1990 and 1992, addresses the

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49 Assembly of IMO (IMCO) Resolution A. 81 (IV), 27 September 1965. See infra, Section 3.2.3.3.
50 See International Conference on the Safety of Life at Sea, 1974, IMO Doc. 080.75.01. E.
51 It has been recognized that by international community that containers provide an ideal haven for the movement of dangerous, hazardous and noxious substances in packaged form and that such havens have the potential to cause serious safety and pollution problems. Large variety of toxic, hazardous and noxious substances are routinely carried in sea containers. On the other hand, anonymity of the cargo has increased and given room to undetected ignorance. All links of the transportation chain (e.g., inland terminal, inland carrier, seaport, sea carrier, etc) have to rely on the responsible behaviour of the shipper and its documentation. Accidents involving such containers might cause serious and significant pollution damage - under certain circumstances even more serious than oil. K. Brunings, "Dangerous Cargo in Containers," In Port Management Textbook Containerization (Institute of Shipping Economics and Logistic: Bremen, 1985) 293, at 294. See also G. Edgar, Handbook on Marine Pollution (Aarevidal, Norway: Assurance Foreningen Card, 1985) at 50.
52 The idea was to elaborate some documents along the lines of the United Nation Convention on International Transport adopted in 1980. UN Doc. TD/MT/CONF/16.
problem of the carriage of dangerous goods in packed forms in chapter VII, Part A.\textsuperscript{53} The 1981 amendments to SOLAS 1974, for the first time, expressly included provisions in respect of precautions to be taken in the case of incompatible cargoes. Chapter VII of SOLAS actually consists of only 8 regulations. In general, these regulations are not very precise, except for regulation 2 (classification) which lists the nine dangerous classes without defining them. Regulation 1 (4) of chapter VII requires the contracting states to issue detailed instructions on safe packaging and stowage of dangerous goods. The actual standards of safe carriage of dangerous goods are established by reference to the IMDG Code.

Although the SOLAS Convention itself does not develop the detailed safety code but rather refers to the IMDG Code, it is regarded as the most important treaty creating uniform standards for shipping safety. It is clear that the IMDG Code, although a non-binding instrument, was adopted by IMO to aid interpretation and application of the standard setting regulatory Conventions and is now part of the regulatory regime on the carriage of dangerous goods.\textsuperscript{54} This will be explained in more detail below in the section 3.2.3.3. of this chapter.

\textsuperscript{53} 1981 Amendments to chapter VII subdivide the latter into three parts. Part A deals with the carriage of dangerous goods in packed form or in solid form in bulk. See Resolution MSC.6(48), of 17 June 1983.

\textsuperscript{54} It is safe to say that the international regulatory regime on the carriage of dangerous goods by sea includes, not only such international treaties as SOLAS and MARPOL, but also the supplemental and other related codes and recommendations concerning the packaging, storage, and handling of such goods at sea and ports. Those regulations and procedures remain an essential frame of reference\textsuperscript{a}. T.A. Mensah, "International Regulatory Regime on the Carriage of Dangerous Goods at Sea" unpublished paper presented at the 9th International Symposium on the Transport and Handling Dangerous Goods by Sea and Inland Waterways (JDG), held in Rotterdam, the Netherlands, 13-17 April 1987.
3.2.3.2. International Convention for the Prevention of Pollution from Ships (MARPOL)\textsuperscript{55}

MARPOL 73/78 was the first attempt to address the problem of pollution from ships by establishing international requirements relating to the carriage of harmful substances. MARPOL 73/78 and its Annexes provide the main source of the international rules and standards for the prevention of pollution from ships referred to in articles 194, 211, 218, and 220 of the United Nations Convention on the Law of the Sea (UNLOSC).\textsuperscript{56}

Annex III to MARPOL 1973/78 particularly addresses the question of the prevention of pollution from substances carried by ships in packaged forms.\textsuperscript{57} The regulations lay down basic requirements for packaging, marking and labeling, and stowing, harmful substances carried in packaged form, or freight containers, portable tanks, or road and rail tank wagons. As with Part A of chapter VII of SOLAS, the regulations of Annex III are very general. The basic requirements set by the Annex are to be supplemented by government regulations, which, by virtue of wording similar to chapter VII of SOLAS 1973, must issue, more detailed requirements. Resolution 19 of the 1973 MARPOL Conference recommended that IMO should adopt more detailed recommendations on the subject. The IMO Assembly subsequently issued a Resolution recommending that the method of marking the label and of placing the correct technical

\textsuperscript{57} Packed form is defined in the Regulation 1: “unless expressly provided otherwise, the regulations of this annex apply to all ships carrying harmful substances in packed form, including those in freight containers, portable tanks, road and rail vehicles and shipborne barges.”
name on packages and receptacles containing dangerous goods should allow this information to remain identifiable on packages surviving at least three months' immersion at sea.\(^{58}\)

Basic principles are also formulated for packaged substances which are considered to present a serious hazard to the marine environment.\(^{59}\) These provisions of MARPOL 73/78, however, reflect the fact that the IMDG Code was initially not designed to take account of the pollution of the marine environment as such. Annex III of MARPOL 1973/78 was amended in 1992 to make explicit reference to the IMDG Code, providing at the same time, guidelines for the identification of harmful substances in packaged form which set out the criteria for identifying and designating marine pollutants. For the purpose of the selection of packaged goods as "marine pollutants", substances are identified by criteria established by GESAMP, the recognized advisory body of experts for IMO in matters related to the evaluation of the hazards of substances carried by ships.\(^{60}\)

Annex III, as amended, further defines packaged form as the "forms of containment specified for harmful substances in the IMDG Code" (Regulation 1 (1.3)). In addition, governments of contracting parties are required to issue or cause to be issued, detailed requirements on packing, marking and labeling, documentation, stowage, quantity and limitations, and exceptions, for preventing or minimizing pollution of the marine environment by harmful substances in packaged form (Regulation 1(3). Within

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\(^{58}\) Resolution A.345 (IX), of 12 November 1975.

\(^{59}\) IMO Official records, Doc MEPC/Circ/78, of 19 September 1975.

\(^{60}\) See Appendix 3 to the MARPOL.
the context of regulations contained in Annex III of MARPOL, reference is generally made to the IMDG Code.

3.2.3.3. International Maritime Dangerous Goods Code (IMDG): its legal nature and scope of application

The International Maritime Dangerous Goods (IMDG) Code, was adopted by the IMO Assembly in 1965,\(^1\) as the standard setting instrument facilitating the implementation of the safety requirements of SOLAS.\(^2\) Much later, reflecting the growing public concern with the impact that the carriage by sea of such substances in packaged forms may have upon the environment, and following the adoption of MARPOL, the scope of the IMDG Code was extended to include marine pollutants.\(^3\) In April 1987, amendments to the IMDG Code were adopted which, for the first time, took into account marine pollution as an aspect of the carriage of dangerous goods. Some 600 substances were identified as marine pollutants, and detailed requirements for their

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\(^1\) IMO Assembly resolution A.81(IV)of 27 September 1965.

\(^2\) Recommendation 56, adopted at the 1960 SOLAS Conference, recommended that governments should adopt a uniform international code for the carriage of dangerous goods by sea which should cover packaging, container traffic and stowage, with particular reference to the segregation of incompatible substances. It further recommended that IMO, in co-operation with the United Nations Committee of Experts on the Transport of Dangerous Goods (ECOSOC) should pursue studies on such an international code, especially in respect of classification, description, labeling, list of dangerous goods and shipping documents. To carry out this mandate, the Maritime Safety Committee (MSC) established a Working Group on the Carriage of Dangerous Goods (CDG). The Group prepared drafts for each class of dangerous goods. In order to make such a code as widely acceptable as possible, the Group took into account the practices and procedures of numerous maritime countries and ECOSOC recommendations.

\(^3\) Recommendation No.19, adopted at the MARPOL Conference, 1973, concerning the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form or in Freight Containers, Portable Tanks or Road and Rail Tanks Wagons invited IMO to pursue studies on the impact that the carriage by sea of such substances in packaged forms may have upon the environment. It was recommended that the results of such studies be directed towards the revision of the scope of the International Maritime Dangerous Goods Code. The Marine Environment Protection Committee (MEPC), considered how best to implement the requirements of MARPOL 1973/78, Annex III, as amended. It agreed that they should be implemented by extending the scope of IMDG Code to include marine pollutants. MEPC, in 1987, agreed on the selection criteria for "marine pollutants" on the basis of GESAMP's hazard evaluation, and decided
carriage have been incorporated into the IMDG Code through amendments 25 - 89, which entered into force on 1 January 1991. These amendments are designed to assist states in the implementation of Annex III of the MARPOL Convention which itself underwent amendments in 1988 to make explicit reference to the IMDG Code regarding the implementation of the regulations pertaining to dangerous goods in packaged form.

Since its adoption the IMDG Code is regularly amended on a biannual basis in keeping with the United Nations Recommendations.

The IMDG Code is a simple recommendation which, while supplementing the SOLAS and MARPOL 73/78 Conventions, does not form part of either of them, and consequently does not possess their legal force. Being no more than a recommendation of the IMO it has no binding character unless adopted by each individual state and incorporated into domestic law. In practice, however, for having the greatest practical value, most maritime states have introduced the Code into their national legislation. Some 53 countries whose combined merchant fleets total more than 90 percent of the world's gross tonnage have incorporated it into their regulatory systems. Even the countries that have not incorporated the Code into their national legislation apply it as mandatory customary international law relating to the carriage of dangerous goods by sea.

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64 IMO News, 1991, No.2., at.3.
66 While the Code is not a formal convention, it is none the less a widely accepted and comprehensive set of regulations which may legitimately claim to have attained the character of customary law. The UNCLOS repeatedly refers to "internationally accepted standards" and explicitly mentions IMO standards. affording them the global and mandatory character even if they were not ab initio mandatory. P.W. Binnie and A.E. Boyle, International Law and Environment (Oxford; Clarendon Press, 1992) in chapter 7, at pp. 251-99. Sea also Patricia Binnie, "The Status of Environmental "Soft Law": Trends and Examples with Special Focus on IMO Norms", in H. Ringbom ed., Competing Norms in the Law of the Marine Environmental
Despite the fact that the IMDG Code has been widely applied, it remains that at present there are no binding international maritime instruments on the transport of dangerous goods imposing on states a uniform set of mandatory rules. The Code was adopted with a view to unifying divergent national systems. While unification was seen as an indispensable tool for safe and efficient carriage of dangerous goods, a mandatory instrument was not perceived to be a viable solution for achieving that uniformity.

There were at least three reasons for not adopting the Code as a mandatory instrument. First, at the time of adopting the Code in 1965, national systems were too divergent and a substantial amount of work on uniformization and consolidation that is crucial for any treaty regime, remained to be completed. The second problem was associated with the need to rationalize the amendment procedure so as not to endanger the development of the IMDG Code and its continuing relevance. And, last and most important for this study, the reason for rejecting the mandatory character of the Code was that giving treaty form to it would only hamper progress towards the harmonization of dangerous goods regulations across all modes of transport and, ultimately, the adoption of a multimodal convention. In fact, the IMDG Code was considered to be but a first step towards a universal system applicable to all modes of transport.

The new IMO’s initiative to make the IMDG Code mandatory under the SOLAS Convention disclosed that despite the remarkable level of worldwide acceptance the IMDG Code is still not uniformly applied by all states. The procedure to make it


\[\text{67 Lampe, W.H. "The "New" International Maritime Organization and its Place in the Development of}\]
mandatory is presently taking place. IMO's Sub-Committee on Dangerous Goods, Solid Cargoes and Containers, whose Working Group on Mandatory Application of the IMDG Code has already drafted the first text of amendments to SOLAS, chapter VII. It also considers amendments to Annex III of MARPOL 73/78 to make IMDG mandatory under that Convention.68

Since the IMDG Code is designed to assist implementation of the 1974 SOLAS Convention, chapter VII, Part A and Annex III of MARPOL 73/78, both as amended, the first part of the IMDG Code (Volume I) consists of a general introduction to these instruments and Resolution 56 of the SOLAS Conference. The General Introduction describes, inter alia, the marking, identification and consignment procedures, labeling and placarding, documentation and packaging of dangerous goods. It includes a section containing special provisions for freight containers, portable tanks and road tank vehicle, stowage and segregation, fire prevention and fire fighting. The final sections deal with, amongst other issues, the chemical stability of dangerous substances, marine pollution aspects of dangerous and harmful substances in packaged forms, and transport in bulk packaging.

Annex I to the IMDG Code following the General Introduction contains recommendations on packing of dangerous goods, and on the construction and the testing of packaging. The Recommendation takes into account the mandatory requirements on packing set forth in regulation 3 of chapter VII of the 1974 SOLAS Convention, as amended. The Recommendation also closely follows the United Nations

Recommendations in respect of packing of dangerous goods, as contained in chapter 9 of the Orange Book.

Following the General Introduction and Annex I, the IMDG Code details the nine classes of dangerous goods, each class being preceded by an introduction which describes the properties, characteristics and definitions of the goods. Full detailed advice is given to shippers on consignment of dangerous goods which includes classification, description, packaging, packing, documenting, labeling, placarding, marking of containers, and to carriers on handling and transport, and separation from other cargoes or from special spaces or areas in a ship.

Headings used in individual schedules again include special observations, packing, stowage and segregation, labels, placards, and if applicable, the marine pollutant marking. In addition, a number of recommendations on special procedures are included in the IMDG Code in order to assist national governments to enact regulations for the safe transport and management of dangerous goods, and for the prevention of marine pollution, or as guidelines for ship operators, vessel and port personnel.

Although worldwide applicability of IMO standards, including the IMDG Code,

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69 In respect of packaging of dangerous goods, Annex I closely follows the United Nations Recommendations (chapter 9 of the Orange Book) The dangerous goods other than those covered by classes 1, 2, 6.2 and 7 are divided into three packaging groups according to the degree of danger they present: packaging group I: goods presenting great danger; packaging group II: goods presenting medium danger; and packaging group III: goods presenting minor danger
70 Such recommendations referring particularly to, or involving dangerous goods in packaged forms are: 1) The Emergency Procedures for Ships Carrying Dangerous Goods (Emergency Schedules-Ems); 2) the IMO/WHO/ILO Medical First Aid Guide for use in Accidents Involving dangerous Goods (MFAG); 3) The Recommendation on the Safe Use of Pesticides in Ships; The Recommendation on the safe Transport, Handling and Storage of Dangerous Goods in Port Areas; 5) The IMO/ILO Guidelines for Training in the
is not questionable, still there is no accurate data as to the extent and the way of their implementation by national authorities.

3.2.4. Multimodal transport of dangerous goods

The multimodal movement of dangerous goods requires that one single unit of transport moves from one to another part of the world using more than one mode of transport. As discussed previously the objectives of safe and efficient transport of dangerous goods are attainable only if the safety and environmental standards are in place and strictly followed by all the participants in the transport operation. The full disclosure of the dangerous nature of goods and sufficient packing on the part of shipper, along with suitable treatment of the goods by carriers in the course of transportation is absolutely critical to achieving the task of safety and environmental protection. Consistency of information and technical requirements along the entire transportation chain makes it possible for shippers and carriers to perform their critical role accurately and efficiently. Mistakes, confusion or omission at any point in the transportation chain in respect of the nature of goods or applicable preventive standards can be fatal to people, cargoes, the transport unit, and the environment. States have long recognized that the safety, environmental, and commercial interests cannot afford, unless scientifically grounded, different technical and legal regimes being applied as one unit of dangerous cargo moves through different jurisdictions or uses different modes of transport. For the sake of both safety and commercial interests the international legal, scientific and commercial community has initiated efforts to harmonize the different rules and, eventually to create

Packaging of Cargo in Freight Containers.
one single set of rules capable of governing all modes of transport of dangerous goods.

3.2.4.1. United Nations Model Regulations on the Transport of Dangerous Goods

Back in 1953, the Committee of Experts of ECOSOC demonstrated in a survey, the vast fragmentation and lack of uniformity in rules governing the transport of dangerous goods in various parts of the world, as well as between different modes. As a result of the work of the Committee the first non-binding UN Recommendations on the Transport of Dangerous Goods (the Orange Book) came into existence in 1953. Since then they have been regularly amended and updated at succeeding sessions of the Committee of Experts in keeping with technological developments established by ECOSOC, and later by UNCED.

At present, the recommendations concerning the transport of dangerous goods are presented in the form of "Model Regulations on the Transport of Dangerous Goods". The Model Regulations present a basic scheme of provisions that will allow uniform development of national and international regulations governing the various modes of transport; yet they remain flexible enough to accommodate any special requirements that might have to be met. It is expected that governments, intergovernmental organizations and other international organizations, when revising or developing regulations for which they are responsible, will conform to the principles laid down in these Model Regulations, thus contributing to worldwide harmonization in this field. Furthermore, the new structure, format and content should be followed to the greatest extent possible in order to create a more user-friendly approach, to facilitate the work of enforcement bodies and to reduce the administrative burden. Among other aspects, the UN
Recommendations cover principles of classification and definition of classes, listing of the principal dangerous goods, general packing requirements, testing procedures, marking, labeling or placarding, and transport documents. The system of classification, listing, packing, marking, labeling, placarding and documentation in general use for carriers, consignors and inspecting authorities, is designated to facilitate simplified transport, handling and control as well as to reduce time-consuming formalities. In order to achieve the full harmonization between different modes of transport, the ECOSOC Committee has maintained a liaison with the international bodies or organizations responsible for individual modes of transport. The UN Recommendations have achieved almost full harmonization in respect to classification, listing, packing, marking, labeling and dangerous goods transport document, but much work remains to be done in respect of packaging, tank containers and intermediate tank containers (IBC).

Initially the aim of the Recommendations was to achieve worldwide uniformity of the safety standards for the various modes of transport so as to allow for an unhampered multimodal transport operation. Today, besides safety and transport efficiency aspects, the UN Recommendations encompass environmental aspects of the transport of dangerous goods.

The Committee of Experts cooperates with other organizations concerned with the development of harmonized classification criteria for chemicals that present health hazards or hazards to the environment, to ensure that their work would complement, rather than duplicate or clash with, existing agreements and instruments on the safe transport of dangerous goods. The harmonization of criteria for defining and classifying
environmentally hazardous substances is undertaken with a view to overcoming the broad disharmony between the international classification schemes for pollutants that are presently employed. Under existing international legal systems, different schemes are applied and with different results for particular products. The rail and road regulations in Europe have adapted the OECD/EU classification system, whereas the IMO/IMDG Code classifies marine pollutants in accordance with Annex III of the MARPOL 73/78 Convention.71

Concerning these areas of disharmony, the UN Recommendations, which seek to provide the basis of a common system while reflecting existing classification schemes, are working to develop a single set of criteria for classifying environmentally hazardous substances suitable and acceptable for all modes of transport. Furthermore, globally harmonized hazard classification and compatible labeling systems, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2001.72

The Recommendations, as their title indicates, are recommendatory in character that is, they establish non-binding safety and environmental protection standards to be followed by all participants in a multimodal chain.73 Their global application, although not mandatory per se, is ensured through the modal instruments which keep pace with

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71 The system based on criteria developed by GESAMP. For GESAMP’s criteria see supra, chapter I, section 1.4.3, n. 50.
73 Despite the self-contradictory wording employed in Article, which stipulates that the Recommendations “shall” be applicable, thus implying their mandatory character, they remain a non-binding set of rules.
their standards. This way they have afforded the same scope of application as the modal instruments have. As established above, while the IMDG Code is, despite their global geographical scope of application, confined to the sea mode of transport, ADR and RID are limited to Europe. Other countries which have not adopted modal instruments may apply some or all provisions of the Recommendations by incorporating them into their national systems. Thus, although developed within an established international forum involving all states with major interests in the field of transport of dangerous goods, the Recommendations do not achieve desired world wide and inter-modal uniformity of safety and environmental standards. The fact is that Recommendations gain their applicability at the national levels through the modal instruments whose standards and geographical applicability are not consistent.

3.2.5. International safety and environmental standards: concluding remarks

This review of the international legal instruments illustrates what enormous work has been done at the modal level and the inter-modal level to create a uniform environmental protection and safety management standards applicable to the transport of dangerous goods and pollutants. Still there is no single and consistent system to govern the transport of dangerous goods worldwide and the results remain limited to a particular mode of transport and to certain parts of the world.

First, the classification, description and consignment, including the transport document is not consistent across the board. Second, the early instruments were not designated to take account of the possible environment pollution aspect of dangerous goods transport. While environmental protection law is fully developed through
MARPOL and the IMDG Code for the sea mode of transport, the polluting materials having detrimental effect on the environment were not subject to a systematic classification under the RID and ADR regulations. Some of these materials are included in class 9 of the UN Recommendation. RID and ADR regulations have accepted the OECD system of the classification of environmentally hazardous substances, whereas the IMDG code classifies substances as harmful to the environment in accordance with Annex III of MARPOL 1973/78, and based on the criteria developed by GESAMP. While rail and road regulations do not go beyond the development of criteria for classification, classification itself, marking, labeling and packing of environmentally hazardous substances, the international instruments which cover the sea transport may be said to form a comprehensive body of law on marine environment protection.

As more and more goods are being moved multimodally, shippers, when preparing and documenting cargo for the journey, do not refer to one single set of rules, but have to check safety and environmental protection standards applicable to all modes of transport and all national legislation that will be applicable to their unit of cargo along the transportation chain. Multimodal transport operators also have a duty to ascertain the nature of goods and the safety standards applicable along the entire transportation chain.

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74 Similar systems have been adopted by member countries. For example, the Canadian scheme includes nine classes of dangerous cargo, class 9.3. being an environmentally hazardous substances. The German regulations for the transport of dangerous goods include environmentally dangerous goods in the Class 9 “Other dangerous substances and articles.” Transport of Dangerous goods by Road, Report prepared by an OECD Scientific Experts Group, OECD, 1988 at 22.
75 RID and ADR provide under class 9 "miscellaneous dangerous goods" division "An Environmentally hazardous substances", ADR, marginal 2901, pp. 400-402; RID marginal 900, pp 263-268. For the sea transport, see supra, section 3.2.3.
chain. They also have to ensure that all relevant information according to all these different standards are provided to their sub-carriers. The safety of the cargo, people, and the environment, as well as liability for damage, is largely dependent on the accuracy of information. The U.N. Recommendations have only partially solved the shippers’ and multimodal transport operator’s problems.

The next chapter demonstrates that a divergent regulatory system hampers the uniform application of distribution of civil liability between carriers and shippers for damage caused in the course of the transport of dangerous goods.

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76 See supra, section 3.2.4. and infra, chapter 4, section 4.2.3.
CHAPTER 4
DISTRIBUTION OF CONTRACTUAL LIABILITIES IN THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS

4.1. Introduction

International regulations on the transport of dangerous goods address, from a policy perspective, safety and environmental concerns. In practice, these concerns are translated into the language of the safety and environmental standards imposed on those who perform the carriage. This chapter demonstrates that private law concepts, despite emerging trends to incorporate these standards, either remain immune to the developments in international safety and environmental protection law or do not follow them consistently.

The previous chapter established that the divergent technical rules are an impediment to their uniform application along the multimodal chain of transport and a impediment to safety and environmental protection. This chapter demonstrates that a divergent regulatory system also hampers the uniform application of distribution of civil liability between carriers and shippers for damage caused in the course of the transport of dangerous goods. The specific aim of this section is to pinpoint inconsistencies and the incongruities between civil and public liability rules in defining shippers’ and carriers’ duties when shipping dangerous goods.

The analysis of the private law regime on distribution of liabilities demonstrates that these inconsistencies cause the rules on safety and environmental protection not to be fully effective in the civil liability context. In particular, this chapter demonstrates that such ambiguity and fragmentation between modal rules causes difficulties in defining
operators' and shippers' responsibilities. This state of affairs hampers safety, environmental protection, and works against efficiency in the multimodal transport of dangerous goods.

The argument of this chapter is that private law instruments not only need their traditional concepts adjusted to incorporate the public law developments, but also that such an adjustment requires, as a first step, the improvement of the public law standards themselves.

In order to establish the areas of needed congruity among the legal instruments, this chapter introduces and analyzes those which allocate responsibilities for liability between carriers and shippers for damages caused by the transport of dangerous goods. Then, this part of the study examines how a violation of a public regulation impacts the apportionment of civil liabilities between contracting parties as set forth by private law rules.

4.2. Distribution of risks for liabilities between carriers and shippers in various modes of transport

The distribution of risks for liability between contracting parties arising out of the international transport of goods is governed by general principles of contract law as supplemented with other common law rules. The distribution of risk is approached in private law as both one of category and as an integral part of the larger question of sharing risk. In other words, the general regime applicable to other goods apply mutatis mutandis to dangerous goods, with the exception that the special provisions apply to dangerous goods because of their nature. Most modal liability instruments provide that their general regimes apply as long as the carrier has been fully informed about what it
Distribution of liability for the loss and damage incurred by the transport of dangerous goods is generally subject to the negligence rule. This standard of responsibility is well established in transport law. However, the standard of care differs when the law of negligence is applied to the transport of dangerous goods. The difference is due to the influence of the public law framework that requires the use of specific precautions for each substance that exists. It must be noted that the “public law” aspect of the standard of due care, in most of the civil law transport conventions, is not clearly spelled out. As a result, these conventions do not clearly allocate liability to the party in breach of the specific “public law” standards.

The central point of the private versus public law controversy in this matter revolves around the shipper’s “duty to disclose,” rule. A shipper is not to ship dangerous cargo without the carrier’s knowledge of the nature of the goods. The rule affirms the private law position that the carrier will be burdened only with the risk it accepts to bear. While this liability scheme, based on the shipper’s duty to disclose the nature of the goods, is a cornerstone of the contractual liability regime, in reality, it leaves unresolved the failure of the private law concepts to fully define the elements and extent of the shipper’s duty by reference to the public law framework. This is clear when the shipper’s duty to inform the carrier about the dangerous nature of goods is applied in the multimodal transport of dangerous goods context. The situation arises because, while the “public law” framework exists and can be construed to define the terms of the private law modal conventions, a “multimodal public law framework” does not exist. Instead a

myriad of modal regulations, imposing different requirements on dangerous products' shippers regarding classification, packing, labeling, and documentation make it difficult for the shipper to decide what standards of information will suffice along the entire transportation chain. In addition to different public law requirements, private law standards with respect to the shipper's obligation to inform the carrier of the dangerous nature of goods, is not uniform along the multimodal chain of transport.

The following subsection analyzes these various concepts in relation to different modal instruments that which are critical for multimodal application. It pinpoints some contractual liability issues, the settlement of which are subject to the special regime of the public rules. The analysis aims to develop an understanding of the private versus public law controversy associated with the distribution of liability between the parties to the transport of dangerous goods.

4.2.1. Civil liability for the sea transport of dangerous goods

Liability with respect to the sea transport of dangerous goods has revolved mainly around the carrier's actual or imputed knowledge of the requirements needed to take special care of the cargo and the shipper's duty to inform the carrier of such requirements. In other words, the general regime of contractual liability applies as long as the carrier has been fully informed about the nature of goods. If not, the shipper is responsible for all the damage caused by such shipment.\(^2\)

A shipper's duty to inform the carrier about the dangerous nature of goods has

\(^2\) International Convention for the Unification of Certain Rules Relating to Bills of Lading, signed at
been established and further developed in both civil and public transport legal instruments. As demonstrated in the following analysis, the standards of care that carriers and shippers are held to are not the same in public and private law. Public instruments such as SOLAS, MARPOL, and the IMDG Code precisely define the nature, scope, and range of information that shippers are required to communicate to carriers. These public law provisions are designed to ensure that carriers have adequate information as to the dangerous nature of the goods so that it may take adequate safety precautions. In contrast, while the civil conventions, such as the Hague Rules, the Hague/Visby Rules and the Hamburg Rules, all require that shippers disclose the dangerous nature of goods, they do not define the scope of the duty. The question arises as to whether and to what extent the public rules are used to define shippers’ and carriers’ responsibilities for the safe shipment of dangerous goods in a civil law context.

According to the general rules of maritime law, the liability for damage caused by the transport of dangerous goods rests upon the negligent party. The question is, what test are the courts using to establish the standard of due care, and thereby determine which party was negligent. The following analysis of conventional and common law rules does not provide a uniform answer to this question.

The existing schemes for allocating civil liabilities between shippers and carriers will now be discussed in turn.

4.2.1.1. The Hague/Visby Rules

The Hague/Visby Rules were intended to function as a code of rules primarily
governing the rights, responsibilities, liabilities and immunities arising out of the contractual relationship between the issuer and the holder of an ocean bill of lading. 3

Article IV (6) of the Hague/Visby Rules deals with dangerous goods as a special category of cargo. This category attracts special rules that are not used when dealing with goods that are not dangerous. These special rules, however, make, no attempt to qualify, specify, or to distinguish between “regulated” dangerous goods, the transport of which is permitted only under certain conditions as developed by technical regulations, and goods which are not inherently dangerous but can become dangerous primarily to the parties’ commercial interests. 4 Rather, the rules simply recognize dangerous goods as a special category, only exemplifying which goods can be considered as dangerous. It imposes, in rather unspecified terms, an obligation on the shipper to inform the carrier of the goods dangerous nature.

Article IV (6) of the Hague/Visby Rules states:

Goods of an inflammable, explosive, or dangerous nature to the shipment whereof the carrier, master or agent of the carrier, has not consented with knowledge of their nature and character, may at any time before discharge be landed at any place or destroyed or rendered innocuous by the carrier without compensation, and the shipper of such goods shall be liable for all damages and expenses directly or indirectly arising out of or resulting from such shipment. 5

4 The majority of maritime cases interpreting Article 4(6) of Hague Rules give to the expression “Goods of an inflammable, explosive or dangerous nature” a broader meaning to include not only physically dangerous cargo but also cargo which is susceptible of causing legal detention of the vessel. For example in Leolga Companie de Navigacion v. John Glynn & Son Ltd., [1953] 2 All E.R. at 327, it was decided that dangerous goods included goods which were prohibited at the port of discharge as well as including those prohibited for loading. For a discussion of the definition of dangerous goods, see supra chapter 1, section 1.4.3.
A shipper's explicit duty to disclose the dangerous nature of cargo to the carrier reflects the higher degree of risk that dangerous goods pose. If the shipper does not disclose the nature of the goods it is liable for any damage to the cargo as a result of the carrier's ignorance and consequent failure to apply the special precautions needed due to the dangerous character of the goods. A shipper may not be liable civilly if the shipper can prove that the carrier was informed, or was otherwise bound to know of the dangerous character of the goods, or that its failure to disclose is not a proximate cause of the damage.

Since the rules do not define relevant terms (e.g., dangerous cargo, shipper's duty to warn, carrier's consent with the knowledge of their dangerous nature and character) and do not expressly or implicitly refer to another area of law to use to determine the meaning of these terms courts have had to rely upon general principles of maritime law.

The following analysis will demonstrate first, that the courts have not achieved the desired uniformity in defining the meaning of relevant terms. Second, it will show that though courts have attempted to use the standards set out by the public rules to define the

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3 Hague/Visby Rules, Article IV (6), supra, note 1.
6 Public regulations covering the safety and environmental protection for the transport of dangerous goods by sea such as SOLAS, MARPOL and IMDG Code impose the same requirement on the shipper. See supra, chapter 3, section 3.2.3. For a discussion of the shipper's duty to disclose see infra, section 4.3.1.1.
7 To state a claim under s 1304(6), [US COGSA] a plaintiff-carrier must allege (1) the shipment of goods of an inflammable, explosive or dangerous nature and (2) that the plaintiff-carrier had not consented to the shipment with knowledge of the nature and character of the goods. Borgship Inc. v. Olin Chemical Group, 1997 WL 124127, 1 (S.D.N.Y).
8 Although a shipper's failure to properly label magnesium phosphide as hazardous cargo breached the bill of lading, that breach did not render the shipper and consignee liable for all damages associated with magnesium phosphide spill, as such damages were not foreseeable at the time of the contract, considering remoteness in time and number of intervening events. M/V Santa Clara I v. Compania Minera El Nindo, et al., 887 F.Supp. 825 (D.S.C. 1995)
civil law standards of due care, this attempt is full of inconsistencies and departs from the primary public law rule.

The duty of the shipper to disclose the dangerous nature of goods is considered a cornerstone of the concept governing liability for the transport of dangerous goods. A shipper’s obligation to reveal the nature of goods is not voluntary, but rather it is mandatory and flows directly from preemptory requirement of valid regulations.¹⁰ Although this obligation appears to be strict, case law and conventions with respect to this obligation have unfortunately tended instead to confuse public and civil law concepts. As a result the law suffers from a good deal of uncertainty.

First, the shipper in U.S. law, unlike in English law, is not liable for failing to inform the carrier about dangerous characteristics of the goods if it did not know, or had no means of knowing, that the goods were dangerous.¹² Second, although both jurisdictions apply the general rule that the shipper’s failure to inform the carrier of the nature of goods bears no consequences if the carrier has “consented with knowledge of their nature and character” to carry them, the standards used to determine the carrier’s knowledge differ.¹³ In both jurisdictions, however, the standard of the carrier’s knowledge, which shifts the shipper’s, otherwise strict liability, does not coincide with the amount and quality of information to which the carrier is entitled to receive from the shipper under SOLAS, MARPOL and IMDG the Code. The following sub-sections deals

¹⁰ In Borgship Inc. the court said that when the bill of lading does not define the scope of the shipper’s duty to warn, it must look at the principles of general maritime law to define the shippers’ duty to inform the carrier of the nature and characteristics of its cargo. Borgship v. Olin Chemicals, supra note 10.

¹¹ Searrow Shipping Company v. E.I. du PONT de Nemours and Co. 361 F.2d 833 (5th Cir.1966) 836.

¹² See infra, 4.2.1.3.

¹³ See infra, 4.2.3.1.
in turn with the two points at which the civil liability scheme departs from the strict regulatory requirement for the shipper to inform the carrier about the dangerous nature of goods.

4.2.1.2. The scope of the shipper's duty to inform the carrier about the dangerous nature of goods

If the shipper, in breach of an express or implied term of the contract of carriage, does not inform the carrier about the dangerous nature of the goods and, if necessary, the precautions to be taken, the carrier may land and destroy the goods without compensation to the shipper. The shipper will be liable for all damages and expenses directly or indirectly resulting from the shipment. The scope of the shipper's obligation to give notice is to ensure that the carrier has consented to the carriage of dangerous goods. Accordingly, the carrier can take the precautions required to protect the vessel and cargo, and to prevent other risks incidental to the carriage of dangerous cargo.

When considering whether the shipper is in breach of its duty of disclosure two issues are relevant in the civil law context. The first issue is whether the shipper has

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15 J. Wilson, *Carriage of Goods by Sea* (2d ed. 1993) 34. This obligation has at times been characterised as a warranty. "By the common law of England the shipper of goods impliedly undertakes to ship no goods of such a dangerous character or so dangerously packed that the shipowner or his agent could not by reasonable knowledge and diligence be aware of their dangerous character, unless notice be given to the shipowner or his agent of such dangerous character; and he is therefore liable to any person who is injured by the shipment of such dangerous goods without notice." W.L. McNair, A.A. Mocatta and M.Musitill eds., *Scruton on Charterparties and Bills of Lading* (17th ed. 1964) at 104. See, *The Athanasia Comninos*, [1990] 1 Lloyd's Rep. (Q.B. Com.Ct.) (Musitill, J.) 277, at 288. "This implied warranty does not strictly speaking appear to be an implied term of the contract of affreightment but rather a warranty on which the carrier may rely in entering into that contract; if notice is given the carrier may refuse the goods (in which case there is no contract) or accept them, in which case the shipper is not in breach on account of their
discharged his duty to inform. The second issue is whether the carrier knew or ought to have known about the dangerous nature of the goods. Neither of these key issues can be settled without answering a number of subordinate but crucial questions.

In the situation where notice is not given, the question is whether the shipper’s liability for not doing so is strict or, or is its liability qualified by its actual or constructive knowledge of the properties of the goods. Another question that needs to be answered in this situation is whether the carrier’s actual or constructive knowledge discharges the shipper from its duty to disclose. If it does, what degree of knowledge is the carrier required to have for the shipper to be discharged from liability for the negligent omission to disclose.

In the situation where notice is given the questions are, what is deemed to be sufficient notice. In the situation where the notice is given, but is not complete, what amount of knowledge is the carrier required to have to relieve the shipper of its duty of full disclosure.

The precise scope of the shipper’s duty to disclose has long been the source of controversy in English law. Further, English and American authorities do not agree on the scope of the shipper’s duty. At issue is whether the shipper’s obligation is absolute or limited to matters that the shipper knew or ought to have known.

According to English law the shipper’s duty to inform is absolute. Thus, even if the shipper lacks knowledge of the dangerous character of the goods, it bears full responsibility for the consequences resulting from their carriage. An analysis of

American law shows that the shipper's duty to inform is not absolute.

Both English and U.S. law will be discussed in turn. The scope of the shipper's duty has been a source of controversy in English law for more than a century. It seems to have been finally settled in the most recent case of Effort Shipping v Linden Management SA. (Giannis NK). In a unanimous decision, the House of Lords held that the shipper's obligation is a strict one and does not depend on its actual knowledge, or the knowledge that it could reasonably have ascertained, about the nature of the goods. The duty to disclose was considered so imperative that the law generally presumed that it was done unless evidence to the contrary was provided. The modern origin of such a rule in English law is found in the case of Brass v. Maitland, and was further developed in Athanasia Comninos.

This rule is based on the majority opinion in Brass v. Maitland wherein Lord Campbell stated:

> Defendants and not the plaintiffs, must suffer, if from the ignorance of the defendants a notice has not been given to the plaintiffs, which the plaintiffs were entitled to receive, and from the want of this notice a loss has arisen which must fall either on the plaintiffs or on defendants.

Judicial opinion, inspired by Mr. Justice Crompton's qualified version of the shipper's liability had differed since Brass v. Maitland. The issue was settled in Athanasia Comninos, wherein Mustill J. expressed the view that the shipper's duty to

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16 Giannis NK, supra, note 14.
17 Brass v. Maitland (1856) 6 E & B 470.
18 Athanasia Comninos, supra, note 15.
19 The facts of this case in part relevant to the question of whether the duty to disclose is absolute or qualified, were that the shipper bought the cargo of chloride of lime-already packed, and that they had no knowledge, or means of knowledge, that the packing was not sufficient.
inform the carrier is not qualified by either the shipper’s actual or constructive knowledge of the dangerous properties of the goods. Thus, the view that Article IV, r.3 of the Hague Rules, which exonerates a shipper from liability when fault is not established against it, was rejected and the principle of absolute liability with respect to the shipper approved.

The same opinion was expressed in Giannis NK, with an additional explanation that the majority holding in Brass v. Maitland, regarding the absolute liability of the shipper,21 and has been regarded as authoritative in most countries in what was then the British Empire, including the U.S. The U.S. adopted the rule on the basis that it assigns loss to the party that generally has the best means of informing itself of the character of the goods shipped.22

The absolute liability of the shipper remained the legal position in the United States until the adoption of the Hague Rules. The Hague Rules, which were incorporated into the Carriage of Goods by Sea Act (COGSA), states that the cargo owner’s liability is measured in terms of negligence under s. 1304 (3) of COGSA but can be influenced by the knowledge of the vessel owner.23 Under the U.S. position the shipper is not held to an absolute warranty24 with respect to the safe nature of its cargo, but rather is chargeable only with that knowledge actually or constructively within its possession.25

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20 Brass v Maitlan, supra, note 17, at 486.
21 On the other hand, Crompton, J., strongly indicated that he would opt for a qualified warranty, thus detracting from its absoluteness and making it dependent on whether the shipper had the means of knowing of the cargo’s dangerous character. See dissenting judgement of Crompton, J. Id. at 489.
22 Parsons, A Treatise of the Law of Shipping (1869) at 265-266.
23 For a discussion of the influence of the carrier’s knowledge of danger on the shipper’s liability in US Law see infra, section 4.2.1.3.
24 But see the U.S. “Pennsylvania Rule” and the “Product Liability Rule” which provide for the strict liability of the shipper.
It is clear that English and U.S. law agree that if the shipper is aware of the danger, there is an unequivocal duty on its part to inform the carrier, failing which the carrier bears no responsibility for any consequences for transporting dangerous goods. This is logical since safe carriage depends on the carrier having adequate knowledge of the propensities of the cargo. With this knowledge the carrier can apply at a minimum, the prescribed, i.e., the statutory requirements as to the equipment, stowage, and disposition of the cargo, and other necessary precautions that should be taken with regard to dangerous cargo.

This raises the following question: Is the shipper’s duty to inform the carrier of the dangerous nature of the goods absolute so as to relieve the carrier from all risks arising from the voyage? Although, the shipper’s failure to give appropriate notice is a violation of its public law duty, such a violation does not attract absolute liability.

The English and American positions are very different with regard to the issue of a shipper’s absolute liability when a shipper is not aware of the dangerous nature of the goods. However, the law in both jurisdictions’ is similar when the carrier knew or ought reasonably to have been aware of the dangerous nature of the goods. In both jurisdictions such knowledge discharges the shipper from its strict liability.

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J. Quillan, 180 F. 681, 682-84 (2d Cir.), cert. denied, 218 U.S. 682, 31 S.Ct. 229 (1910); Ionmar Compania Naviera, S.A. v. Central of Georgia R. Co. 471 F.Supp. 942. (S.D.C. 1979). Under admiralty law, a cargo owner is under an obligation of informing a carrier of the inherent dangers in the cargo which are reasonably foreseeable and of which the cargo owner is aware or ought to be aware and of which the carrier is not aware and cannot reasonably be expected to be aware.

26 Despite the stated desirability of the harmonization of rules on the carriage of goods, Lord Steyn in Giannis NK did not affirm the U.S. Courts position arguing: “What would the framers of the Hague Rules have done if collectively they had been minded to adopt the step of reversing the dominant theory of shippers liability for the shipment of dangerous goods? There is only one realistic answer: they would have expressly provided that the shippers are only liable in damages for the shipment of dangerous goods if they knew or ought to have known of the dangerousness of the goods. Giannis N.K. [1998] 1 Lloyd’s Rep.337, H.L.(E) at 343. See also: L.C.Bullow, “Dangerous Cargoes: the Responsibilities and Liabilities of the Various Parties.”(1978)Lloyd’s Maritime and Commercial Law Quarterly 342.
4.2.1.3. Carrier's actual and constructive knowledge of the dangerous nature of goods

The general rule is unambiguous: the shipper has no duty to warn the carrier of hazards that the carrier is aware of or could reasonably be expected to be aware of. The rule clearly allows the shipper to shift liability to the carrier if it can prove that the carrier new or ought to have known of the dangerous character of the goods thereby accepting the risk involved in carrying them. This is the case even in situations where the shipper is in breach of a public rule duty to fully disclose the required information on the dangerous goods. The underlying private law reasoning is that by being aware of the dangerous nature of the goods, the carrier consents to carry them and accepts the responsibilities involved. The following questions arise. First, what standard should courts use in deciding whether the carrier had the knowledge or means of obtaining the knowledge with respect to the nature of the goods carried? Second, what kind of risk was consented to when notice by the shipper was not given or was insufficient? The tests used to determine the carrier's knowledge of the goods, its means of informing itself of their nature, and if proper notice was given, are not uniformly established. Again, the U.S. position is very different from the English position.


28 Which impose absolute responsibility on the shipper to provide information as to the dangerous nature of
In both jurisdictions courts use public law regulations restrictively to set the standard of due care that the shippers and carriers are held with respect to the carriage of dangerous goods. Their liability is measured in terms of the compliance with their public rules, combined with the rules of negligence, such as, causation, foreseeability. While courts refer to public standards, they are not used exclusively to determine the standards of care to which they are held for the purpose of distributing liability. When determining which party is at fault, civil law applies general rules of maritime law, intermixed with rules of torts, whose origin date back to the time when the safety and environmental regulations were not developed to such a great extent as they are today.

The English position of today is based on Lord Campbell’s C.J., ruling in Brass v. Maitland, which was decided more than 100 years ago. It was decided at a time when the transport of dangerous goods was not, as it is now, regulated by exhaustive scientific rules. In this case Lord Campbell pioneered the reasoning that the shipper has the best means of knowing the nature of the goods and that it had a duty to communicate this knowledge to the carrier. He established that the shipper’s warranty of fitness was absolute, regardless of its knowledge or means of knowledge about the nature of goods. However, he qualified the shipper’s liability stating that it was subject to the carrier’s actual or constructive knowledge. Athanasia Comninos Mustill J, when addressing the issue of what standard should be used to determine whether the carrier had notice, or knowledge, or means of knowledge of the hazard and therefore concluding that it

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goods, an obligation precisely defined in terms of form, nature and kind of information. For a discussion of public law rules concerned with hazard communication see supra, chapter 3, section 3.2.3.

59 This is particularly true in US law. See China Union Lines, 364 F.2d 769 (5th Cir.1966) at 784-86. For a
consented to accept the risk, stated:

I do not believe that any general solution can be attempted: everything will depend on the description of goods in the contracts, the size of gap between the proper carriage and completely safe carriage, the knowledge of means of the carrier as to the existence of this gap, and other matters from which the extent of the carrier's assent to the running of the risk can be inferred. All that one can say is that the risk must be of a totally different kind (whether in nature or degree) from those attached to the carriage of the described cargo, before shipment of the particular cargo can be regarded as breach of duty. 30

In this case the view was adopted that, although the inquiry must obviously start and end with the document and its description of the goods, in cases where the cargo had dangerous characteristics different in degree from those notoriously associated with goods of such type, i.e., a special hazard, the danger is regarded as lying outside the area of risk which the shipowner has contracted to bear. 31 He further stated that it has been clear since Brass v. Maitland, that the carrier is not expected to have the knowledge of the expert chemist. 32 In this case Mustill, J., held the time charterer (i.e., the shipper)

shipper's and carrier's strict liability in U.S. law for a breach of regulations see infra. "Pennsylvania rule" and "Product liability rule."

30 The Athanasia Comninos, supra, note 15 at 284. is an important judgement for the reason that Mr. Justice Mustill there adopted a new approach to the problem of allocating the risks relating to the carriage of dangerous goods. In that case, explosions had been caused through the ignition of a mixture of air and methane gas emitted by cargoes of "Devco" coal shipped on two vessels (the Athanasia Comninos and the Georges Christos Lemos). The explosions resulted in damage to the detriment of the shipowners. The charterparty specifically referred to the type of cargo to be carried, i.e., Devco 2 XO Steam Coal. The solution adopted in The Athanasia Comninos relates to allocation of risks which Mustill J. described in the following words: "In such a case, I consider that it is not correct to start with an implied warranty as to the shipment of dangerous cargoes and try to force the facts within it; but rather to read the contract and the facts together, and ask whether, on the true construction of the contract, the risks involved in this particular shipment were risks which the plaintiffs contracted to bear." Supra, note 15, at 284. See also Mediterranean Freight Services Ltd. v. B.P. Oil International Ltd. (The Fiona) [1994] 2 Lloyd's Rep. 506, at 522 (C.A.).

31 The Athanasia Comninos, supra note 15, at 283

liable for all damages to the vessel caused by an explosion, because he found an implied indemnity even though the evidence was insufficient to show liability on the part of the shipper.

While this formula seems sound in the broader context of civil transport law, in the case of dangerous goods, which is considered to be a unique category of goods attracting special and extensively developed public safety rules, it is insufficient. A more complicated test based on a combination of public and civil law ought to be applied to determine the distribution of liability between the parties. This raises a number of issues. What degree of knowledge on the part of the carrier will negate the shipper's duty to disclose? What criteria will be used to define the constructive knowledge of the carrier? What means is the carrier expected to use in order to investigate the nature of the cargo offered for transport when notice to the carrier is not given, or the notice is insufficient? Should the carrier rely on the information given in the notice, or does he have a duty to investigate their accuracy and exhaustiveness? Is insufficient information as to the dangerous characteristics of a particular cargo given by the shipper enough to shift all risks to the carrier? Has the meaning of the “means of knowledge” changed since Brass v. Maitland, given today's wide availability of international regulations, which describe the dangerous properties of goods, the methods for their handling, and conditions for their safe carriage? Does the delineation in Brass v. Maitland mean that the carrier today is not expected to have the “knowledge of the expert chemist”? Or, does it mean that the carrier of today is expected to have knowledge of those parts of the IMDG Code that sets

742, at p. 762.
out a shipper's responsibility to communicate the nature of the goods before shipping the cargo? This last question requires an answer in order to be able to answer the question of whether general description of goods, without specifying the degree and kind of hazard, is sufficient to relieve the shipper of liability? Only after answering these questions will we be able to properly determine the liability of each party.

Although crucial for determining liability, and ultimately enhancing safety and environmental protection, civil law, both statutory and case law, has not provided an adequate formula by which to answer these questions, nor do they make a firm attempt to answer these questions by reference to public law. While, as established above, the English law, based on the general rule laid down in Brass v. Maitland, does not make specific reference to the public standards, U.S. law considers them to be appropriate standards to which carriers and shippers are held. However U.S. law does not synonymously use duties imposed on shippers and carriers by public regulations to define the standards of liability to which they are to be held. In Borgship Inc. v. Olin Chemical Group (M/V Skanderborg) the court distinguished cases in which the bill of lading specifically required compliance "with all the statutes, ordinances and regulations of the Department of Transportation," from those which did not define the scope of the shipper's duty to warn. Since the bill of lading in this case did not define the scope of the shipper's duty to warn, the court defined the shipper's duty to warn looking at the principles of general maritime law. Then, citing Ionmar Compania Naviera S.A. v. Olin

34 The Borgship, Id, at 3, referring to Santa Clara, supra, note 8.
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it found that compliance with DOT regulations does not necessarily satisfy, as a matter of law, a shipper’s duty to warn.

In *Ionmar Compania Naviera, S.A.* v. *Central of Georgia Railroad Company* the court held both the stevedore and the shipper liable proportionately to their respective faults. The standard employed was a balance between the degree of information that the shipper was expected, but failed, to provide to the stevedore and, the degree of knowledge that the stevedore was expected to have about the dangerous nature of goods. In this case the shipper, despite labeling the dangerous cargo as prescribed by the Coast Guard Regulations, was found 85% liable for failing to give sufficient warning to the parties in the chain of delivery as to the propensities of the cargo and the necessity special handling. The court ruled that, if there was an increased danger beyond the minimum that the standards were designated to meet, it may be considered negligent to do more than the standard required by the regulations. In this case, the “yellow sticker” sign, required by the Coast Guard for containers of oxidizing agent, was not sufficient to shift the entire responsibility to the stevedore. The full disclosure of the cargo’s propensity was required. The court also held the stevedores who handled the goods 15% liable because they should have known more about the dangerous nature of goods due to their long experience in handling such goods.

Against the strict position that the carrier’s negligent handling does not destroy the legal effect of the shipper’s dereliction in shipping dangerous goods without full

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35 Noting defendants’ compliance with DOT regulations, but remanding to ascertain what knowledge was possessed by each party with respect to the nature of dangerous goods shipped and to ascertain whether carrier was chargeable with notice of the governmental and industry regulations governing the stowage of
disclosure stands the carrier's obligation to ascertain the dangerous characteristics of the cargo it carries.\textsuperscript{37} As the previous quotation from \textit{Brass v. Maitland} demonstrates, the obligation not to ship dangerous goods without giving notice relates to goods "which those employed on behalf of the shipowner may not on inspection be reasonably expected to know to be of a dangerous nature."\textsuperscript{38} Although, in earlier common law cases carriers lacked the authority to inspect packages,\textsuperscript{39} modern courts in both English and American jurisdictions have recognized the carrier's right to inspect.\textsuperscript{40} That right has existed for the protection of the carrier's and other shipper's property. It is rooted in the rule common law principle that common carriers have the right to decline the shipment of packages proffered in circumstances indicating contents of a suspicious, indeed of a possibly dangerous nature.\textsuperscript{41}

The common law rule as initially established in \textit{Brass v. Maitland} making the


\textsuperscript{38} \textit{Brass v. Maitland}, supra note 17 at 470.


\textsuperscript{40} \textit{Adams Express Co. v. Commonwealth}, 129 Ky. 420, 112 S.W. 577, 580 (Ky.App.1908) ("... if the carrier believes upon reasonable grounds that it is contraband... and, if an inspection is reasonable and practicable under the circumstances, may require an inspection.") is the earliest reported case which recognises a right to inspect.

\textsuperscript{41} \textit{Bruskas v. Railway Express Agency}, 172 F.2d 915, 918 (10th Cir. 1949). The Court in \textit{Bruskas} stated: "(t)he carrier was under no duty to ascertain the contents of a shipment free from suspicion, or to require information as to the contents of the package offered as a condition of transportation. It was only when the appearance of the package or other circumstances excited the suspicion of the carrier, that it incurred any duty to inquire concerning the contents of the package offered, as a condition for carriage. \textit{Dinsmore v. Louisville}, F. 593, 605-606 (C.C.D.Ind.1880); \textit{The Buenos Aires}, 46 F.2d 693, 695(S.D.N.Y.1931); \textit{State v. Swett}, 87 Me. 99, 32 A. 806, 809-810 (1895).
shipper strictly liable, subject to the carrier’s constructive or actual knowledge of the nature of the goods, rendered the strict liability rule in this age almost of no practical use. Today, most shipping lines are specialized in transporting specific cargo and are expected to have sufficient knowledge of their propensities. Further, there is the world-wide availability and applicability of the SOLAS, MARPOL, and the IMDG Code. These provide information on the dangerous properties of goods carried by ships in a clear and informed manner. In view of this, the relevance of the shipper’s and the carrier’s actual and constructive knowledge of the dangerous nature of so-called regulated dangerous goods, is legally outdated.42 This is because the shipper’s duty to disclose the dangerous nature of goods in private law is not synonymous with its duty under safety and environmental protection regulations, except in rare cases. Such a rare case exists when the shipper has allegedly misled the carrier with respect to the nature of the cargo, by recklessly or purposefully declaring other cargo instead of the dangerous one. In that situation a case may be made on behalf of shipper that the carrier has the same accessibility to regulations which describe the dangerous nature of goods and therefore the “means of knowledge” which makes it also liable. The shipper’s exclusive liability would then appear only on the rare occasion when the carrier was not informed at all that the goods are dangerous by their characteristics or means of packaging.43 In cases where the carrier is informed of the nature of the goods in unspecified terms, or it is informed of the kind of goods but not of their properties, the shipper may avoid or share

42 In another context it has been stated ” '[w]here stops the reason, there stops the rule.” *Aetna v. Barthelemy*, 33 F.3d 189, 193 (3rd Cir. 1994).
43 As in *Giannis NK*, supra, note 14, where neither the shipper nor the carrier knew the dangerous nature of
liability with the carrier on the ground that the carrier has an obligation\textsuperscript{44} and the means\textsuperscript{45} to ascertain undeclared or insufficiently declared cargo.

The following discussion of two rules specific to the United States, namely the product liability rule, and the Pennsylvania Rule, concerns legal concepts which tend to introduce strict liability and qualified liability for the breach of a statute respectively, into the sphere of the transport of dangerous goods by sea. Under the product liability rule the shipper who is also the manufacturer of the goods is held strictly liable for the failure to give adequate warning when the product shipped is extraordinary in nature. The Pennsylvania Rule introduces strict liability for statutory fault. Both concepts are well established in U.S. maritime law.

\textsuperscript{44} In Petition of Republic of France, as Owner of M/V Grandcamp, in a cause of Exoneration from and Limitation of Liability. 171 F.Supp. 497 (U.S. Distr. Court S.D. Texas, Galveston. 1959) the shipper declared cargo as “fertilizer” (FGAN) which was essentially ammonium nitrate. The court held that the petitioner French Line was, “in privity and knowledge,” aware of the unseaworthy condition of the cargo, in that it failed to know or to learn, from information readily available, the nature and character of the cargo accepted, and neglected and failed to inform the Master fully in connection therewith. The court held also that as carrier the French Line was under the duty to use due care to ascertain the nature and characteristics of the cargo accepted, and, as a matter of law, it was chargeable with the knowledge which reasonable inquiry and investigation would have disclosed. It has also been held that the charterer of vessel, which accepted cargo which it knew or should have known to be a dangerous article without demanding from the shipper an originating shipping order containing the shipper’s certification that the cargo in question complied with Coast Guard regulations, was at fault in accepting the cargo.

\textsuperscript{45} The court in the Grandcamp, pointed that the owner and the operator of the Grandcamp had a long experience in transporting cargoes of nitrates. The Master of the Grandcamp, was found chargeable as a matter of fact and of law with knowledge that ammonium nitrate (which was declared as FGAN) is and was an oxidizing agent; and a fire hazard; and that ammonium nitrate was a “dangerous article” within the purview of the statutes and Coast Guard Regulations. The court also pointed out that evidence showed that prior to the disaster there was an abundance of information available in the shipping trade as to the hazards of ammonium nitrate. In addition to the Coast Guard Regulations, the court cited other sources of information that were available, such as “Carriage of Dangerous Goods and Explosives in Ships” by the British Board of Trade; National Board of Fire Underwriters summary of fire and explosive hazards of ammonium nitrate. Regulations of the French Ministry of Public Transportation (1945) and other sources. Additionally, reference was made to many sources of information available prior to the disaster, dealing with the hazards of ammonium nitrate, and the precautions that should be observed in its handling.
4.2.1.4. Product Liability Rule

American courts have adopted a product liability rule which allows the carrier to rely on the manufacturer's (usually the shipper's) strict liability for the failure to give adequate warning, when the product, i.e., goods shipped, are of an extraordinarily dangerous nature:

[When] a failure to give adequate warning is alleged to have made a product unreasonably dangerous, the standard for strict liability is essentially similar to the standard for establishing negligence; the seller or manufacturer has a duty to warn of foreseeable dangers.\(^{46}\)

It has been said that the strict liability doctrine may require the manufacturer to use reasonable efforts to bring the warning to the attention of the potential user. The seriousness of the consequences of an accident bears on the duty, scope, and degree of the warning. Every reasonable precaution suggested by experience of the attendant dangers should be taken.\(^{47}\)

Although this rule appears to have limited application in the context at issue here (because it is not applicable to all shippers, but exclusively to the manufacturer who also

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\(^{46}\) Borel v. Fibreboard Paper Products Corporation, 493 F.2d 1076, 1093 (5th Cir. 1973). In Pan-Alaska Fisheries, Inc. v. Marine Construction & Design Company, 565 F.2d 1129 (9th Cir. 1977) the Ninth Circuit said: "We hold that strict products liability actions have become sufficiently well-established to justify its being incorporated into the law of admiralty." That case involved a fire aboard a vessel as a result of which she ultimately sank. The decision cites the precedents supporting the rule that strict liability applies in admiralty. On the development of products liability in maritime law see the article by P.S. Edelman, (1978) XIV Forum, at 230-250. "(T)he concept of "foreseeable risk" is universally taken to mean the foreseeability of a general kind or type of risk, rather than the foreseeability of the precise chain of events leading to the particular injury in question." Hall v. E. I. DuPont De Nemours & Co., Inc., 345 F.Supp. 353, 362 (E.D., N.Y.1972).

\(^{47}\) 72 C.J.S. Supp. Products Liability s 28; Restatement of the Law 2d Torts s 388, at 301, 308-310; Frumer and Friedman, (1978) 1 Products Liability s. 803(3), at 176, 180, s. 805(3), at 186.
happens to be the shipper),\textsuperscript{48} its scope is much more far-reaching than it appears at first. First, the product liability rule offsets the U.S. court rulings that have held that the shipper's liability is not an absolute one but is subject to its actual knowledge of the dangerous nature of the goods. In cases where the manufacturer is also the shipper, the carrier does not have to go through a lengthy process of establishing that the manufacturer (shipper) had adequate knowledge of the nature of the goods in its possession. The manufacturer's duty to inform the carrier of the dangerous nature of the goods is absolute and the liability is strict.

Second, there is great potential to apply the rule to resolve liability issues that are specific to multimodal transport. The complex network of shippers and subcontractors involved in multimodal transport operations may well create gaps in the communication of relevant information. According to U.S. law this can lead to the discharge from liability of all participants in the chain based on their claim of ignorance with respect to the nature of the goods. For instance, a multimodal transport operator (MTO) may be given inaccurate information as to the nature of the goods and then pass it on to other shippers and carriers in the multimodal chain. Since the shipper's duty to warn according to U.S. law is not absolute, but is qualified by the shipper's actual or constructive knowledge, the MTO could easily escape liability for damages to the sub-carriers. The product liability rule makes it possible for carriers who suffer damage to claim liability directly against the manufacturer based on the manufacturer's strict liability.

While the U.S. product liability rule does not explicitly refer to the public law,

\textsuperscript{48}Therefore a sub-carrier can not succeed by invoking the rule against a multimodal transport operator who
the rule may be said to be the most consistent with the corresponding public law duty. When determining liability both public and private rules employ the same line of reasoning: the shipper, or manufacturer, has the best means of informing itself and others in the transport chain, of the good's properties.

4.2.1.5. The Pennsylvania Rule

When analyzing the legal instruments that deal with the distribution of civil liability, and their comparability to the public law standards, the Pennsylvania Rule, an American common law rule, should be mentioned. The importance of the Pennsylvania Rule, in the context of determining civil liability for damages incurred by the transport of dangerous goods, lies in its affirmation of a statutory duty to look for the crucial moment at which the presumption of liability and, therefore, the burden of proof and evidence, are presented. It answers the question of liability for the breach of statutory duty. As such, it helps to dispense with the hypothetical and patchwork-like method of determining the actual and constructive knowledge of the contractual parties.

The Pennsylvania Rule is named for the famous admiralty case in which it was first announced.49 The Rule provided that when a ship at the time of a collision is in violation of a statutory rule intended to prevent collisions, it is no more than a reasonable presumption that the fault, if not the sole cause, was at least a contributory cause of the disaster. In such a case, the burden rests upon the ship to show, not merely that its fault might not have been one of the causes, or that it probably was not, but that it could not

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assumes the role of shipper against his sub-carrier.
have been. The statutory violator who is subject to the Pennsylvania Rule, may rebut the presumption of the Rule by making a clear and convincing showing that the violation could not have been the proximate cause of the accident, or by demonstrating that the accident would have occurred despite the statutory violation.\textsuperscript{50} For purposes of applying the Pennsylvania Rule, in cases where there is no clear link between the statutory violation and the casualty, the party seeking to take advantage of the Rule must make a showing that the statutory violation may have had some relation to the accident.\textsuperscript{51}

Although the Rule originally applied only to collisions between ships, it has been reformulated in U.S. law to apply to any statutory violator who is a party to a maritime accident.\textsuperscript{52} In *United States v. Nassau Marine*, the court articulated a test for determining when to apply the presumption of the Pennsylvania Rule. The court held that three elements must exist: (1) proof by a preponderance of the evidence of a violation of a statute or regulation that imposes a mandatory duty; (2) the statute or regulation must involve marine safety or navigation; and (3) the injury suffered must be of a nature that the statute or regulation was intended to prevent.\textsuperscript{53} If each of these criteria is satisfied, a party is entitled to a presumption that a statutory violation of a defendant caused, or at least contributed to, the injury or damage.

The Rule was clearly intended to aid those who were injured as a result of the

\textsuperscript{49} *The Pennsylvania*, 86 U.S. (19 Wall.) 125, 136, 22 L.Ed. 148 (1873).

\textsuperscript{50} In the matter of the complaint of *Nautilus Motor Tanker Co.*, Ltd. as owner of the *M/T BT Nautilus* for Exoneration from or Limitation of Liability, 85 F.3d 105 (1996).

\textsuperscript{51} *United States v. Nassau Marine*, 778 F.2d 1111 (5th Cir.1985); *Cliffs-Neddrill v. M/T Rich Duke*, 947 F.2d 83, 86 (3d Cir.1991); See also *Folkstone Maritime v. CSX Corporation*, 64 F.3d 1037, 1047 (7th Cir.1995).

\textsuperscript{52} See e.g., *Pennzoil Producing Co. v. Offshore Express, Inc.*, 943 F.2d 1465, 1471 (5th Cir.1991).

\textsuperscript{53} *United States v. Nassau Marine*, supra, note 51, at 1116-1117. See also, *Folkstone Maritime*, supra, note
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statutory violation. Applied in the context of the transport of dangerous goods, the rule allows the party who suffers damage to define the scope of the duty of the party at fault by relying on the unequivocal terms of the statutes, in this case, safety and environmental protection regulations. By placing the presumption of fault on the party in breach of the statutory duty, thus shifting the burden of proof to that party, the rule allows the parties to avoid vague conventional and common law concepts which mix a shipper’s absolute duty to warn with a carrier’s actual or constructive knowledge. Furthermore, the Pennsylvania Rule affirms the need for the convergence of parties’ public and contractual duties.

Most of the cases involving dangerous goods, whether based on the bill of lading or in tort, building upon unreliable evidence, single out the party which had actual or constructive knowledge of the nature of the goods and ultimately end up with determining which party’s negligence was the proximate cause of the damage. As already established, when deciding which party is negligent the courts base the standard of due diligence on the public regulations, but often depart from the public rules on the subject. The application of the Pennsylvania Rule, coupled with official records and reports on accidents involving dangerous goods\(^\text{54}\) would make it easier for the injured

\(^{52}\) at 1047.

\(^{54}\) The public evidence exception to the hearsay rule does not preclude the introduction of opinions and conclusions in public reports so long as all statements in such a report are based on factual investigation, and any portion of the report that is admitted is sufficiently trustworthy. Fed.Rules Evid.Rule 803(8)(C), 28 U.S.C.A. In a tanker owner’s limitation of liability suit, the district court properly determined that the Coast Guard investigatory report regarding the grounding of an oil tanker was admissible under the public records exception to the hearsay rule. The district court considered the appropriate factors regarding the document’s trustworthiness, including timeliness of investigation, investigator’s skill and experience, whether hearing was held, and possible bias. 46 App.U.S.C.A. ss 181- 189. In the same suit it was held that a Coast Guard investigatory report regarding the grounding of an oil tanker could be admissible under the public records exception to the hearsay rule, notwithstanding the Coast Guard regulation stating that investigations of marine casualties were for the purpose of promoting safety at sea, and were not intended to fix civil or criminal responsibility. It was held that the government was not a party to the litigation and
party, and the courts, to establish relatively reliable evidence that the breach of the statutory rule proximately caused the damages. Should both parties be in breach of their statutory duty, such as the case where the shipper failed to disclose the exact danger of the goods and the carrier failed to ascertain the relevant details, and both failures contributed to the damage, the liability would be apportioned between them according to the contribution of each breach to the consequences.

In *State of Louisiana v. the M/V Testabank, et al.*, 55 while the court acknowledged that the Pennsylvania Rule has been applied in a non-collision context, 56 it did not find the shipper liable under Pennsylvania Rule because the cargo of chemical Pentachlorophenol (PCP) was not regulated under federal law, but only under the IMDG Code. 57

The court's hesitation to attach liability to the party in the face of its compliance with detailed regulatory scheme, with exceptions discussed in relation to the Product Liability Rule and the Pennsylvania Rule, is in part explained in the context of international multimodal transport. The lack of one single set of rules applicable to shippers and carriers along the entire transportation chain makes it difficult for courts to hold parties to the multimodal transport to a standard of due care established by a statute.

The court's hesitation to apply the sea transport international regulatory scheme in the

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56 *Citing Candles Towing Co. v. M/V B&C Eserman*, 673 F.2d 91 (5th Cir.1982).
57 There is nothing in federal regulatory scheme that indicates that optional compliance with the IMDG Code in the transportation of regulated substances which makes compliance with the IMDG Code
context of the private law is surprising given, as it appears in this study,\textsuperscript{58} that the IMDG Code is a uniform and globally accepted regulatory scheme. However, the fact is the national implementation of the international regulatory scheme is not uniform,\textsuperscript{59} and it is difficult to apply a statutory rule in the context of strict liability. This problem was clearly identified, but not resolved by delegates who negotiated the Hamburg Rules in 1978.

The negotiating history of the Hamburg Rules\textsuperscript{60} shows an intention by delegates to catch up with the regulatory and other developments in the field of dangerous goods transport.\textsuperscript{61} The International Chamber of Shipping, for example, proposed that in order to achieve safety at sea, it was important to, (1) impose a strong obligation on behalf of the shipper to inform the carrier of the dangerous nature of the goods, and (2) provide that the shipper could not easily escape liability by alleging that the carrier had knowledge of the dangerous nature of the goods.\textsuperscript{62} Furthermore, delegates from Tunisia, Austria, Bulgaria, Yugoslavia, Mauritius, the United Kingdom, Brazil and France were in favor of imposing on the shipper a duty to mark or label dangerous goods as dangerous in a manner that complies with the regulations in force and with the particular practices observed in the carriage of that type of good. Again, the proposal was advanced that the

\textsuperscript{58} See supra, chapter 3, section 3.2.3.3.
\textsuperscript{59} As for example in the case of an explosion of the cargo on the board of M/V Testbank, where the U.S. federal regulations and IMDG Code differed in respect of PCP cargo and the court found that the Pennsylvania Rule was (in addition to other reasons) not applicable.
Rules should include a definition of dangerous goods by reference to existing international regulations. Both proposals were rejected, on the ground that regulations differ from one port to another and that a problem will arise as to which port's regulations were applicable. Furthermore, it would impose on the shipper the onerous task of learning all the rules and regulations applicable at the various ports concerned. All proposals to make reference to the IMDG Code were also rejected on the ground that it is not a mandatory instrument, and therefore such mention might cause problems in regard to the ratification of the Convention being prepared. Although the delegates were fully aware that the provision, without making reference to international norms concerning dangerous goods, did not give much direction to the courts in deciding what the shipper should have done to comply with the obligation to inform the carrier of the nature of the goods it was taking over, Article 13 of the Hamburg Rules remained vague. Article 13 (1) imposes a duty on the shipper to mark and label dangerous goods in a suitable manner, but no penalties are imposed on the shipper for not doing so.

Dangerous goods covered by special public law rules make up the largest part of the category of dangerous cargo. The allocation of civil liability in international transport based on regulations governing the carriage of dangerous goods, requires these standards to be ascertainable by courts and the contractual parties. Parties should know before committing themselves to a contract of carriage what standard of care they will be held to.

62Id., at 93.
63The delegation of Mauritius proposed the following text: "When the shipper hands over dangerous
4.2.2. Inland Transport by Road and Rail

The rules with respect to the distribution of liability between shippers and carriers in international inland transport have been subject to international codification in Europe, but only where the Convention Concerning International Carriage by Rail (COTIF),\textsuperscript{65} applies to the international rail transport, and the Convention on the Contract for the International Carriage of Goods by Road (CMR)\textsuperscript{66}, to international carriage of goods by road. The rules are in many ways broadly similar to those that apply to carriage by sea, since many of the issues involved in all three modes of transport are the same. These provisions have generated far less case law than the carriage by sea rules. This is probably because they are more recent, and the principles have been worked out in the older carriage by sea cases. Furthermore, carriage by sea is considered to be inherently more dangerous and more likely to give rise to loss than other forms of transport.

Although the two essentially commercial conventions contain the same general principles pertaining to the transport of dangerous goods, they differ with respect to some specific legal arrangements. In this way they add to the fragmentation of laws with regard to the international transport of dangerous goods.

4.2.2.1. Position under CIM/RID\textsuperscript{67}

\textsuperscript{64} Id., at 276.
\textsuperscript{65} Concluded at Bern May 9, 1980, entered into force May 1985, (1978) B.T.S. 1 (Cm. 41) (F.E) (1993) BTS 52(Cm.2312) (consolidated text).
\textsuperscript{67} Regulations Concerning the International Carriage of dangerous Goods by Rail (RID), done at Bern, January 1959, 329 U.N.T.S. 3.
There are notable differences between CMR, Hague/Visby, and Hamburg Rules on the one hand, and CIM/RID on the other, with respect to their legal nature. Sea and road transport conventions do not expressly refer to public law standards when defining the meaning of provisions establishing the responsibilities of the parties, but rather resort to the general contract and common law principles. CIM, however, defines the responsibilities of the parties that transport dangerous goods by rail by explicitly referring to the public-law regulations (RID).

Article 4 (1) of CIM provides that the railway shall not accept dangerous goods for carriage except in compliance with the conditions laid down in the RID. Under RID Article 13, the shipper has a duty to furnish a general description of goods in the consignment note and to provide all the information regarding the shipping name, hazard class, compatibility group, packing methods, marks and container numbers and any special precautions regarding the cargo. Further, a declaration that the content of the consignment is fully and accurately described and classified, packed, marked, and labelled according to international and national regulations is required.

It also appears, from reading Article 18 of CIM, that the shipper will be unlimitedly liable to the carrier for all consequences in the event those particulars are irregular, incorrect, or incomplete. In particular, the consignor shall be liable for all the consequences of the absence of the packing, or the defective condition of packing, and shall make good any loss or damage suffered by the railway from this cause. In addition to its liability for all loss and damage to the railway, the consignor will lose its
right to compensation for its own loss or damage resulting from, the insufficient
description of the articles listed in RID, or its failure to observe the prescribed
precautions. Furthermore, when a railway establishes that the damage could have
arisen from these reasons, there is a statutory, though rebuttable, presumption that it did
so arise.

Although CIM uniquely imposes strict liability for the breach of statutory rules, it
does not solve other problems that can arise in the course of the transport of dangerous
goods when damage occurs. For example, the Convention is silent on the issue of the
redistribution of risk from the consignor to the railway when the consignor does not
inform the railway about the dangerous nature of goods, but can establish that the railway
knew or had the means of knowing that the goods were dangerous.

However, CIM does not provide any formula for the distribution of liability
between the railway and the consignor when the deficiencies in packing are apparent to
the railway. Neither does it deal with railway’s right to unload or destroy the dangerous
goods if the consignment does not correspond with the particulars in the consignment
note, or when the railway discovers that the cargo is in fact dangerous. In the absence of
conventional provisions and case law specifically dealing with such issues, it appears
legitimate to assume that the common law rules applicable to other modes of transporting
dangerous goods, or the general principles of law would apply in such cases.

At common law, the carrier, whether common or private, is not obliged to carry

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68 CIM, Article 19(4).
69 RID, Article 36 (3) (g)
70 RID Article 37 (2). Note the similarity of this concept to the concept affirmed in the United states in the
dangerous goods without the protection of a compensatory warranty of fitness by the shipper. The shipper will therefore be liable if it consigns goods that contravene the common law warranty of fitness, and the carrier has no reason to anticipate their dangerousness. CIM affords wider protection for the railway than does the common law, as the carrier will lose the protection of the common law if it is established that it knew or ought to have known of the dangerous nature of goods. CIM takes a more rigid approach to defining the extent of the consignor's duty to provide appropriate information. These requirements for information are established, and the responsibilities of contracting parties are made, by explicit reference to the safety regulations of the RID.

4.2.2.2. Position under CMR/ADR

Like the Hague/Visby and Hamburg Rules, but unlike CIM, the CMR approaches civil liability for the transport of dangerous goods as a category and creates a separate set of rules to govern it.

Article 22 of CMR provides that:

(1) When the sender hands goods of a dangerous nature to the carrier, he shall inform the carrier of the exact nature of the danger and indicate, if necessary, the precautions to be taken. If this information has not been entered in the consignment note, the burden of proving, by some other means, that the carrier knew the exact nature of the danger constituted by the carriage of the said goods shall rest upon the sender or the consignee.

(2) Goods of a dangerous nature which, in the circumstances referred to in paragraph 1 of this article, the carrier did not know were dangerous, may at any time or place, be unloaded, destroyed or rendered harmless by the carrier, without compensation; further the sender shall be liable for all

Pennsylvania Rule.

71 See Paton: Bailment in the Common Law (London: Stevens and Soons, 1952) at 262.

expenses, loss or damage arising out of their handing over for carriage or of their carriage.

Although the CMR does not expressly refer to public regulations that set detailed standards and conditions to be followed by carriers and shippers, like the CIM/RID, it nevertheless indicates in a more elaborate manner than the Hague/Visby Rules, the terms and principles to be followed by the parties to the contract.

CMR stipulates for that the shipper has a duty to inform the carrier of the exact nature of the danger and requires it to enter such information into the consignment note. Thus, CMR defines both the extent of the knowledge that the shipper should communicate to the carrier and the method of disclosure. The consignor's failure to enter the required information in the consignment note creates a rebuttable presumption that the carrier did not know the exact nature of the danger. This provision must be read in conjunction with other provisions with respect to the consignment note and defective packing. Article 6 (1) (f) requires the shipper to enter on the consignment note the method of packing and a generally recognized description of the dangerous goods. In practice, this requires careful adherence to the provisions of ADR in documenting the consignment, classifying and describing of the goods therein. The Convention also provides that the sender is unlimitedly liable for all expenses, loss or damage sustained by the carrier through any inaccuracy in such information. It also provides for damage to persons, equipment and goods, and for any expenses due to the defective packing of

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74 CMR, Article 7(1)(a)
the goods.75

In addition, the sender may have to shoulder the risk of damage to the cargo themselves, since CMR Article 17(4) relieves the carrier of liability for loss or damage to the cargo due to special risks inherent in some situations, one of which is defective packing. When the carrier establishes that loss, damage or delay could be attributed to one of the special risks referred to in Article 17(4), it will be presumed that it was so caused.76 It should be noted, however, that the sender would avoid liability where defects in packaging, or the exact nature of the goods was apparent or known to the carrier at the time when it took over the goods, without reservation.77 However, in practice, this plea of the sender is likely to be of limited value since in the case of goods listed in ADR, a transport document is mandatory.78 Accordingly, it is apparent that if a sender fails to declare goods which are subject to ADR, and to ensure that they are correctly packed, the carrier will be exonerated from liability and the sender will instead be unrestrictedly liable to the carrier under CMR.

In conclusion, one can note that, although ADR is not concerned with the distribution of civil liabilities, but rather is concerned with the distribution of responsibilities between parties with respect to classification, marking, labeling, packing, documenting, loading, handling, stowage and transporting of dangerous goods, CMR and ADR are indeed complementary in their effect. The compliance with ADR requirements will be relevant, although not conclusive, as to liability under CMR. Furthermore, the

75 CMR, Article 10.
76 CMR, Article 18(2).
77 CMR, Articles 7, 10, and 22(2).
wide protection created on behalf of the carrier in view of the presumptions contained in Article 22(1)\(^79\) and Article 18(2),\(^80\) clearly indicate the relevance of compliance by the shipper with ADR.

4.2.3. Multimodal Transport

The fragmentation of public safety and environmental protection rules and the fragmentation of private law concepts between different modes of transport, coupled with the lack of integration between the private and public law rules, is most obvious when dangerous goods are transported multimodally. Although the United Nations Convention on International Multimodal Transport of Goods\(^81\) was an attempted to respond to the needs of the modern door-to-door transport system, by integrating the different modes' liability schemes into a single set of rules applicable along the entire journey,\(^82\) the Convention did no more than the modal regulations of the Hamburg Rules. Thus, the Multimodal Convention retains all the previously mentioned legal ambiguities and the mixture of different concepts.\(^83\) In addition, there is no single set of safety and environmental protection rules that can provide a frame of reference for determining the liability of the MTO along the entire transport chain.

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\(^{79}\) The consignment note will be acceptable as such, provided it contains the information required under ADR. For a discussion of its requirements see *supra*, section 3.2.1.

\(^{79}\) Under 22(1) of CMR, if the information on the exact nature of the goods has not been entered in the consignment note, the burden of proving, by some other means, that the carrier knew the exact nature of the danger constituted by the carriage of the said goods shall rest upon the sender or the consignee.

\(^{80}\) Article 18 of CMR creates a presumption that, when the carrier establishes that in the circumstances of the case, the loss or damage could be attributable to special risks referred to in article 17 (4) (discussed above), it shall be presumed that it was so caused. See *supra*, note 77.


\(^{83}\) See *supra*, chapter 3, section 3.1.
The Article 23 of the Multimodal Convention, which faithfully follows Article 13 of Hamburg Rules, provides:

1. The consignor shall mark or label in a suitable manner dangerous goods as dangerous.

2. Where the consignor hands over dangerous goods to the multimodal transport operator or any person acting on his behalf, the consignor shall inform him of the dangerous character of the goods and, if necessary, the precautions to be taken. If the consignor fails to do so and the multimodal transport operator does not otherwise have knowledge of their dangerous character:

   (a) The consignor shall be liable to the multimodal transport operator for all loss resulting from the shipment of such goods; and

   (b) The goods may at any time be unloaded, destroyed or rendered innocuous, as the circumstances may require, without payment of compensations.

3. The provisions of paragraph 2 of this article may not be invoked by any person if during the multimodal transport he has taken the goods in his charge with knowledge of their dangerous character.

4. If, in a case where the provisions of paragraph 2 (b) of this article do not apply or may not be invoked, dangerous goods become an actual danger to life or property, they may be unloaded, destroyed or rendered innocuous, as the circumstances may require, without payment of compensation except where there is an obligation to contribute in general average or where the multimodal transport operator is liable in accordance with the provision of article 16. 84

Articles 23 (1) and (2) should be read in conjunction with Articles 8 (1) and (2), which impose an obligation on the shipper to furnish the multimodal transport operator with, and to guarantee the accuracy of, the particulars stating the dangerous nature of the goods. It appears from these articles that there is inconsistency between them in respect

84 Multimodal Convention, supra, note 81, Article 23.
of the consignor’s liability for resulting damages. On one hand, Article 12 creates the presumption of accuracy of particulars furnished by the shipper regarding the general nature of the goods, leading to the consignor’s unlimited liability to the multimodal transport operator for loss resulting from possible inaccuracies or inadequacies of such particulars. On the other hand, Article 23 defeats the guarantee of the consignor by making its liability subject to the multimodal transport operator’s knowledge of the dangerous nature of the goods and its taking of the goods into its charge with such knowledge.

Furthermore, although Articles 8 and 23 stipulate that the consignor has a duty to mark and label the goods as dangerous in a suitable manner and a duty to inform the carrier of their dangerous character, it is not clear what is meant by “suitable manner” and what amount and type of information is considered to be sufficient to fulfill these obligations. Conversely, the question arises as to what amount and kind of knowledge the multimodal transport operator should evidently possess to be deemed to be aware of the dangerous nature of the goods.

The increased number and complexity of dangerous substances on the market has made the identification of their dangerous nature, and the communication of adequate information absolutely crucial to safeguard against the risks they entail. The duty to identify, and to inform of the risks that dangerous substances pose in general, and in the course of transport in particular, has developed within a realm of both public and private law. These two sets of law seek to achieve different objectives. While the public law intends to prevent harm to the general public, the private law seeks to individualize and to
remedy the harm inflicted. But, as this study argues, the conceptual discrepancies of the two legal approaches do not justify departure from the basic public law standard which identify the boundary between the shipper’s and the carriers responsibilities for the safe carriage of goods.

According to private law a carrier who contracts to carry goods of a particular description contracts to perform the carriage in a manner appropriate to goods of that description, and thereby assumes all risks of accidents attributable to a failure to carry in that manner.85 The information, required by both public and private law to enable the carrier to perform the carriage in a safe manner, should, as a minimum, contain the public law requirements related to the hazard communication because they are scientifically most credible.

As established in chapter 3, the hazard communication requirements are not, in public law, limited to the general description of goods but also includes the specific hazards, marking, labelling and placarding and certification as to the appropriate packaging and stowing of packages into container, and, if needed, instruction as to special precautions to be taken in the course of transport. The hazard communication requirements are particularly important for the multimodal transport of dangerous goods since the carriers involved in the multimodal chain determine the proper method of carriage entirely relying on information communicated to them by the MTO and the shipper.86 Therefore, the public law standards of hazards communication should be

incorporated into the private law standards of due care and should be consistent along the entire transport chain.

The spirit and the letter of the Convention indicates that, because the multimodal transport operator assumes responsibility for the entire transport chain, the consignor is expected to furnish information on the nature of goods covering the entire transport chain, and also to mark, and label the dangerous goods as dangerous, in a manner suitable for all modes of transport involved. The multimodal transport operator, on the other hand, accepts all the risks attached to the moving of dangerous goods along the entire transport chain, logically under the assumption that the operator is aware of the risks attached to all modes of transport.

Keeping in mind the previously established lack of uniformity in both the liability concepts of the modal private-law conventions and the public law regulations, it is not difficult to see the practical and legal hardships that consignors, MTOs, and subcontracting carriers will have determining the content and the scope of their obligations in a multimodal chain. It is likely that in the absence of there being any binding regulations applicable to all modes of transport across the board, the courts will, when deciding on the distribution of liabilities, have to resort to the network of modal private law conventions which explicitly, as CIM, or only implicitly, as CMR, Hague/Visby, and Hamburg Rules, refer to the public regulations which set standards for that mode of transport. As established in previous chapters, even the modal provisions do not provide a common ground for interpretation of shippers’ and carriers’ responsibilities.

*Sea and Inland Waterways* (Nippon Kaiji Kentei Kyokai: Tokio, Japan, 1992) at 51.
for each respective mode of transport.\textsuperscript{87}

However, one has to note that, despite all the confusion and fragmentation in applying civil concepts of liability for damage incurred in the course of the transport of dangerous goods in a particular mode of transport, the public rules applicable to that mode, no matter how imperfect they are, still might be invoked to determine the meaning of the former. The inadequacies of the concepts remain within this particular mode, and, may eventually be solved relying on rules available in this particular mode. The Multimodal Convention provisions on dangerous goods cannot be bolstered in a like manner, since there exists no such uniform set of regulations applicable to the entire transport chain. In addition to this problem, the question will often arise as to who is the consignor, and who is the carrier, in a complex network of transport operations, since MTO may subcontract part, or all, of the carriage and thus assume the role of shipper

\textsuperscript{87} The Giannis NK case may indicate resolutions for liability questions. The concept of the “absolute duty to warn” as established in Giannis NK, when applied \textit{mutatis mutandis} in the multimodal transport scenario would mean the MTO’s bears an absolute duty to provide information to the sub-carriers, regardless of his actual or constructive knowledge of the nature of the goods. The same concept applies in the relation between the MTO and the consignor/shipper against which the MTO appears to be a carrier. The concept, however, has a limited scope of application to the multimodal transport operation. First, the concept of a shipper’s absolute liability is not accepted worldwide. According to US law, the shipper is not held to the absolute duty to inform about the dangerous nature of the goods shipped. In a multimodal contract, this means that the MTO would not be liable to other carriers in the chain against which it appears to be a shipper, if it did not have the actual or constructive knowledge of the dangerous nature of the goods. Given the anonymity of goods packed into the container by the consignee, this might often be the case. In this situation the carrier, because the MTO has a good defence as to all sub-carriers, is left to sue the consignor with whom it has no contract. Second, the rule differs from legal concepts accepted in other modes of transport, Therefore it is not applicable along the entire chain of transport. Third, even if the concept was applicable along the entire transportation chain, still there is a vagueness, and differences between different modes of transport and between jurisdictions as to the question of what is deemed to be appropriate information about dangerous goods. Furthermore, there has not been unambiguous resolution of the issue of what constitutes a sub-carrier’s (to which the MTO appears as a shipper) and MTO’s (being a carrier towards the shipper) constructive and actual knowledge, which shifts the shipper’s strict liability. The same arguments of uncertainty apply in the relation between MTO and the consignor.
towards the actual carriers for those parts of the journey.\textsuperscript{88}

These problems are partly remedied, but by no means settled, through the UN Model Regulations on the Transport of Dangerous Goods. The UN Recommendations, although developed on a worldwide level, do not have the legal force of a convention. They are not binding for states, but are applied by states on a voluntarily basis.\textsuperscript{89} In any event, the problems addressed above would not appear so extensive if an International Convention on the Transport of Dangerous Goods, drafted along the lines of the UN Multimodal Convention, had been implemented as proposed more than twenty years ago.\textsuperscript{90}

4.3. Distribution of risks for liability between contracting parties: conclusions

In my opinion, shifting liabilities for damages from one party to another, based on vague concepts of statutory and general maritime law \textsuperscript{91} amounts to fragmentation, disorder, and inconsistency in the distribution of responsibility for safety, environmental protection and liability.

This study argues that, rather than determining the constructive knowledge of either party, the crucial test for allocating liability should be based on which party was assigned, according to safety and environmental protection laws, the duty to ascertain and

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\textsuperscript{88} For the relationship between consignor and MTO and MTO and its sub-contractors, see generally De Wit, \textit{supra}, note 82.
\textsuperscript{89} On the legal status of the Recommendation see \textit{supra}, chapter 3, section 3.2.4.1.
\textsuperscript{90} See \textit{infra}, chapter 6 n. 25-30.
\textsuperscript{91} This section is limited to exploring the respective rights and liabilities of the vessel owner and the cargo interest for the transport of dangerous goods as set forth by the bill of lading and general rules of maritime law as opposed to their public law responsibilities. However one has to note that the "intermixing of tort and contract principles appears to occur frequently in complex admiralty cases. \textit{M/V Santa Clara I, supra}, note 8 at 834 (citing \textit{Skibs A/S Gyffe v. Hyman-Michaels Co.}, 438 F.2d 803, 805 n. 1 (6th Cir.1971; \textit{Polish Line Oceaniczne v. Hooker Chem. Corp.}, 499 F.Supp. 94 (S.D.N.Y.1980)).
\end{flushright}
be informed about the dangerous properties of cargo shipped. When defining the scope of the shipper’s notice and the carrier’s knowledge, or means of knowledge for allocating risks between them the standard should, as a minimum, reflect the range of information prescribed by the public rules. That is, whether the party assigned the task of disclosure had disclosed all prescribed information. Only based on the knowledge so acquired, could it safely be determined that the carrier accepted the risk to perform the carriage safely.

Such a formula would benefit, in particular, the safety and certainty in the multimodal transport of dangerous goods. The multimodal transport of dangerous goods is an extremely hazardous undertaking. This is so because all participants in multimodal transport chain rely on the information provided by the shipper and have no means of investigating what is inside the container. Thus, enhancing the shipper’s responsibility for giving sufficient warning to all parties in the chain of transport, as to propensities of the cargo and the necessity of special handling, is of critical importance so that all participants coordinate and take appropriate measures to ensure safety.

The argument can be made that if all public regulations are enforced with an ultimate aim of making some order of the distribution of responsibilities among all participants in the transport of dangerous goods, the safety and protection of the environment would also benefit. Furthermore, because of the paramount importance of the safety of people and the protection of the environment a great deal of work has been done to conclude international agreements that require the use of the best technical practices and scientific schemes to set up safety standards, and to establish
responsibilities for obeying these standards. Private law cannot ignore these specific rules when establishing civil liability for damages. Rather, I would argue, its requirements should be supplementary and supportive in the implementation of the public standards.

Fault in private transport law is not synonymous with fault as defined by public regulations. In light of the foregoing discussion of civil liability, it is safe to state that the violation of regulations by either the shipper or the carrier does not necessarily result in liability. Both parties are potentially liable. Much depends on factual circumstances. Because of the unpredictable interpretations by the courts as to the nature and extent of the shipper's duty to inform, and the carrier's knowledge or means of knowledge, both the shipper and the carrier have to maintain full familiarity with the international and national regulatory scheme. While this would be ideal, the question arises as to whether it is realistic given the fragmented nature of regulations, to expect the carrier in a multimodal chain, who was not given proper information, to determine the nature of the goods. This study answers this question in the negative. It is not real to expect the carrier in the transportation chain to have the knowledge of the shipper about the hazardous nature of goods unless information is readily available. Only a single set of multimodal regulations, applicable along the transport chain, can provide shippers and carriers the "means of knowledge."

Therefore, the approach proposed in this chapter requires a consistent statutory norm with respect to hazard determination, hazard communication, and hazard prevention governing the transport of dangerous goods through the entire transportation chain. The
reality is that shipper's and carrier's duties are subject to a complex and inconsistent network of regulations which establish the standards for the safe transport of dangerous goods. As established in Chapter 3, the regulations governing international transport are unified to a certain extent at the modal levels. The international regulations governing specific modes of transport are implemented nationally with the consequence that not all jurisdictions through which the multimodal movement takes place implement them uniformly.

In addition to the problems addressed above, inconsistencies in the definition of the shipper's and carrier's duties are not justifiable for three additional reasons. First, the harm that dangerous goods might cause is not measured in individual terms, but in the broader social context: regulated dangerous goods are a specific category of goods, which, potentially, might cause harm to subjects other than the shippers and carriers. As such they attract special rules that need to be consistently enforced at all levels, regardless of the legal sector (public or private law) involved. Second, it is well accepted that the right to safety and the right to a healthy environment, which are put at risk by the transport of dangerous goods, fall within basic human rights and are of overriding social importance. Therefore, all legal instruments dealing with identified and regulated dangerous substances must support each other towards achieving the common ends of the safety of people, and the protection of environment. Third, the principles of sustainable development, namely integration, cooperation and coordination, call for all legal instruments and environmental agencies to cooperate and not to clash and overlap.92

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92 For a discussion of principles of sustainable development see supra, chapter 2, section 3.
Overall, the argument of this part of the study is that with respect to regulated dangerous goods, shipper's and carrier's strict compliance with the duties imposed on them by scientifically informed technical regulations, must serve as the basis for the distribution of civil liabilities between the two parties. In other words, the cornerstone of the civil liability, and the safety and environmental protection regimes, i.e., the shipper's duty to disclose and the carrier's actual or constructive knowledge, must be consistently approached in both legal sectors. The critical device to achieve this task, particularly in international multimodal transport, is consistency across the board of the safety and environmental protection standards.

Although this approach would require courts to refer to a very complex system of technical regulations, this system provides the legal certainty to the party that complies with the public standards, and therefore increases compliance with them.
CHAPTER 5.

THIRD PARTY LIABILITY FOR DAMAGE CAUSED DURING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS

5.1. Introduction

The transportation of dangerous goods is a commercial activity that benefits, and, at the same time, exposes to extraordinary risks, shippers, carriers, the goods being shipped, operating vehicles and equipment, their crews, and the general public. Because this activity entails such a variety of extraordinary risks in an extended social context, the distribution of risks between parties to the carriage and the general public has always been of prime concern for policy and law makers. Policy and law makers have had to answer the question, who is to bear the risks, and to make a decision either: (1) to enjoin the conduct of certain activities; (2) to let the costs fall where the injury falls; (3) to prescribe that certain activities can only be conducted under certain predetermined safety measures; or (4) to tolerate the activity on the condition that it pays its way regardless of...

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1 To exemplify the above statement it is helpful to draw up a list of categories of damages, injuries, and classes of interest that may be affected by a transport accident involving dangerous goods: loss of life; personal injury; injury to birds, animals, fish, damage to breeding grounds; damage to beaches, cliffs, coastal strips, which need reinstatement; loss of subsistence: loss of catches of wild fish/loss of profits; future losses because of damage to the eco-system; loss of damage to food processors, wholesalers; damage to stocks; moving of stocks; protection of stocks; location and recovery of packages, making them safe and their disposal; safeguarding of population; damage to shore crops/grazing; evacuation of livestock; loss of earning of tourism; loss of tourism reputation; loss of amenity.

2 States have never done anything to challenge the acceptance of the position that the carriage of dangerous goods is a legitimate activity, since it is considered, in any event, to be essential for trade. Nor is it common practice to weight up the advantages or otherwise of the activity in relation to the potential costs to society as a whole. See Carriage of Dangerous Goods and Pollutants by Sea: the Safety Aspect (European Parliament, Directorate General for Research, 1994) at 13.

3 This concept of liability assumes that the system of technical regulations becomes a decisive factor, and the carriage of dangerous goods is thus prohibited when it is not performed in accordance with the provisions set out by the safety rules. Unlawfulness related to the above ban, as well as a standard of
the manner in which it was conducted.4

The first alternative was found impractical and incompatible with free democratic society and its economic and industrial policies. The second alternative was considered incompatible with the principle of equity and with the social justice system.5 The third alternative, although problematic because it requires the application of fault or negligence liability and leads to a proliferation of safety statutes and rules and licensing systems, has for long been adopted by courts as an underlying concept for governing liability issues. Accidents involving dangerous goods in a machine age, which exact a large and fairly regular toll on life, property and the environment, and in general affect the interests of innocent third parties, cannot be significantly reduced by the standard of conduct that can be prescribed and enforced through the operation of fault based tort law.6 Furthermore, the flood of tort claims has overburdened the courts with complicated litigation, and forced the courts to determine whether or not there was fault or negligence with respect to highly technical and complex activities. That law has inevitably operated in favor of the person conducting the activity which caused the injury, because the injured party bears the burden of proof.7

diligence on the part of shippers and carriers, stems from failure to comply with technical provisions, that is, from an infringement of derived law. European Parliament, supra note 2, at.35.
5 Id., at 315-316.
6 In the absence of specific legislation on compensation and liability for damages involving hazardous and noxious substances, the courts, dealing with claims advanced by third parties, apply common law principles found in tort law. Tort claims for injurious consequences of the transport of dangerous goods have been based on negligence, nuisance, trespass or common law strict liability rules.
7 Even if a claimant is able to establish a fault on the part of the tortfeasor, it will still face the hurdle in respect of the extent to which its damages are recoverable at common law. The underlying principle of the tort law is to compensate the victims for loss or damage to persons or property caused by the fault of the responsible party. The tort of negligence is traditionally formulated in terms of a duty of care. When
The fourth alternative is the concept of strict liability, which tolerates the activity on condition that it pays its way regardless of the manner in which it was conducted. The person whose activity causes the injury is held liable not for any particular fault, but for the inevitable consequences of a dangerous activity which could be stigmatized as negligent on account of its foreseeable harmful potentialities, were it not for the fact that its generally beneficial character requires us to tolerate it in the interest of the community at large. This realization has given rise to the more recent adoption of the strict liability approach. 8

The newly emerging international third party strict liability regimes are the response of modern society to the need for the effective delivery of justice to victims of the accidents involving dangerous goods, victims who have long been exposed to an

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8"Just as a major 'public benefit' flowing from a hazardous activity (like nuclear power stations and other public utilities) is no longer a good reason for leaving it unburdened but rather reinforces the wisdom of distributing the loss among its beneficiaries, so the very fact that it is widespread and exposes the community to a typical hazard may furnish a sufficient reason for tolerating it." Fleming, supra note 4, at 317. See also L.F.E. Goldie, "Liability for Damage and the Progressive Development of International Law," (1965) 14 Int'l and Comp. L. Q., at 1207.
unjust and ineffective operation of tort law or national statutes.\(^9\) It has been realized that an increasingly globalized economy, along with the global nature of harmful consequences that can occur in transporting dangerous goods, require the existence of internationally consistent legislation aimed at combating and mitigating these harmful consequences.

To protect defenceless victims, a strict liability scheme channels liability not to the party that acted negligently, but to the party whose dangerous activity creates the hazard\(^10\) and benefits from the activity.

This chapter first briefly identifies the third party strict liability concept and its underlying political and legal premises. Then it examines the newly emerging liability concept for damage caused by a third party by transporting dangerous goods in packed form, and assesses the role that the safety and environmental standards play in a distribution of the liability. Finally, it argues that these conventions, despite their underlying objective of detaching liability from fault, eventually introduce fault based elements of the private and public rules. The introduction of these rules, inconsistent and fragmented as they are, open the possibility of a lengthy determination of the party at fault. An examination of the channelling of liability in the two conventions clearly demonstrates the inconsistency inherent in the modal conventions’ definition of shippers and carriers and their respective liabilities, the consequences of which will be discussed

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\(^9\) Most of the jurisdictions that believe that the traditional “fault liability” based on tort principles could not afford adequate protection to innocent victims, enact statutes to deal with the claims of the innocent third parties at the national level. The legal instruments dealing with third parties claims vary profoundly in respect of the bases of liability or damages recoverable.

\(^10\) "The burden will be put upon the one of the two innocent parties whose acts instigated or made harm possible." *Siegle v. Kuhlman*, 81 Wash. 2d 448, 502 P.2d at 1185.
5.2. **Strict liability for damage caused to third parties**

The concept of strict liability for the damage caused by the transport of dangerous goods is built upon the notion that the one engaged in an unusually dangerous activity should be held strictly liable for the resulting injury. A strict liability action, unlike an action in negligence, does not require that the damage be attributable to the defendant's duty. Two underlying reasons for adopting strict liability should be emphasized. The first is the limited knowledge of the adverse effect arising from the application and use of the endlessly developing scientific facilities and technology.\(^{11}\) The second is the difficulty of establishing which conduct is negligent, and the difficulty of presenting the evidence necessary to establish negligence.\(^{12}\)

It has also been suggested that strict liability is another aspect of negligence and the basis of both concepts rests on the responsibility for creating an abnormal risk.\(^{13}\) While negligence is primarily concerned with an improper manner of doing things which are “safe ... enough, when properly carried out,” strict liability deals with activities which remain dangerous despite all reasonable precaution.\(^{14}\) The core of strict liability is therefore to impose liability on lawful, not "reprehensible" conduct. What distinguishes negligence from strict liability, however, is that strict liability censures the extraordinary risk of harm to others, either because of the seriousness or the frequency of the potential risk.

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\(^{11}\) Goldie elaborates on this issue by stating that in the present “state of the art” of new industries, no amount of foresight or feasible measures may avert injuries. See Goldie, “International Liability for Damage and the Progressive Development of International Law,” *supra*, note 8 at. 1203.

\(^{12}\) Goldie, *Id.*

\(^{13}\) William Prosser, *Selected Topics on the Law of Torts* (1954.) Ch. 3.
The activity in question has been permitted on the condition and the understanding that it will absorb the cost of its potential accidents as part of its overhead.16

The strict liability concept is also an outcome of the realization that the application of fault for activities that are subject to extensive preventive prescriptions have overburden the courts with complicated litigation, forcing them to determine whether there was fault or negligence involving highly technical and complex activities. This situation inevitably operates in favour of the person conducting the activity that caused the injury, for the injured party has the burden of proof.17 Thus, the strict liability concept can be said to be an attempt by industrialized society to distribute the cost of industrial progress, from those less likely to be able to prove fault with respect to any particular individual, to those who benefit from accident-producing activity. Otherwise, the effect of denying compensation to the victim is "to take much from few, and something from all, in order that a special group may pay less."18

In the common law, the principle was first stated in the English case of Rylands v. Fletcher.19 This theory of liability, now known as the doctrine of Rylands v. Fletcher, has been utilized by U.S. courts to develop the rationale for imposing strict liability in

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14 Fleming, supra, note 4, at 329.
17 Fleming, supra note 4 at 318.
18 Id at 8-9.
19 Rylands v. Fletcher (1865) 3 H.L. The rule of that case, as it has developed from subsequent English cases, has been succinctly stated by Prof. Prosser to be: "The defendant will be liable when he damages another by a thing or activity unduly dangerous and inappropriate to the place where it is maintained, in the light of the character of this place and its surroundings." In regard to implication in United States law, see Prosser and Keeton, Torts, (5th ed. 1984) at 545-559.
other cases. In *Green v. General Petroleum Corp.* 20 the court explained:

Where one, in the conduct and maintenance of an enterprise lawful and proper in itself, deliberately does an act under known conditions, and with knowledge that injury may result to another as direct and proximate consequence of the act, however carefully done, one who does the act and causes the injury should, in all fairness, be required to compensate the other for damage done.

Although the actor’s conduct is not so unreasonable as to constitute negligence it is sufficiently anti-social so that, as between two innocent persons, the actor and not the injured should pay for mishaps. Relying on its decision in *Green* the court in *Margarito Chavez at al.* v. *Southern Pacific Railroad C.D. et al.*, 21 the court while relying on the *Green* case, justified its decision by reference to an unspecified public policy:

[T]here can be no doubt that that the case of *Green v. General Petroleum Corp.*, enunciated a principle of absolute liability which is applicable to the instant case. It is not significant that a property damage, as distinguished from personal injury, was there involved. The important factor is that certain activities under certain conditions may be so hazardous to the public generally, and of such relative infrequent occurrence, that it may well call for strict liability as the best public policy.

Further, the court explained that one public policy now recognized as justifying the imposition of strict liability for the miscarriage of an ultra-hazardous activity is the social and economic desirability of distributing the losses, resulting from such activity among the general public. 22

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20 205 Cal. 328, 270.  
22 Professor Prosser summarizes the rationale for the imposition of strict liability: “the problem is dealt with as one of allocating a more or less inevitable loss to be charged against a complex and dangerous civilization, and liability is placed upon the party best able to shoulder it.” Prosser, *Law of Torts*, (2d ed.,
As in *Smith v. Lockheed Propulsion Co.*, the risk distribution justification for imposing strict liability is well suited to claims arising out of the conduct of ultra-hazardous activity. The victims of such activity are defenceless and losses suffered as a result of such activity are likely to be substantial and overwhelming misfortune to the person injured. Therefore operators of such activities must be in a position to administer the loss so that it will ultimately be borne by the public.\(^{23}\)

The American Restatement of the Law of Torts, established by the American Law Institute,\(^{24}\) adopted the principle of the *Rylands v. Fletcher* decision, but confined its application to ultra-hazardous activities.

A number of jurisdictions, by statute, provide for strict liability for damage caused by unreasonably hazardous activities. They are all based on two commonly held premises: the activity is necessary and it carries high risk to society and individuals. These premises have determined the political and legal landscape that governs the transport of dangerous goods, namely that the activity is permitted under prescribed safety measures, and that it must pay its way regardless of the failure to comply with the prescribed measures. Furthermore, they are all based on similar public policy objectives,

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1955) at 318.

\(^{23}\) By indirectly imposing liability on those that benefit from the dangerous activity, risk distribution benefits the social-economic body in two ways: 1) the adverse impact of any particular misfortune is lessened by spreading its costs over a greater population and over a larger time period, and 2) social and economic resources can be more efficiently allocated when the actual costs of goods and services (including the losses they entail) are reflected in their price to the consumer. See Calabresi, Some Thoughts on Risk Distribution and the Law of Torts, (1961) 70 *Yale L.J.* 499.
that is, the innocent victims must not suffer because of fault based liability regimes which
force them to get involved in a long, expensive, and often unsuccessful legal process.

The next section will demonstrate that international conventions, that develop
international compensatory regime for damage caused the third parties by the transport of
packed goods, are not capable of achieving this task. The reason lies not so much in
these conventions’ strict liability concepts, but in the fact that they require uniform safety
and environmental standards to support their efficient application. This part of the study
suggests that the limited defences afforded to carriers by these conventions provide
unlimited options for them to prolong or avoid their liability. This is due to the
ambiguities that encumber a consistent distribution of risks between contractual parties,
where they affect third party liability in a similar manner.

5.3. Third party liability conventions for damage in connection with the carriage
of dangerous goods in packaged form

There is not yet in force any straightforward international regime based on the
strict liability concept, covering packaged cargoes and all modes of transport that would
be applicable to the multimodal transport of dangerous goods. Convention on Civil
Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and
Inland Navigation Vessels (CRTD) is an attempt to establish uniform standards of strict
liability for damages caused during the carriage of dangerous goods by road and rail in

Section 520 enumerates factors to be considered in determining whether an activity is abnormally
dangerous: (a) Existence of a high degree of risk of some harm to the person, land or chattels of others;
(b) Likelihood that the harm that results from it will be great; (c) Impossibility of eliminating the risk by
the exercise of reasonable care; (d) Extent to which the activity is not one of common usage; (e)
Inappropriateness of the activity to the place where it is carried on; (f) Extent to which its value to the
community is outweighed by its dangerous attributes. See American Law Institute, American Restatement
Europe.\textsuperscript{25} For the transport of dangerous goods by sea the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, (HNS Convention) was recently adopted.\textsuperscript{26} These two conventions, which present very important developments, are indicative of future trends toward the international unification of strict liability rules for all modes of transport. Neither of them, however, is yet in force. Working from the concept of strict liability developed in the CLC\textsuperscript{27} convention, the CRTD convention provides that "the carrier at the time of an incident shall be liable for damage caused by any dangerous goods during their carriage by road, rail or inland navigation vessel."\textsuperscript{28} This establishes joint and several liability for carriers.\textsuperscript{29} The same approach to liability has been adopted by HNS.

The following subsections discuss the implications that international public rules might have on the application of the two conventions.

\section*{5.4. CRTD and HNS Conventions}

Multilateral treaties touching on the issue of third party liability for the transport of packaged dangerous goods and, therefore, for their multimodal transport now include

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\textit{of the Law of Torts} (Washington, D.C., 1938), Vol. III, Chap. 21, sects. 520-524.\textsuperscript{25} \textit{Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels}, 10 October 1989, UN. Doc. ECE/TTRANS/79, 1989, not yet in force. A large majority of the governmental delegations at the negotiations insisted on the introduction of a system of "strict" or "no fault" liability. For Convention see \textit{Revue De Droit Uniform (UNIDROIT)}, 1989 (I), at. 280.\textsuperscript{26} \textit{International Convention on Liability and Compensation for Damage in Connection with Carriage of Hazardous and Noxious Substances by Sea}, 2 May 1996, IMO Doc. LEG/CONF/10/8/3, reprinted in (1996) 35 ILM 1506-1436.\textsuperscript{27} Ever since the CLC Convention was concluded, the need for a liability and compensation regime for damages resulting from dangerous substances other than oil had been recognized.\textsuperscript{28} CRTD, \textit{supra}, note 26, Article 5 (1).\textsuperscript{29} CRTD, \textit{supra} note 26, Article 5(2) and (3).
The CRTD was enacted in Europe in 1989, to deal with liability for damage caused by dangerous goods during inland carriage. The CRTD specifically excluded deep-sea vessels because it was expected that there would be an international liability and compensation convention dealing with the sea-mode of transport. The HNS Convention, adopted seven years later, in 1996, closely follows concepts developed by CRTD. These two conventions have some common features. Neither of them provides a definition of, or creates its own list of hazardous and noxious substances by reference to specified criteria. Instead, they both refer to public regulations in force. The main benefit of this approach lies in the fact that the shipowners, shippers, cargo agents, insurers and mariners are already familiar with these conventions and codes, and are used to dealing with substances covered by them. Another benefit of this approach is that it allows that the amendments of the instruments referred to by CRTD and HNS have an automatic effect on the implementation of the HNS Convention. This ensures that both conventions keep pace with relevant technical developments.

Other common features of the two conventions are that both provide for strict channeled liability, limited grounds for exoneration, stringent conditions to break the

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10 The origins of CRTD date back to 1974 when the subject of civil liability for damage caused as a consequence of the carriage of hazardous goods duly entered into the Work Program of the International Institute for the Unification of Private Law (UNIDROIT). See Report on the 53 session of the Unidroit Governing Council, p.20.

11 CRTD refers in its Article 1 (9) to the ADR. The HNS, in Article 1(5) (iv) refers to different codes, and regarding packaged goods to the IMDG Code.

12 "(T)here was not much doubt that it would be impossible to come up with a general definition of HNS which would give sufficient guidance as to whether or not a particular substance would fall under Convention's scope of application. Magnus Göransson: “The HNS Convention” (1997) 2 Uniform Law Review, at 252.

13 CRTD defines its scope of application by reference to ADR and relies on the procedure for updating the list provided for in these instruments.

14 CRTD, Article 5 (1). HNS, Article (3).
limit or to re-channel liability;\textsuperscript{36} compulsory insurance; and the right to recourse against a party whose fault gave rise to the damage. \textsuperscript{37}

While these features generally and conceptually build on the same set of principles, some notable differences in defining "carrier" and "shipper" appear to make the multimodal transport operator's position unclear in terms of its responsibility. Both conventions leave the door open for carriers and shipowners to shift their liability to the shipper in cases where the shipper failed to furnish proper information as to the dangerous nature of goods. In addition to the difficulties in establishing fault in cases where liability is re-channelled,\textsuperscript{38} it is difficult to determine the identity of the shipper and the carrier in a complex multimodal chain. Both must be done in order to re-channel the third party liability. This examination will demonstrate that if performing carrier the re-channels liability to the shipper it may allow MTO to escape liability, despite his crucial role in a multimodal chain. For example, if the performing carrier in its defence pleads that the shipper failed to inform it of the dangerous nature of the goods, the following question must be answered: Who is the shipper with respect to the operating carrier and who was responsible for providing adequate information along the transport chain?

One important tool and the first step to avoid such a scenario would be an internationally binding set of rules that unify the standards of hazard assessment, the hazard communication, and the safe method of carriage of dangerous goods along the

\textsuperscript{35} CRTD, Article 5(9). HNS, Article 7(2).
\textsuperscript{36} CRTD, Article 10(1). HNS Article 9(2).
\textsuperscript{37} CRTD, Article 5(9). HNS, Article 7(6).
entire transport line. These two particular points with regard to these conventions are analyzed below in more detail.

5.4.1. Incompatibility of definitions of carrier

The CRTD channels liability to the carrier, while the HNS channels liability to the shipowner. The carrier, according to the Article 1(8) of the CRTD means, with respect to carriage by road and by inland navigation vessel, the person who at the time of the incident controls the use of the vehicle or vessel, on the assumption that the owner is in control. The owner can rebut the presumption by proving that another person, lawfully or unlawfully, had use of it and that he could not reasonably have prevented such use. When the vehicle onto which the dangerous goods have been loaded onto is moved by another vehicle or vessel, the person who controls the use of such other vehicle is deemed to be a carrier. Conversely, the HNS Convention makes the registered shipowner exclusively liable, regardless of whether he is operating as a carrier or not.

When constructed upon these definitions the MTO, although the carrier vis-a-vis the shipper, will not be liable except in cases where it happens to be in control or it is the registered owner of the inland vehicle or vessel, or it is the ship owner transporting the dangerous goods. In the cases where the MTO, is not a performing carrier, but subcontracts the MTO appears to be a shipper towards them and assumes no third party liability save in the case where the carrier’s strict liability is re-channeled to the shipper by operation of exonerating provisions of the Conventions.

Although the multimodal transport operator plays the role of carrier toward

\[38\] Again, this involves the unsettled boundary between shipper’s and carrier’s duties.
consignors and the role of shipper with its subcontractors, neither convention seems to see that MTO is not a ship owner or an operator of the inland vehicle or a vessel and at any point, liable for third party damage. This means that the non-vessel owning multimodal transport operator is, not required to obtain insurance. According to the HNS Convention a MTO, which is not a shipowner also does not contribute in any way to the HNS Fund.\textsuperscript{39} As a result MTOs will be strictly liable for damages only if they also happen to be the carriers in terms of CRTD, or ship owners in terms of HNS. Further, HNS allows for the re-channelling of the strict liability of the shipowner to the HNS Fund in cases where the shipper has failed to provide appropriate information about the nature of the goods, while the CRTD in similar circumstances, redirects the carrier’s strict liability to the shipper. Thus, unless the MTO clearly performs the carriage, owns the vessel, or is clearly defined to be a shipper vis-à-vis the performing carriers, for the purpose of providing necessary information about the nature of the goods, under both Conventions it escapes liability altogether if it fails to supply appropriate mandatory information about the dangerous goods.

It appears that the HNS and CRTD concepts of strict liability depart from the basic rationale and objectives of the notion of strict liability for the operation of hazardous activity. By creating provisions whereby strict liability may be re-channeled to the shipper, or other person not performing its duty to disclose, the two conventions have created the possibility for litigation in which contractual and common law concepts of contractual warranty, and common law implied warranty, respectively, are to be

\textsuperscript{39} The CRTD does not provide a second tier of compensation.
determined and applied *mutatis mutandis* in the strict liability context.

Given previously established uncertainties in defining the scope of the shipper’s duty to disclose, and the carrier’s actual knowledge, and the lack of coincidence between civil law tests applied to determine these terms and public regulations on these issues, the scope and rationale of strict liability, as established in the two conventions, are subject to radical challenges. This is explained in the coming sub-sections in more detail.

### 5.4.2. Re-channelling of liability

Under HNS and CRTD conventions, the carrier can be exonerated from the liability imposed on it by third party liability conventions. Under HNS the carrier’s liability is re-channelled to the HNS Fund if the shipowner proves that: (1) it was not given the appropriate information about the dangerous nature of the goods by the shipper; (2) such failure on the part of the shipper has caused the damage; and (3) neither the ship owner nor its servants or agents knew or ought reasonably to have known of the dangerous nature of the goods. This particular ground of exoneration of the carrier from its strict liability, because it is identical to Hague/Visby and common law rules applicable to allocation of contractual risks for the safe transport of dangerous goods, imports all the ambiguity of the letter into the third party liability concept. Under Hague/Visby and general rules of maritime law, the shipper’s duty to communicate the characteristics of cargo and the carriers’ actual or constructive knowledge about them are, while critical to deciding the liability question, the subject of legal controversy. If the carrier pleads in its defence to a third party claim ignorance with respect to the nature of
the goods, all of the issues discussed in Section 4.3.1. of chapter 4 must be considered.

The CRTD also relieves the carrier of liability if it proves that "the consignor or any other person failed to meet its obligation to inform it of the dangerous nature of the goods, and that neither it nor its servants or agents knew or ought to have known of their dangerous nature." In these circumstances, no liability attaches to the carrier. By operation of Article 7, the consignor, or other persons are deemed to be the carrier for the purposes of the Convention and, as such, are liable. While the shipper's and carrier's duties in road, particularly in rail transport, are more settled in terms of public law standards, than in the sea transport, the problems that occur in these two modes of transport are different in the ADR and RID regimes.

Neither of the convention defines the term 'shipper' for the purpose of application of this provision or define the scope of the shipper's and the carrier's duties which are used to assess fault. Nor do the conventions make adequate use of the public standards that define shippers' and carriers' duties. Lacking jurisprudence on the point, one can only predict that the determination of third party liability will be largely based on civil law rules and relevant modal conventions, where, as previously established, the boundary

40 HNS Convention, Article 7(2)(d).
41 CRTD, Article 5 (4)(c).
42 Besides the consignor, the CRTD stipulates that "other persons" can be responsible for not informing the carrier of the dangerous characteristics of the cargo. While there is no jurisprudence on the point as to what was meant by "other persons," one can construe this term to be any person responsible to warn about the dangerous nature of goods. Subsequently, in addition to the shippers of goods, the other persons referred to in Article 7 of the CRTD may well be MTOs who subcontracted to the inland carrier. Persons other than the carrier who becomes liable under this provision are, however, deprived of benefits accorded to the carrier under the Convention, with the consequence that they may be exposed to claims for compensation otherwise than in accordance with the Convention, and to amounts in excess of the limits of liability stipulated under the Convention.
43 For a discussion of RID and ADR regimes see supra, chapter 3, sections 3.2.1.1. and 3.2.2.1. respectively.
between the extent of the shipper’s duty to disclose and the extent of the carrier’s reasonable knowledge has not been clearly and consistently settled. Again, in order to allocate third party liability without resorting to unsettled civil law rules, one has to apply public law rules. Public law rules which define shippers’ and carriers’ duties with respect to hazard communication should be applied as a minimum standard in order to re-channel liability from the carrier to the shipper. This, theoretically ideal solution in reality cannot be applied without having consistent and internationally applicable public law standards. Consistent public law standards are particularly important for the allocation of liability in the international multimodal transport.

The fact is that most cargo moving multimodally involves goods in containers that have been packed by someone other than the MTO. Accordingly, the MTO has no means of inspecting the goods to ascertain the accuracy of the particulars furnished by the shipper for insertion into the transport document. Furthermore, the tests applied by the courts to assess the shipper’s duty to disclose the dangerous nature of the goods and the quality and extent of the carrier’s knowledge, differ between jurisdictions and depends on the mode of transport. The public law technical regulations, which are suppose to use the best scientific practices and are to assist the private law in determining the parties’ duties, are fragmented and not consistent. Accordingly, MTO can play multiple roles in the multimodal transport chain: it can be the shipper, carrier, consolidator of goods, container provider, packer etc. Or it may be none of these, and merely be the non vessel operating common carrier (NVOCC), a carrier that has no control over any part of the journey.

Both scenarios would require the court to establish a complex set of facts about
(a) causation between the failure of the shipper, which can be the MTO, to furnish information to the actual carriers and the damage; and (b) the actual or constructive knowledge of the performing carriers, who may well happen to be the MTO at a certain point or along the entire multimodal chain, or his servants or agents, of the hazardous character of the shipment. Furthermore, if the shipowner or CRTD inland performing carrier, who is not the MTO, successfully establishes the failure of the MTO to inform about the dangerous nature of goods, liability shifts to the shipper, or to the second tier, respectively, where the MTOs pays no contribution. Having attached strict liability solely to the shipowner, and having given him the opportunity to avoid such liability by proving ignorance of the dangerous nature of goods, HNS a priori discharges the MTO from any third party strict liability. This is also the point where lengthy litigation initiated in recourse actions involving insurance, the Fund, shipowners, MTOs, and shippers can be generated.

With the multimodal transport involving road, rail and inland carriers, the situation can be even more confusing since the CRTD extends liability to the carrier who controls any other vehicle by which the vehicle with the dangerous goods is moved. The effect of channelling liability to an easily ascertainable carrier can be radically diminished, since the definition of the carrier, and the carrier's ignorance of the dangerous nature of goods can be interpreted differently depending on the mode of transport. Furthermore, mistakes in communicating relevant information from the consignor via the MTO, to the MTOs' subcontractors are more likely to arise. For example, a road carrier for part of a journey can often be someone hired by the principal
road carrier (who is sub-contracted by the MTO) for the sole purpose of the moving with his truck the semi-trailer already loaded with dangerous goods. In a multimodal scenario, although this actual inland carrier may perform only one small segment of the transport chain, preceding other modes of transport, the proper communication of the dangerous nature of the goods is still a decisive factor in determining his right to discharge his strict liability.

5.5. Third party liability: conclusions

The close analysis of the concepts and provisions of third party liability conventions shows why public law standards are essential in effecting the third party liability regime. It highlights the inability of public law standards to inform civil rules with respect to shippers’ and carriers’ duties to disclose or to ascertain the nature of the goods. The inability of civil law rules to incorporate public law standards and the inconsistencies of these standards may be detrimental to the efficiency of the third party liability scheme. This situation has the potential to undermine the very purpose of third liability concepts. Third party liability instruments form part of pollution prevention regime that should act as an efficient scheme of compensation for innocent victims, and as a deterrent to potential violators of public standards. Because they lack the consistent inter-modal or a single set of multimodal safety and environmental protection standards, third party liability may prove to be ineffective in the context of multimodal transport.

Although developed to be an important device to protect common values, third party liability eventually compromises them by allowing the re-channelling of liability without defining minimum standards to govern the nature and the extent of shippers’ and
carriers' duties. They entail application of fault based civil rules, which themselves have not settled the issue of appropriate standards of shippers’ and carriers’ duties with respect to dangerous goods.

To remedy this situation the public standards to which shippers and carriers are held to should be consistently incorporated into the civil law definitions of shippers’ and carriers’ due care. The adoption of an internationally binding instrument, establishing uniform safety and environmental protection standards for all modes of transport, is not the only step that needs to be taken, but it is the first step toward achieving this objective.

The concluding chapter summarizes other considerations addressed in this study which advocate binding international standard setting instrument applicable along the multimodal chain of movement of dangerous goods. It demonstrates that it is possible to unify the private law with respect to the shippers and carriers responsibility by setting the technical rules into a consistent legal framework around one functional philosophy of risk allocation.
CHAPTER 6
THE NEED FOR A MULTIMODAL CONVENTION ON THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS: SUMMARY AND CONCLUSIONS

An examination of the policy, safety, environmental protection and liability considerations attached to the international transport of dangerous goods reveals that the laws or legal regime governing the activity needs improvement.

According to the Rio principles of sustainable development, all pieces of legislation on the transport of dangerous goods should form one interrelated and well coordinated system striving to achieve the common ends of safety of people and the protection of the environment. The achievement of these common objectives should be balanced with industry interests, thus making for sustainable development. The examination of the international legal norms concerned with the transport of dangerous goods operating within different legal disciplines and modes of transport, leads to the inescapable conclusion that, despite all the harmonizing measures adopted at the international level, the rules governing the carriage of dangerous goods are anything but consistent.

Having arrived at such a conclusion, based on the analysis conducted in the previous parts of this study, the issue to be addressed is how to remedy this situation. The simple solution offered in this study is to bring all the rules into a philosophically and functionally harmonious system centered around the well defined core principles of human safety and protection of the environment. The common denominator and the driving force of the system would be the conclusion of a world-wide binding convention.
on the transport of dangerous goods. As projected in this study, in addition to enhancing human and material safety and environmental protection by managing its own risk prevention standards, the convention would nourish other legal norms belonging to the same system. The convention would, for example facilitate the allocation of risk for liability based on failure to comply with the standards it establishes.

The question is how to arrive at the world convention. According to Dr.-Ing. Bernard Shultz-Forberg's statement¹ the United Nations Recommendations on the Transport of Dangerous Goods (Orange Book) need only to be transferred over into a convention.² His conclusion is based on an analysis of the potential of the existing modal-specific and modal-independent technical rules to reduce risk to humans, physical assets, and the environment.³ Unlike his study, which is based on risk reduction analysis from the perspective of engineering and technical standards, this study bases its conclusions on a comprehensive analysis of the policy, normative, and institutional legal structures surrounding the international transport of dangerous goods.

This chapter first summarizes and pinpoints the drawbacks of the existing system, and shows why the existing rules cannot form the integrated legal system required to

² This is the solution he arrived at after diagnosing that the current state of regulations is deplorable. Id., at 3.
³ The aim of a regulatory system cannot, of course, be to provide a condition of absolute safety, because no part of human existence can be described as being risk-free. Although the German "Grundgesetz" (Constitutional Law) commits state authorities to protect the constitutional rights of its citizens, i.e. to protect life and health as objects subject to protection by law (precautionary principle), it does not thereby guarantee the right to a risk-free life. Rather, the aim of the legal system is to prevent "avoidable" risks or to at least reduce them to a socially acceptable level. "The purpose of legal regulations is thus not to "ban" but to "control" risks (with the intention to minimise them). The function of environmental and technology laws is to separate "permitted" from "unlawful" risk. Of course this also means that no approval must be given to any inadequately controllable risk" Shultz-Forberg, supra note 1, at 6.
regulate multimodal transport desirably. Secondly, it explains the way that the proposed
convention might reduce these shortcomings.

While a list of arguments in support of the world convention can be endlessly
developed, this study limits its arguments to the fundamental concepts of this solution. It
is not the aim of this study to elaborate on the finalized solution. Furthermore, the idea of
developing a new convention, as addressed in this study, is not based on entirely new
concept. It simply rationalizes the need, and takes into account the work already done on
world-wide harmonization of the rules on the transport of dangerous goods and of the
existing organizational structure within which this harmonization of the rules takes
place.

Safety and environmental protection rules

The transport of dangerous goods in packaged form at sea is regulated by chapter
VII of SOLAS and Annex III of MARPOL 73/78. While containing the basic
requirements with regards classification, labelling, marking, packaging, and the
documentation for the transport of dangerous goods and marine pollutants by sea, both
refer to the IMDG Code for detailed requirements. The IMDG Code sets out the detailed
classification of dangerous goods and the requirements concerning their packaging, use
of IBCs, and tanks, labelling, documenting, marking, placarding, and the transport
operation i.e., stowage and segregation of dangerous goods on board ships. In addition to
the worldwide applicability of the two conventions, the requirements of the IMDG Code
are incorporated into the national laws of most maritime nations. It is also clear that the
IMDG code, like most other IMO standards, are considered binding by the operation of the UNCLOS provisions through the notion of internationally accepted rules and practices.\(^4\) Maritime safety rules are well harmonized and applied internationally through the application of the IMO standards.\(^5\) Furthermore, maritime safety and marine environment protection norms have already acquired an encompassing normative quality as more than purely technical standards.

International rules on safety and environmental protection in the carriage of dangerous goods by road are harmonized only within Europe, and for carriage by rail within Europe, the Middle East and North Africa. The Provisions of RID are completely harmonized with those of ADR and made applicable to domestic traffic in the European Union countries. There is no instrument equivalent to ADR or RID outside Europe. The legal nature of ADR and RID differ. The ADR is a free standing binding public law convention, while RID forms part of the civil convention, namely COTIF, which allocates liabilities between parties to the contract of carriage of goods by rail.\(^6\)

There is at present no binding legal instrument equivalent to the modal instruments governing the multimodal transport of dangerous goods. The UN Recommendations which have been developed for multimodal application are indirectly applicable through their voluntary incorporation into modal instruments. As established above, the modal instruments are not all harmonized to the same extent with the UN Recommendations. Furthermore their geographic scope of application is different. The

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\(^4\) For the IMDG Code, see *supra*, chapter 3, section 3.2.3.3.
\(^5\) See *supra*, chapter 2.
\(^6\) See *supra*, chapter 3, section 3.2.3.3.
IMDG Code is going through harmonization with the UN Recommendations as a part of
IMO’s commitment to UNCED’s Agenda 21, chapter 19. This chapter endowed the UN
with the mandate to coordinate work on establishing a common set of standards
applicable to modes of transport currently in existence. The process of harmonization
requires updating the requirements of the IMDG Code every two years to reflect the
decisions taken to amend the UN Recommendations. The provisions of RID are
completely harmonized with those of ADR, and both are being updated with those in the
UN Recommendations.

The UN Recommendations themselves are implemented through national
legislation. In cases of sea transport they are implemented through the IMDG Code, and
in case of rail and road transport, through ADR and RID. In some countries where ADR
is not applicable, Governments have adapted their systems to the UN system.\(^7\) The UN
Recommendations’ structure is being reformatted in order to better organize the
information and to make it easier for shippers, carriers, forwarders, packers and other
participants in the transport chain to understand and comply with it. Based on the “model
rule” format, the modal organizations are also reformatting the existing requirements of
their respective instruments.

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\(^7\) See \textit{supra}, chapter 3, Section 3.2.1. and 3.2.2.

\(^8\) The application of the Model Regulations annexed to the UN Recommendations is under consideration in
North America, for international transport between NAFTA countries; in South America (under
MERCOSUR) and in Asia, under the auspices of the United Nations Economic and Social Council for Asia
of Dangerous Goods Regulations and Systems of Classification and Labeling of Hazardous Product,” In
\textit{The 13\textsuperscript{th} International Symposium on the Transport of Dangerous Goods by Sea and Inland Waterways
Proceedings}, 26\textsuperscript{th}- 28\textsuperscript{th} October 1998, Seoul, Korea.
Accidents that happen in the course of the transport of dangerous goods involve not only the cargo and the shipowner's commercial interest. More often than not, those accidents cause damage to subjects whose interests are now being protected by a vast number of international instruments. These instruments are developed on the philosophy that the regulatory system developed to prevent accidents cannot provide a condition of absolute safety, because no part of human existence can be described as being risk-free. Rather, the aim of the legal system is to prevent "avoidable" risks or to at least reduce them to a socially acceptable level.

While the function of environmental and technology laws is to separate "permitted" from "unlawful" risks by defining dangerous goods and their properties and imposing relevant requirements on participants as to their behavior relating to the operation of the activity, liability laws recognize that there is no absolute safety and that damages happen regardless of specified compulsory detailed regulations to prevent it. Private law conventions such as the Hague, Hague/Visby, the Hamburg Rules, the CIM, CMR, and the Multimodal Convention, do not specifically govern regulated dangerous goods i.e., dangerous goods for which the public law framework exists. Instead they define dangerous goods in a generic and rather unspecified manner. In the same way, these conventions describe responsibilities of the contracting parties using unspecified

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9 See supra, chapter 5, fn. 1.
10 The purpose of legal regulations is thus not to 'ban' but to 'control' risks (with the intention to minimise them). Of course this also means that no approval must be given to any inadequately controllable risk" Shultz-Forberg, supra note 1 at 6.
11 See supra, chapter 1, section 1.4.3.
and undefined terms such as "exact danger" and "dangerous nature" of goods. The degree of flexibility achieved in this way is, however, at the expense of legal uncertainty. What protective measures are required in a specific situation are not always derived from the normative regulation. Instead, their substantiation is left to the discretion of the court dealing with the individual case. As established in chapter 4 courts, when deciding the liabilities of the parties, in the absence of contractual definitions, resort to common law standards of due care which do not always follow regulations governing the carriage of dangerous goods. This is understandable since the private law instruments have been developed to balance the interests of the contracting parties. In this way, the failure to comply with duties imposed on the shippers and carriers in the transport chain often does not coincide with their liabilities.\(^{12}\)

This situation begs the question whether the failure of private law to define and allocate risks for damages to the parties in breach of public regulations is attributable to fragmentation of the technical regulations and to difficulties of determining which regulations apply in international law. Examination of the legislative history of the Hamburg Rules reveals that delegates recognized the need to establish an explicit reference to the public rules in defining shippers and carriers duty. The Hamburg conference attempted to link the standards set out in the safety and environmental rules to the rules governing allocation of risks to the contractual parties, but this solution was eventually dropped due to the fragmented regulatory structure, and its inadequacy to be

\(^{12}\) See supra, chapter 4.
explicitly incorporated into the Rules. The problem of fragmentation of minimum standards by which to determine due care in international multimodal transport is even more obvious due to the number of links and actors. They all have to apply the mode or the activity specific rules. In addition to inconsistency of standards in the modal specific public instruments, there is incongruity among the modal specific private rules, making them inapplicable throughout the entire transport chain. In addition to this, in the containerized transport of dangerous goods it is hard to determine the elements of the carrier's constructive or actual knowledge of the dangerous nature of the goods, because the carrier does not have any means of inspecting the goods packed in the container. For the same reason, the shippers "duty to warn" and the "carrier's knowledge of the nature of the goods" should be defined in terms of public law rules regulating the shippers duty to fully describe the content of the container, the properties of goods within it, and precautions to be taken. Thus, it becomes obvious that a single set of public rules covering the entire transport chain is needed for the shipper to perform its duty to disclose and for the carrier to perform the carriage in a manner appropriate to goods of a particular description.

The third party strict liability instruments such as HNS and CRTD, demonstrate the same failures, primarily due to the re-channelling of liability. The re-channeling of liability eventually imports fault elements, based on the notion of the contractual or common law warranty, which, as established above, requires firmly and consistently established public law standards.

13 See supra, chapter 4.2.1.1.
Policy and institutional structure

As established in chapter 3, the transport of dangerous goods is an activity bearing extraordinary risks for both individuals and society. Because it benefits society at large, the activity is given conditional legitimacy. The activity is permitted under the condition that it is performed according to the regulations governing technical, safety and environmental protection standards.\(^\text{15}\) and that it pays its way regardless of the manner in which it was performed.\(^\text{16}\) This formula allows sustainable development of the activity which requires balancing common and commercial interests.\(^\text{17}\) It is clear from the above analysis that this conditional legitimacy, as explained, has been well accepted worldwide. Most states have prescribed detailed standards to govern every single stage of the transport of dangerous goods, have fixed enforcement mechanisms and have established criteria for compensation in case of damage. Further, market globalization, followed by the redefinition of safety and environmental rights, has resulted in, and will further augment, general recognition and acceptance of the principles of sustainable development in the law making process.

The analysis of the mode-specific instruments and the work on their harmonization shows that there is a multitude of instruments and authorities involved in the rule making process in the field of transport of dangerous goods. Although their relationship has improved in terms of cooperation, interrelation, and co-ordination, they still work at different modal and philosophical levels. As a result a fragmented system of

\(^{14}\) See supra, chapter 4.
\(^{15}\) See supra, chapter 2.
\(^{16}\) See supra, chapter 5, section 5.1.
rules which produces different outcomes continue to govern the activities of the chemical and transportation industries.

In light of the foregoing, the question phrased in its most radical form turns on whether a deficient system of norms reduces, or even removes the legitimacy of the activity of the transport of dangerous goods. 18

Except in some rare cases where accidents and damages occur despite full conformity to rules, most accidents happen due to inadequate consignment or transport procedures. For example, by shipping the cargo without documenting it in a manner prescribed by the public rules, the shipper jeopardizes the safety of the carrier’s and other the cargo’s interests and must accept the risks that such failure creates. The carrier, by accepting cargo which is not fully documented despite its duty not to do so, also accepts part of risks. Both the shipper and carrier create an unlawful situation and jeopardize the public’s interests. Private law must reflect this situation when allocating liabilities to the parties involved.

However, the lack of world-wide uniform regulations makes this system of rules hard to apply and sometimes unenforceable across the board because of differences in implementation or additional rules at the national or modal levels.

In light of the policy and regulative premises, which prohibit transport of dangerous goods unless performed in a prescribed manner combined with the lack of adequate international rules applicable to the multimodal transport, the question of

17 See supra, chapter 2, on the Rio principles of sustainable development.
18 The transport of dangerous goods is ultrahazardous activity which is, as established in chapter 5, section 5.1., allowed only 1) if conducted under prescribed safety condition; 2) pays it’s way regardless of the
legitimacy of the multimodal transport of dangerous goods arises. The fact that the multimodal transport of dangerous goods is governed by modal instrument does not satisfactorily solve the problem. Shippers have to prepare dangerous goods for the safe transport over the entire transport chain and often lack particulars on different national and modal regulations. Carriers are usually well informed only about their mode's safety standards. In addition, they have no means of checking the goods packed into a container. Therefore, the present rules, lacking world-wide and intermodal homogeneity, neither meet the needs of today's global economy which is dependent on multimodal transport, nor guarantee the basic safety and environmental rights of the public. Differences not only impose on carriers and shippers a lot of regulations with which to comply, but more often lead to their incorrect interpretation, communication and application across the board. Furthermore, this study establishes that public-law technical safety and environmental protection regulations are not adequate with regard to the distribution of liabilities between contracting parties, nor to the distribution of risks between contracting parties and third parties, since the divergence of regulations does not provide a common basis for the interpretation and application of these norms and rules. On the other hand, convergence of both the rules themselves and their interpretation and application is essential to avoid confusion and serious problems, especially when the liabilities of the contracting parties need to be established.

manner in which was conducted. See supra, chapter 5, section 5.1., n. 3.
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The need for a new convention on the multimodal transport of dangerous goods

The divergences in the system of rules dealing with the transport of dangerous goods are the result of the fragmented way of law making in this field. Although it cannot be denied that a significant improvement in coordination and harmonization of standards has been achieved since the first SOLAS, the industry oriented philosophy has long been responsible for the absence of coordination between individual national and international instruments and organizations. The scientific and legislative approaches of various countries and organizations have been and are still modally, and sometimes locally centered.

The unification of regulations for the carriage of dangerous goods by all modes of transport would demonstrate the determination and ability of the world's chemical and transport industries to pursue the principles of sustainable development. This means that there would be no need for participants in the production-transport chain to comply with different requirements imposed on them by international and national regulations but rather there would be a single set of rules applicable across the board. As a result, safety and environmental protection would be enhanced. This result would also facilitate uniform interpretation of carrier's and shipper's civil liability rules regardless of the mode of transport and the governing jurisdiction.

In addition, uniform world-wide regulations would enhance economy in the transportation of dangerous goods by eliminating many of the administrative barriers imposed on shippers and carriers by different national and international regulations. Institutional and legislative integration of rules would, furthermore, give rise to the
rationization and concentration of the diffused scientific potentials of various countries, international organizations and scientific bodies, thus making for the co-ordination of their efforts to secure the best informed set of rules.

The history of the idea to develop a world convention reveals that the economic, legal and social setting in the field of transport of dangerous goods has been leading towards such a convention. The idea to develop the world convention is not a new one. What is new is the historical, legal, institutional, social, and economic developments that have given rise to the new philosophy surrounding the transport of dangerous goods. While the whole subject area is still undergoing a complicated phase of development, the emerging new trends have set up the appropriate scene for the convention to be negotiated.

Initially, because the quantity of dangerous goods moved by all modes of transport was relatively limited, there were no attempts to harmonize the early regulations for transport of dangerous goods. Rather, the early instruments invited each administration to determine its own list of dangerous goods and the precautions to be taken during their transport.¹⁹

The increase in the production and transportation of dangerous goods by all modes of transport, brought about by the globalization of the world economy, required some degree of collaboration of the rules and standards governing these transport modes.²⁰ The harmonization of divergent national and international regulations took the

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¹⁹ C.E. Henry, the Carriage of Dangerous Goods by Sea (New York; St Martin’s Press, 1985) at 94.
form of recommendations to the modal organizations and the industry, when, more than forty years ago, the first of the United Nations Recommendations on the Transport of Dangerous Goods (Orange Book) were developed. However, the idea of a world-wide binding convention was raised repeatedly. Almost twenty-five years ago, in 1974, the development of a world-wide binding and self-contained International Convention on the Transport of Dangerous Goods was proposed as an instrument to remedy differences between various national, international, and regional rules. Resolution 1-II of the SOLAS Conference, 1974, recommended continuing co-operation with the ECOSOC Committee of Experts with a view to adopting a "Self Contained International Convention on the Carriage of Dangerous Goods by all Modes of Transport." The United Nations Social and Economic Council repeatedly, by its Resolutions No 1975(LIX) of 30 July 1975, and No.2050 (LXII) invited the Committee of Experts on the Transport of Dangerous Goods, in consultation with other bodies concerned and regional commissions, to pursue the study on the possibility of drafting of an international convention on the transport of dangerous goods by all modes of transport. The resolutions referred to the SOLAS Conference Resolution No.1. The idea was, previously, also elaborated by the Experts of the Soviet Union and Italy and generally

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21 See supra, chapter 3, section 3.2.4.1.
22 The idea was to elaborate some documents along the lines of the United Nation Convention on International Transport adopted in 1980. United Nations Doc. TD/MT/CONF/16.
23 In particular, the United Nations Conference on Trade and Development (UNCTAD), the IMO, The International Civil Aviation (ICAO), and the International Air Transport Association (IATA). See U.N. Doc. ST/SG/AC.10/3, 1980.
24 Proposing the draft of the two-part convention: the convention proper containing general obligations, definitions, procedural question, application, relationship with other conventions, and civil liability for damage caused as a result of the transport of dangerous goods; and annexes with technical regulations which are common to all modes of transport and based on the UN Recommendations and modal regulations.
accepted by major international organizations, such as IMCO, UNCTAD, ICAO, and IAEA. Despite general agreement that the world convention is desirable, the Committee of Experts on the Transport of Dangerous goods decided to accept the proposal of the Group of Reporters to give preference to the harmonization of the existing rules and recommendations over the idea of developing a world convention until more conformity between existing rules and the Recommendations is achieved. In 1992, Italian experts once again proposed a world convention to be developed, stressing that the criteria contained in the UN Recommendations are now used internationally through their adoption by IMO, ICAO, ADR, and RID. Furthermore, the Italian expert stressed that the question of a world convention should be treated as a topical subject in the light of the chapter 19 of Agenda 21, which gave direction for global harmonization of hazard classification and labeling to be achieved by the year 2000.

Assuming that the above short history of the idea of a world convention evidences a favourable political environment, the next issue is the legitimacy of the convention from the legal point of view. The right to safety and the right to a healthy environment


25 Also proposing the draft convention comprising two parts: the convention proper and two annexes covering requirements common to all modes of transport and leaving it to the modal conventions to regulate all other questions not covered by the world conventions. UN Doc. E/CN.2/CONF.5/R.598, 3 November 1976.

26 Generally welcoming the idea but emphasizing the desirability that an eventual convention for the transport of dangerous goods should cover only dangerous goods in packed and unitized forms and stressing the fact that sea transport in certain respects would need different requirements from those applicable to other modes. E/CN.2/CONF.5/R.497, 16 January 1976, at 1-3.

27 Id., at 1.

28 Id.


31 11th Session of the UN Committee of Experts UN Doc. ST/SG/AC.10/5, of 1-10 December 1980, at 4.
have now received international recognition. Improvement in safety regulations and their transformation from technical norms into legal ones is viewed as the crux of this process. Furthermore it is generally agreed that the subjects of international safety and environmental protection, presently dealt with in separate bodies of rules, are interrelated and require an integrated, highly uniform system of safeguards. This approach provides, as a matter of principle, for "world partnership" and involvement so as to avoid the existence of inconsistent and overlapping norms and activities, thus making for sustainable development.33

The requirements laid down in such norms must be developed and enforced as far as possible on a world-wide basis, keeping pace with technological progress. In order to implement rules fully and consistently, not only do technical and environmental laws have to be consistent, but the requirements imposed by them on shippers and carriers have also to be consistently applied and interpreted by civil-law instruments. Environmental and safety laws, like all topics that encompass several disciplines, should disregard traditional distinctions, in particular those between public and private law. This can be achieved by incorporation of the proposed world-wide convention, along with its definitions of dangerous goods and shippers' and carriers' responsibilities, into the allocation of liabilities applied in the multimodal transport of goods.

Not only will the consistent interpretation of public rules by civil law instruments benefit safety and environmental protection, it will also eliminate uncertainty about liability arrangements which are primarily derived, from an ever increasing number of

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international conventions covering limited subject areas. This will eliminate any piecemeal approach that fails to simultaneously take into account all aspects of responsibility for the transport of dangerous goods.

In order for civil conventions to contribute to the integrated system of norms, they have to impose duties and liabilities on the contracting parties by reference to the public law regulations, and by assessing the risks "a priori" in terms of causes and "post-hoc" in terms of effects. This would eliminate the belief that these conventions are there merely to make good the damage inflicted, and in this way they would contribute to the consistent implementation of the precautionary principle. Such thinking, which would probably be opposed by the proponents of private law who have preferred to link liability in terms of relationship of cause to effects, can be justified by placing the liability mechanisms in a broader social context.

Viewed in a broader social context "dangerous goods" is a special category of goods which presents hazards to common interests. As such, it has to be approached as a distinct category and its legal treatment must differ from the normal run. Consequently, responsibility for the variety of damage inflicted by the transport of dangerous goods can no longer be viewed in individual terms. It must be considered, first and foremost, from the social point of view when developing a system for apportioning the burden imposed by damage. Redefining individual risks in social terms suggests that the entire sector is increasingly being brought within the purview of public law. Since the damage caused by the transport of dangerous goods most often is not quantifiable, and always carries risk of

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33 See Chapter 2.
harm to common interests, the liability scheme must strictly incorporate requirements for
the prevention of damage as a leading test for allocating liability. This way the liability
mechanism would operate as an additional stimulus for operators of the activity to
comply with safety and environmental standards.

A legal concept of safety is not merely a technical criterion; safety is a value that
underpins the rights revolving around the freedom of contract. Furthermore, the fact that
the existence of public safety rules consolidates the right to engage in the activity, thus
making the activity legal and possible, requires civil liability to depart from its general
concepts and give full affirmation to the conditions under which the activity is considered
to be legal.

From the economic point of view market globalization makes a global regulation
of transport of dangerous of dangerous goods imperative. Not only do disparities
adversely affect safety and the environment; they also cause the international market to
become fragmented, leading to competitive disadvantages on account of technical
barriers and different certification procedures. Furthermore, the fragmentation of rules
adversely affects the multimodal transport system in terms of the performance of
individual modes and carriers, the capacity for interaction between modes, and operation,
due to limits an efficiency imposed by the standard of the weakest links in the system.
Individual modes need to be readily available, reliable, flexible, and rapid with any
adverse impact in terms of safety, the environment or liability restricted to a minimum.

After examination of the current state of legislative and institutional structures on
the transport of dangerous goods, one must conclude that two definite elements that
already exist that could serve as prerequisites for achieving the task of developing a binding convention. First, the UN Recommendations, which could be easily transformed from model rules into a binding convention and second, the UN organizational and working structure which could also easily be reshaped into a soundly corresponding system with changed terms of references defined according to the new task.

The UN Recommendations as restructured in 1996,\(^{34}\) should serve as a nucleus for, and be considered as a first step towards developing a world-wide mandatory instrument. The existing UN bodies, introduced in chapter 3, which developed the UN Recommendations as supplemented by their sub-bodies at the modal level, are valuable and established organizational structures within which the work of developing the new convention can take place.

The UN Model Regulation now has a structure corresponding to a binding instrument.\(^{35}\) While the UN Recommendations are capable of being implemented directly, or being taken up by the modal organizations in charge of dangerous goods regulations, these are not sufficient ground on which to transfer the UN Recommendation into a convention. The UN Recommendations, while containing well developed technical norms, lack the necessary procedural structure, which is yet to be developed. This procedural structure would have to define target goals, definitions of terms, scope of application, procedural matters, relationships with other international conventions such as SOLAS, MARPOL 73/78, ADR, CIM/RID etc., responsibilities and enforcement. Annexes which contain technical regulations and are well developed and under

\(^{34}\) The structure of the reformatted UN Recommendations is appended to this study as Appendix 3.
permanent revision, may remain almost identical to the UN Recommendations, the first Annex being concerned with technical requirements common to all modes of transport, and the second Annex being concerned with different modal requirements related to the specific condition of the transport operation and vehicles.

An alternative to this solution might be the retention of the distinctive modal requirements under the mandate of modal authorities. But, because it might generate differences between modal requirements, this solution is not favorable.

Whatever form the technical regulations assume, the new convention would bring about the standards of behavior both applicable and enforceable world-wide and to all modes of transport. It would drastically reduce the complicated and overlapping procedure of having to harmonize rail, road, and sea transport rules on dangerous goods with each other and with the UN Recommendations. Transposition of the UN Recommendations into modal regulations and then into national regulations requires repeating and re-checking work by diffuse international and national authorities. While transposing them, these national authorities often modify the original rules or give them different interpretations. This in turn generates a number of instruments with almost identical regulations, while not guaranteeing full harmonization and world-wide application.

One single set of world wide binding rules covering standards would require a number of modal and regional authorities to redefine their mandates to a modal scientific expertise and enforcement role. Individual states, instead of examining what has been

35 *Id.*
done at the UN level and than taking or not taking steps in terms of updating their legislation to comply with requirements set out by them, can simply refer to the new Convention and keep pace with it in light of technological developments. At the same time, transforming the UN Recommendation from indirectly effective recommendations into directly effective legal norms will require widening and amplifying the UN organization as the guarantor of its effectiveness.36

The question of organizational and working structure within which the new convention should be developed and updated is interrelated with the question of the compatibility and relationship between the existing conventions and the new convention. As established above, the provisions of existing conventions which are common to all modes of transport and which have already been harmonized, or will be shortly harmonized through the UN work program, such as classification, labeling, packing, marking, transport document, would form the body of the new convention. Questions specific to each mode of transport, such as transport equipment, loading, stowage requirements, and vessel equipment for the sea mode can remain within the sphere of these modal conventions or annexed to the new convention. Both solutions provide sufficient working background for achieving the principal task: to unify and enforce worldwide the rules on the transport of dangerous goods to the maximum possible extent.

From the procedural point of view there is no legal obstacle to the revision of these conventions: Article 14 of ADR makes provision anticipating the conclusion of a

36 "(T)aking into consideration the principle that only a universally accepted and communal institution will enable the Recommendations to the whole world to achieve a direct effect, the quantitative step in this direction must be discussed and agreed upon, as it is decisive for future action." Dr. Bernd, Shultz, supra
worldwide agreement by stipulating:

In the event of the conclusion of a world-wide agreement for the regulation of the transport of dangerous goods any, provision of this Agreement which is contrary to any provision of the said world-wide agreement shall, from the date on which the latter enters into force, automatically be replaced by the relevant provision of the said worldwide agreement.

In the case of RID, there are also no procedural obstacles to its revision: RID constitutes an Annex to CIM and could be amended without revising CIM.37

Lastly, the new convention would not only be compatible with chapter VII of SOLAS, but would also clarify questions which SOLAS leaves to national governments to regulate. The IMDG Code regulations that presently supplement SOLAS in most countries, would form a part of the new convention, whereas provisions which form a set of strictly maritime regulations would either remain within the scope of SOLAS or constitute a separate Annex to the new convention. SOLAS itself would not require revision. The legal position of MARPOL 73/78 is similar.38

In any event the Conference of the parties to the new convention would have to work out the question of its relationship with existing agreements. A number of other questions such as common definitions, general principles, and objectives would also have to be agreed. General principles and targets should be clearly stated, thus clarifying which class of subjects the convention was intended to protect. This would further make

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37 Although it must be recalled that the CIM explicitly refers to RID when establishing the consignor’s and the railway’s obligations in respect of dangerous goods. Interconnection between CIM and RID through the consignment note would probably require some revision of CIM. See, supra, chapter 3, section 3.2.2.

38 If the first alternative were to be accepted, i.e., to retain the modal conventions maintaining strictly modal requirements, the initiative to make the IMDG Code legally part of SOLAS does not affect the idea. If the second alternative is accepted, i.e., to annex distinctive modal requirements to the new convention, the
legally possible consistent interpretation and application of the new convention within
different legal fields that are, in one way or other, concerned with the transport of
dangerous goods. These disciplines include the administrative, criminal, environmental,
commercial and contractual aspects of the transport of dangerous goods. Furthermore the
convention has to arrange for the possibility of an efficient amending procedure of
technical annexes with the aim of keeping pace with the advancing developments in
technology and science.

The fate of the conventions largely depends on the acceptance by the major
interests groups, such as, transport, chemical and related interests, that there is a need for
multimodal mandatory safety and environmental protection standards. Although
industries have traditionally welcomed the harmonization of different modes' requirements, they have opposed a binding instrument. Their opposition is based on their
position that legislation is needed only when self-regulation and voluntary commitments
do not achieve the objectives.\textsuperscript{39} The industries generally contend that their own regimes
and present systems are more than adequate.\textsuperscript{40} Some do not see \textit{a priori} the need for an
additional convention. It is maintained that the harmonization of regulations with respect
to the transport of dangerous goods is sufficiently handled by the U.N. Recommendations. Unless, it is asserted, contrary arguments are provided that a binding


\footnotesize{\textsuperscript{40} Shaw, R., Historical Background of the ISM Code, (1999 ) \textit{34 E.T.L.} at 13. European Chemical Industry Council (CEFIC), \textit{Statement on an integrated approach towards sustainable development, Position paper}, Id. See also, Hubrechts, M., \textit{Id}.}
international convention will better meet safety and environmental objectives.\textsuperscript{41} The lessons of the past provide the most convincing argument against this position. It is only after disastrous accidents that the international community realizes that voluntary codes were not sufficient. Only after such disasters are the codes made mandatory and conventions are adopted so as to prevent future accidents.\textsuperscript{42} Why should the international community wait for another "convincing" accident? This study has established that there are enough indications that existing codes are not sufficiently implemented in the container transport of dangerous goods. There has been numerous accidents causing deaths and environmental damage arguably due to the lack of implementation of safety codes.\textsuperscript{43}

The globalization of markets, and the following the redefinition of safety and environmental rights, have certainly brought about, and will continue to develop a general recognition and acceptance that world-wide binding regulations for the transport of dangerous goods are absolutely necessary for the sustainable development of the transport and chemical industries. Presumably this acceptance will eventually create sufficient political will to develop a new convention, thus eliminating the separatism of the different working and organizational structures which presently deal with the presently existing multitude of regulations.

\textsuperscript{41} This opinion was expressed by Philippe Deroisy, counsellor at the Department of Trade and Environment of CEFIC. Conversation via electronic means, of August 16, 1999.
\textsuperscript{42} See chapter 3, section 3.2.3. n.40. see also Huybrechts, M., supra note, 39.
\textsuperscript{43} See Appendix 2. See also, M/V Santa Clara I Loss of Hazardous Material in the Atlantic Ocean Off the New Jersey Coast on 4 January 1992, (United States Ports and Waterways Safety Act Board of Inquiry, 1992) at 1.
The first step has already been taken through the UN model Recommendations, and furthermore that Rio Principles have affirmed the integration of environmental protection process. Thus it appears entirely possible to work towards such a Global International Convention on the Transport of Dangerous Goods by All Modes of Transport.
UN RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS

- Classification of Dangerous Goods
  - Definition of classes/divisions
  - Test methods and criteria

- List of Dangerous Goods most commonly carried
  - Name and UN Number
  - Main hazard and subsidiary risk
  - Transport conditions
    - Labelling
    - Assignment of packing group
    - Packing methods
    - Special provisions
    - Multimodal tank transport

- Packing
  - Construction requirements
  - Packing
  - Certification and approval
  - Marking
  - Labelling
  - Transport documentation
  - Exemption quantities

MODAL REQUIREMENT

- Danger specific
  - To one mode

- Restrictions
  - Types of packaging allowed and quantity limitations
  - Types of tanks allowed

- Specific marks
- Specific labelling
- Specific items of Information
- Specific exemptions
APPENDIX II

SHIPPING INCIDENTS INVOLVING CHEMICALS IN PACKED FORMS

Halifax explosion, 1917

Following a series of navigational errors the M/V Mont Blank, loaded with 2,600 tons of explosives, collided with another ship the Imo, and caught fire. Shortly afterwards the ship exploded in the biggest man-made explosion. As many as 3,000 people were killed, 9,000 were injured. 6,000 homes were completely destroyed.

Sinbad, 1979

The Iraqi vessel Sinbad lost 51 cylinders of chlorine gas during a heavy storm off the Dutch coast. Only 12 cylinders were recovered shortly after the incident. Remaining cylinders after being caught incidentally by fisherman in 1984, were recovered and destroyed.

Traugutt, 1979

The general cargo vessel Traugutt, as a result of fire and grounding off Pakistan Coast, lost packages of sulphuric acid and calcium carbide.

Aeolian Sky, 1979

This general cargo Greek vessel sank off the French coast and lost 32 canisters of arsenic trichloride and 10 drums of liquid hollering.

Cavtat and Clearkos, 1981,

These two vessels, Yugoslav and Greek, sank off Sardinia. The preventive recovery of the Cavtat’s 900 drums of tetraethyl lead cost $6 million. The packages carried on board of Klearcos included arsenic, which caused serious damage to fishing grounds and the local tourist industry. The Klearcos clean up bill was nearly $10 million.

Crainganlet, 1982

This Cypriot containership lost one freight container of dimethyl sulphate waste.

European Gateway, 1982

British roll-on roll off ship lost various toxic chemicals in drums off the British coast.
**Forum Hope, 1984,**

The Greek vessel lost overboard, near Bay of Biscay, 200 drums flammable liquids.

**Mont Louis, 1984**

French roll-on roll off containership, because of collision and sinking, lost 450 tonnes of uranium hexafluoride in 30 steel flasks.

**Dana Optima, 1984**

Danish cargo vessel on her way from New Castle, England to Denmark encountered a heavy storm which resulted in a number of container/trailers stored on deck being swept overboard. Amongst those lost were 80 drums containing a highly toxic weed killer. It was estimated that the amount of the chemical could kill everything over an area of perhaps a square kilometre on the seabed. Fortunately most of drums were recovered. A considerable number however were leaking.

**Menga, 1984**

A barge capsized in rough seas while it was being towed from Port Moresby to the Fly River. Fifteen containers with a total of 2,700 drums containing sodium cyanic, a toxic substance were lost overboard. Some 94 drums washed ashore and were recovered. The majority of drums were not recovered.

**Ariadne, 1985**

Panamanian containership grounded in the port of Mogadishu, Somalia, causing fire. The ship carried 665 containers on board, some of them contained different dangerous goods, including tetraethyl lead. Some of them contained at least one of 62 different dangerous substances listed on ship’s manifest. Due to the loss of 2,000 tons of packed dangerous cargo including pesticides, serious sea and air pollution occurred, necessitating evacuation of some people in the port area.

**Cason, 1987**

Panamanian cargo ship ran aground on the northwest of Spain. It carried over 1,000 tonnes of dangerous goods including aniline oil orthocresol and dipheylmethane. When seawater penetrated drums of sodium they exploded. Only 8 out of the 31 crew were saved. 20,000 residents of a nearby town were evacuated.

**Caribe, 1988**

French containership lost overboard (jettisoning) various dangerous goods and marine
pollutant.
APPENDIX III

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(ST/SG/AC.10/1/Rev.10), December, 1996

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