

ORIGINAL RESEARCH PAPER

## Investigating the Place of International Law in the Protection of the Marine Environment Against Transportation of Hazardous Chemicals

Hooman Fathi<sup>1</sup>, Seyed Bagher Mirabbasi<sup>2\*</sup>, Mansour Pournouri<sup>3</sup>

<sup>1</sup> UAE Branch, Islamic Azad University, Dubai, United Arab Emirates

<sup>2</sup> Department of Law, UAE Branch, Islamic Azad University, Dubai, United Arab Emirates

<sup>3</sup> Central Tehran Branch, Islamic Azad University, Tehran, Iran

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### ABSTRACT

Seas have a special place in human life; and the seas as one of the important geopolitical resources and today, regardless of the important role of the seas in other areas such as temperature regulation and food supply, this water area is the choice. It is the primary and irreplaceable human species for trans boundary transportation of goods. However, the increase in the number of operators and the multiplicity of international transportation by sea, especially with the advancement of technology, has caused significant pollution in the marine environment. The purpose of this study is to identify the role of international environmental law in the protection of the seas. This research is a review that has been done through extensive studies. The results indicate that the attention to the transportation of dangerous goods is noteworthy because of their destructive and potential effects on the marine environment. The type of transportation and safe storage of hazardous materials in ports is an important issue emphasized by all governments and international maritime organizations. The international responsibility of governments and international organizations for marine pollution can be considered as one of the main causes of the evolution and development of international environmental law in this field. In addition, the damage caused by the maritime transport of hazardous materials is different from the maritime transport of other materials, and this requires the international community to provide effective means of managing the transport of hazardous materials with the most destructive effect.

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Corresponding author: [mirabbasi@ut.ac.ir](mailto:mirabbasi@ut.ac.ir)



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## 1. Background

The marine environment has the potential to play an influential role in human life, and in return, humans have different effects on the marine environment. On the one hand, the seas are a good route for the transportation of goods and passengers, and on the other hand, they are a source of food supply (Elias, 2003). The seabed is a source of energy and many sources, including metals and minerals, can be extracted from the seas. The integrity of the environment causes both land and sea to be affected by land; this makes the protection of the marine environment affect a wide range of issues. Any pollution in the marine environment will have devastating effects on the entire planet's ecosystem and threaten the life cycle (OPRC-HNS, 2000).

On the other hand, the industrialization of human life has caused the environment to be affected by a variety of substances and pollutants that are not compatible with its natural cycle and cause damage to both animals and their habitats. This situation not only threatens plants and animals, but also poses challenges to human health in terms of human dependence on the environment. In line with the gradual development of international environmental law, attention has been paid to marine environmental pollution by governments and international institutions. Non-oil pollution at sea, such as ship waste, sewage and hazardous materials, are generally factors that seriously threaten and destroy the marine environment (ADR, 2013).

To this end, governments have established international legal systems, such as international conventions, since the second half of the twentieth century to prevent the destructive effects of hazardous substances at sea. Rules of law derived from customary international law, which required states not to pollute the environment, gradually moved towards the establishment of convention systems between states. Convergence of governments to prevent environmental pollution from hazardous substances at sea, in addition to international action led to the creation of regional conventions (Dabiri, 2012).

In this regard, scientific research and studies have played a very important role in the development of treaties and laws governing hazardous substances, although there is no scientific certainty about the dangers of all such substances, but these studies show that many dangers. Types of hazardous substances, there is a serious fear that can lead to poisoning, production of carcinogens, alteration, erosion and other things that are dangerous to human health and the environment (Brown, 1986).

The results of this research later became the basis for international legal action, and in the early 1970s led to the development of more and more environmental laws in industrialized countries and a huge increase in the cost of hazardous waste disposal. Inevitably, this situation led to efforts to find alternative ways and facilitate the disposal of hazardous materials and waste in developed countries from a legal perspective. Problems and concerns about hazardous waste led to the adoption of measures by developing countries, which eventually led to the

development of binding and non-binding international agreements that set out a set of rules, principles and standards in the management of hazardous waste and waste management this was rubbish (Bai & Li, 2021). Unlike ordinary and natural transport accidents, which they problematic enough are, hazardous materials can have consequences that extend far beyond the accident and affect a large number of people other than those directly involved, influence (Bergkamp & Orlando, 2009).

Although these accidents occur on a limited basis, a brief look at the statistics of such accidents shows that transport accidents involving hazardous substances often occur on a large scale and lead to death, injury and Property and the environment are damaged. In 1998, for example, a truck containing cyanide hit a gold mine in Kyrgyzstan, drowning a bridge and releasing about 1,800kg of sodium cyanide into a river, polluting the water supply of several towns and villages (Borelli, 2015).

Hundreds and thousands of local residents reportedly sought medical treatment for the incident. This event shows well how a simple incident in a small area can have effects in remote areas. The Basel Convention on the Control of the Movement and Disposal of Hazardous Waste is the most important international agreement on hazardous waste (Birnie et al., 2009; Ojaghi et al., 2021).

The action of the International Maritime Organization (IMO) for the drafting of the Marple Convention by States, as well as the ratification of the London Convention, the 1982 Convention on the Law of the Sea, Especially the subject of research (Yearbook of the International Law Commission, 1985).

The OPRC-HNS protocol, to which the Iranian government has also acceded, is another example of governments paying attention to pollution from hazardous substances at sea. In addition, the mechanism of international responsibility of the government and compensation for the transportation of hazardous and toxic substances from the sea, today the attention of governments in the field of international responsibility of the government has attracted attention because the development of international responsibility of governments and its consequence, compensation for pollution Dangerous substances will lead to the settlement of disputes and lawsuits between governments in international dispute resolution bodies (Khadduri & Gareeb, 1990).

Therefore, in addition to the performance of governments, the role of international organizations and their activities in the field of environmental protection is also considered, which in this paper will be analyzed with emphasis on the protection of the marine environment. The use of the word "reference" in the title of the research may not be relevant, but what is important in this area is the work of international organizations to protect the marine environment, especially the pollution caused by the transport of hazardous substances at sea. The following are some of the international conventions that deal with the pollution of the marine environment caused

by the transport of dangerous goods:

- Convention on Civil Liability for Damage in the Carriage of Dangerous Goods by Road, Rail and Domestic Shipping, Geneva, 1989.
- Basel Convention on the Supervision of the Transnational Transport of Hazardous Wastes and their Disposal, Basel, 1989.
- Bamako Convention on the Prohibition of Imports into Africa and the Control of trans boundary Movements and the Management of Hazardous Waste in Africa, Bamako, 1991.
- Regional Agreement on the trans boundary Transportation of Hazardous Waste, Panama, 1992.
- Convention on the Prohibition of the Import of Hazardous and Radioactive Waste Intra-Algerian Countries and on the Control of trans boundary Transport and the Management of Hazardous Waste in the South Pacific, 1995.
- Amendment of the Basel Convention on the Control of trans boundary Movements and Disposal of Hazardous Waste, Geneva, 22 September 1995.
- Protocol on the Prevention of Pollution from the Mediterranean Sea by Tran's boundary transport of hazardous wastes and their disposal, Izmir, 1996.
- Basel Protocol on Liability and Compensation for Trans boundary Transport of Hazardous Wastes and Their Disposal, Basel, 1999 (Dabiri, 2012; Grant et al., 2009).

The main question of the research is to what extent the practice of governments and international authorities in drafting and implementing international treaties has been effective in the development of environmental rights to prevent pollution caused by the transport of hazardous substances? The answer to this question requires the review of international conventions, the actions of international organizations, and dispute resolution authorities regarding marine pollution caused by the transport of hazardous substances. It should be noted that although governments have not yet taken effective measures to prevent the contamination of hazardous substances, international conventions, and in particular the actions of international organizations, are important given the nascent nature of international environmental law.

In 2011, the United Nations introduced a document entitled "The Universal Coordinated System for the Classification and Labeling of Chemicals". This document defines and classifies hazardous chemical products that can be used to identify hazardous substances (UNEP, 2016).

In addition, we can refer to the 1996 International Convention on Liability and Compensation for Injuries Related to the Carriage of Toxic and Hazardous Substances by Sea, the 2010 Protocol of which defines hazardous substances. Pursuant to paragraph 5 of Article 1 of this document, hazardous and toxic substances are:

- (A) Any material carried on a ship as a commodity referred to in the following paragraphs:
- Bulk oil listed in Annex 1 to the 1973 International Convention for the Prevention of Pollution, as

amended by the 1978 Protocol;

- Toxic liquids transported in bulk, listed in Appendix 2 of the International Convention for the Prevention of Pollution in 1973, as amended by the 1978 Protocol, and substances and compounds normally classified in categories A, B, C, D;
  - Hazardous liquid substances transported in bulk and listed in Section 17 of the International Code for the Construction and Equipment of Ship Carrying Hazardous Chemicals in Bulk 1983 and its amendment, as well as hazardous products for which the initial conditions are suitable for transport Is provided by the executor and the executor port in accordance with paragraph 1.1.3 of the same code;
  - Packaged hazardous and harmful substances, covered by the International Maritime Code of Hazardous Materials;
  - Liquefied gases listed in Section 19 of the International Code for the construction and equipment of vessels carrying international liquefied natural gas 1983 and products for which the appropriate initial conditions for carriage by the operator and the port in accordance with paragraph 1.1.6 of the Code Has been;
  - Bulk transported liquid materials whose boiling point is not more than 60 degrees Celsius; - Bulk solids including hazardous chemicals covered by Appendix "B" of the Code of Practice for Safe Bulk Goods to the extent that these materials are also subject to the provisions of the International Maritime Code of Hazardous Materials when transported in packages;
- (B) Remains for the transport of bulk materials referred to in paragraphs (a) to (3), (4) and (6);

Hazardous materials can be in three forms: solid, liquid and gaseous, and what matters is the properties of these materials. Other hazardous chemicals are listed in the table below:

The European Union divides hazardous substances into nine separate categories (Bowring, 2009):

- Explosives;
- Compressed and insoluble gases under pressure of 2200 N / m<sup>2</sup> (Pascal);
- Newton flammable liquids per square meter (Pascal) 2300;
- Flammable solids 2400 N / m<sup>2</sup> (Pascal);
- Potential combustible material 2430 N / m<sup>2</sup> (Pascal);
- Materials that emit flammable gas in contact with water;
- Oxide materials;
- Organic peroxides;
- Toxic substances;
- Infectious substances;
- Radioactive materials; \
- Miscellaneous hazardous materials.

## 2. Research methodology

This research is a review that has been done with a thorough and comprehensive review of written sources and international documents.

**Table 1.** Chemicals and hazardous (UNEP, 2016; Unterweger, 2014)

Type of Material	Description
<b>Persistent Organic Pollutants</b>	<p>Persistent organic pollutants are one of the hazardous substances. The Stockholm Convention, with three annexes, sets out these provisions. Given that this Convention makes such articles subject to exceptional and restrictive rules, the same procedure is provided for in the Annexes.</p> <p>Appendix A is included as Appendix B as Restrictions and Appendix C as Unintentional Products. Appendix A contains substances such as Aldrin, Alpha and Beta Hexa Chlorosilicohexine, Chlordane, Chlordecone, Decobromodiphenyl, Dildrin, Andrin, Heptachlor, etc., which should be removed.</p> <p>Appendix B lists chemicals whose production and use for certain purposes are accepted and with certain exceptions. One of these substances is an insecticide called DDT.</p> <p>Appendix C contains resistant organic pollutants that are inadvertently formed and released from human sources and contains chemicals called Hexachlorobenzene, Hexachlorobutadine, Pentachlorobenzene, Polycarbonate Diphenyl (PCB), Dibenzene-dioxin Polycarbonate. And Dibenzofurtan and finally naphthalene. These substances are the result of release and unintentional production, including chlorine, from imperfect compounds or chemical reactions.</p>
<b>Hazardous waste</b>	<p>Hazardous waste is one of the categories of hazardous materials. In addition to hazardous products that are exported for trade to different parts of the world and can be the subject of maritime transport, the disposal of hazardous waste is also part of the trade in these materials. This trade is done in the form of transferring these materials from developed countries to developing countries. Hazardous waste has properties that make it hazardous or give it the ability to have harmful effects on human health or the environment. Hazardous waste comes from a variety of sources, ranging from industrial plant waste to batteries, and can come in a variety of forms, from liquid, solid, gas, or sludge.</p>

For this purpose, by referring to reputable Internet sites as well as reference libraries in specialized organizations, the required data were prepared and collected. Finally, in order to summarize the data by setting a benchmark checklist and referring to the opinions of experts and specialists on the measures taken were evaluated.

### 3. Results and Discussion

The research findings are presented in several separate sections.

#### 3.1. Legal regime for the protection of the marine environment against the transport of hazardous materials

The maritime environmental law system consists of several international conventions, each of which, thematically or geographically, covers part of the purpose of this legal system. Therefore, in the first step, it is necessary to explain the legal sources related to the transportation of dangerous goods (Brownlie, 2008).

The components of this system can be divided into several categories, which are:

- Rules contained in the regime of environmental law, which can be divided into the following two categories:

A. General rules for the protection of the marine environment.

B. Special rules of environmental protection against the

transportation of hazardous materials.

- Rules related to the protection of the marine environment resulting from the transport of hazardous substances in other legal regimes, including human rights;

#### 3.2. Protection of the marine environment against hazardous substances in environmental law

The legal system of environmental protection against the transport of hazardous materials can be generally divided into two categories. First, the general rules of environmental protection that covers all types of environmental pollution, and second, the specific rules related to the protection of the environment against hazardous materials and the transportation of these materials.

The legal system for the protection of the marine environment against marine pollution caused by the transport of dangerous goods, consisting of several international conventions and general and specific zones, international customary rules as well as international provisions contained in other legal systems, including human rights. It is the international community that together constitutes the legal system in this area. However, understanding the commitments of governments and the practice of international organizations and institutions in this regard is not limited to the introduction of these documents.

**Table 2.** Division of the legal system of marine environmental protection

Type of legal system	Types	Examples
General system of marine environmental protection	International treaties	<ul style="list-style-type: none"> <li>▪ Combating Environmental Pollution (1958)</li> <li>▪ Convention for the Prevention of Marine Pollution (1972)</li> <li>▪ Marple Convention and Annexes</li> <li>▪ 1982 Convention on the Law of the Sea</li> <li>▪ </li> </ul>
	Customary law	<ul style="list-style-type: none"> <li>▪ International Law Commission (1973-1976-1978-1985)</li> </ul>
Special system of marine environmental protection		<ul style="list-style-type: none"> <li>▪ Convention on the Prevention of Marine Pollution by Disposal of Waste and Other Materials 1972</li> <li>▪ Convention on the Law of the Sea (1982)</li> <li>▪ International Convention on Liability and Compensation for Transport of Dangerous and Toxic Substances</li> <li>▪ Basel Convention with the aim of controlling the trans boundary movement of hazardous wastes and their disposal</li> <li>▪ Protocol of Preparedness, Response and Cooperation in Pollution Incidents Due to Toxic and Dangerous Substances (2000)</li> <li>▪ Convention on the Prohibition of the Importation of Hazardous Waste into Countries and the Control of the Movement and Management of Hazardous Waste within the Pacific,</li> <li>▪ Convention on the Prohibition of Imports into Africa and the Control of Trans boundary Movements and the Management of Hazardous Waste in Africa, known as the Bamako Convention (1991)</li> <li>▪ Stockholm Convention on Persistent Organic Pollution (1995)</li> <li>▪ Rotterdam Convention on Preconscious Consent Procedure for International Trade in Certain Chemicals and Pesticides, (2004)</li> <li>▪ Stockholm Convention</li> </ul>

(Source: Author based on research findings)

Although these rules and regulations are formulated in separate documents, their implementation requires a thorough understanding of the relationship between these rules. Therefore, in recognizing the performance of international actors, it is necessary to consider the conflict resolution system among international resources related to this field. For this purpose, international law uses two methods, which are: the general system of conflict resolution and the terms of conflict resolution that are contained in international treaties and determine the relationship between that document and other rules of international law. Both mechanisms are conceivable in relation to environmental treaties related to the transport of dangerous goods. For example, the Stockholm Convention on Resistant Organic Substances lacks any conflict resolution, and therefore the conflict between the contents of this document and other relevant rules is determined within the framework of general conflict resolution rules (Curry, 2011; ECE, 2019).

In order to understand the environmental legal system governing the seas, it is necessary to distinguish the different stages of transportation of these items. In general, in an international transport, several steps are conceivable:

- The first step is to pack the goods at the origin and prepare the relevant documents;
- Second stage, transportation of goods from the factory or origin to the destination of the international transport

operator;

- The third stage is the transportation of goods to the final destination, which can include transportation by the high seas or across borders (Galindo-Leal & Bunnell, 2011).

It is clear that each of these steps will have its requirements. Another issue is the type of transport of hazardous materials. Therefore, it is necessary to first determine how these materials can be transported and secondly, in each of these methods, what requirements should be considered.

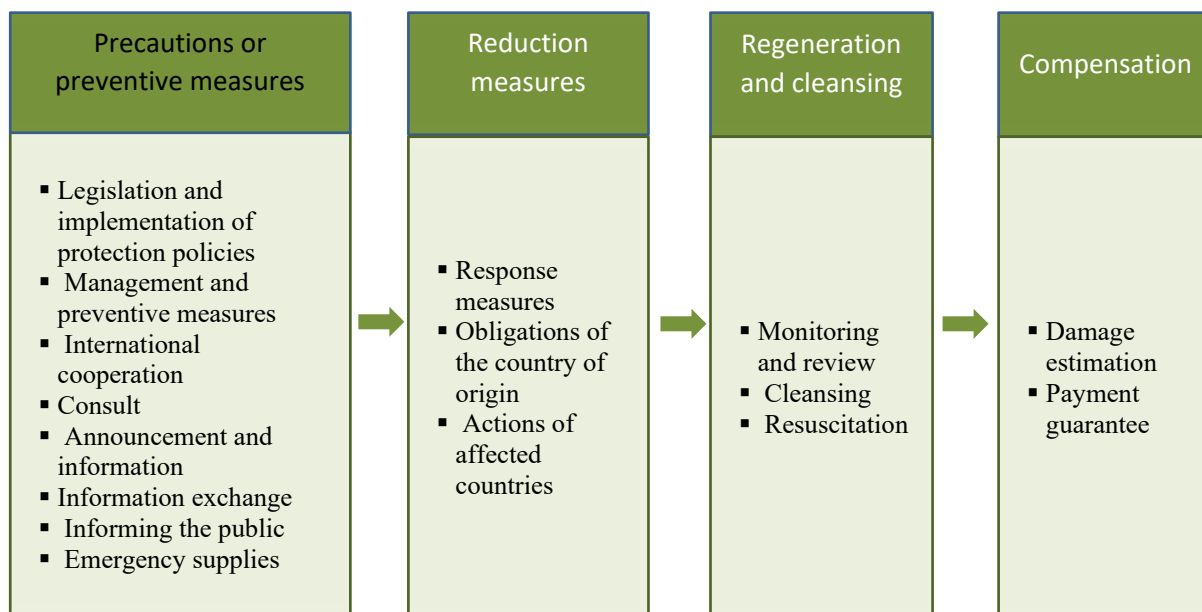
### 3.3. Protecting the marine environment

The protection of the marine environment during the transport of hazardous materials includes the following steps (Figure 1):

The first step is precautions or preventive measures that include eight indicators. Also, second step is reduction measures that include 3 indicators and third step is regeneration and cleansing that include 3 indicators and finally, fourth step is compensation that include 2 indicators.

### 3.4. The performance of governments and international organizations

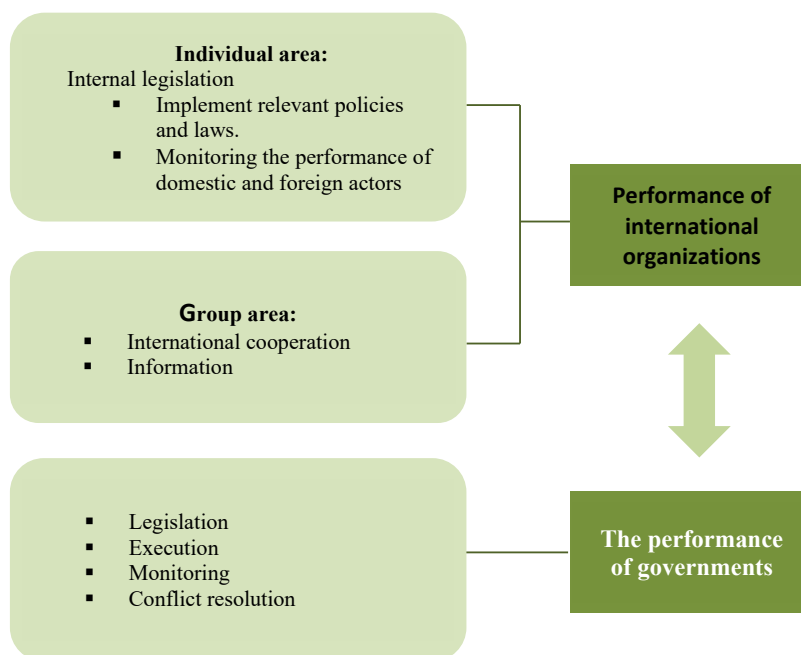
In the next step, it is necessary to examine the performance of governments and international institutions in this regard.



**Figure 1.** Steps and components of marine environmental protection by governments  
(Drawing: Author based on research findings)

In general, in relation to governments, two forms are conceivable, which are individual performance and group performance. In the first form, three stages can be deduced in the performance of governments, which are internal legislation, implementation of relevant policies and laws, and finally monitoring the performance of relevant domestic or foreign actors. In the area of group practice, issues such as international cooperation and information can be included (Brownman & Stergiuo, 2014). In parallel, for international institutions such as international organizations, several functions can be envisaged, which

include legislating, implementing, monitoring, and resolving disputes. In fact, international organizations either seek to formulate international rules and regulations or take steps to implement those rules and regulations, which can include, for example, coordination mechanisms between other actors (Dodds et al., 2012). At the same time, another important mechanism of international organizations is their supervisory role in the implementation of these rules and regulations. Governments can take an important step towards strengthening the implementation of these rules and regulations (Figure 2).



**Figure 2.** Functional areas of governments and international organizations in the field of marine environmental law  
(Drawing: Author based on research findings)

International Laws and Regulations Chapter 7 of the SOLAS Convention on Dangerous Goods and the MARPOL Convention on the Control of Pollutant Liquid Contamination, and subsequently the 1978 Protocol to the United Nations Convention on the Carriage of Goods by Sea (known as Hamburg Convention and the Prevention of Contamination of Packaged Harmful Substances in conjunction with the International Marine Hazardous Goods Code (IMDGE code) and the International Protocol on the Preparation, Response and Cooperation against Pollution of Toxic and Dangerous Substances (OPRC-HS-2000) All have dealt with the issue of the transport of dangerous goods, in addition to which the United Nations ratified the Convention on “Combined International Transport” in 1980 (CLC, 1996). In the case of the transport of radioactive materials and nuclear waste, although in view of the enormous amount of potential damage in existing international conventions, the responsibility for the damage is often borne by the governments, but under certain conditions the transport operator Instead of the operator, the shipment is responsible for accidents that occur during the shipment and is responsible for the shipping conditions.

▪ ***International Marine Hazardous Materials Code (IMDG CODE)***

The International Maritime Dangerous Goods Code (IMDGE code) agreed upon by the members in the Convention (SOLAS-1960) was implemented by Chapter 7 of the Convention (2004-SOLAS) by the World Maritime Organization (IMDGE) (Houghton, 2014).

Safety precautions for the 9 dangerous marine goods at the container terminal include the following:

- Training of all people involved in the transportation and storage of dangerous goods;
- Develop a plan for the transportation, handling and storage of dangerous goods;
- Planning in the acceptance of dangerous goods to the container terminal;
- Paying attention to labeling on containers containing dangerous goods;
- Cleaning of containers containing dangerous goods based on its compatibility and incompatibility;
- Preparation of special arrangements by (Cargo Interest) in how to deal with containers of dangerous goods (IC, 1983).

▪ ***International Convention on Safe Containers (CSC)***

The International Convention on Safe Containers (CSC) was established in 1972 by the IMO, recognizing the benefits of formalizing the common safety requirements for the complete safety of life at work, stacking and transporting containers, and facilitating international container transport. ; In this convention, in order to ensure the safety of working with containers, it is emphasized that in all stages of container efficiency, the forces resulting from movement, placement, stacking, container weight and external forces do not exceed the strength of

the container design (Kil, 2015).

▪ ***International Convention for the Prevention of Pollution from Ships***

The International Convention for the Prevention of Pollution from Ships was adopted in 1973 by the International Maritime Pollution Conference (IMO) and subsequently amended by the 1978 Protocol. These regulations cover various sources of pollution from ships and their main purpose is to eliminate pollution of the marine environment by oil and other harmful substances and reduce the discharge of such substances intentionally or unintentionally, through the application of laws and regulations on ships and ports. (Viliger & Customary, 1997).

▪ ***International Protocol on Preparedness, Response and Cooperation against Pollution of Toxic and Dangerous Substances***

The OPRC Convention addresses oil-related accidents in general and in particular (Zozetto, 2013).

▪ ***International Convention on Liability and Compensation for the Carriage of Toxic and Dangerous Substances by Sea 1996 and Additional Protocol 2010***

In general, damages will be paid through the HNS Fund when the shipowner’s liability is not complete or sufficient to compensate for the damage, or when no liability is borne by the shipowner under the first level. Under this convention, the second level of membership of the HNS Fund will be imposed on persons who receive a certain minimum amount of HNS consignment from the Contracting States for a period of one year. The unit of account in this convention is the Special Drawing Right (SDR) (Hasley, 2011).

▪ ***Convention on Civil Liability for the Transport of Nuclear Material 1971***

Convention on Civil Liability for the Transport of Nuclear Material (Brussels, 1971), established by a conference organized by the International Maritime Organization (IMO) with the International Atomic Energy Agency (IAEA) and the European Atomic Energy Agency (IEA) (OECD) was formed (Gerard peet, 1994).

▪ ***Establishment of compensation funds***

Another provision of the international community to protect against the transport of dangerous goods can be found in the International Convention on “Liability and Compensation for Damages Related to the Transport of Dangerous and Toxic Substances”. According to this convention, in cases where the damage caused by hazardous and toxic substances is in bulk, the ship-owner should normally be able to pay between ten million and one hundred million special withdrawal rights from the International Monetary Fund (depending on the volume and tonnage). Ship), limit their financial responsibility. In

cases where this damage occurs as a result of hazardous and toxic packaged materials, the maximum liability of the ship-owner will be 115 million special withdrawal rights (Hill, 2015).

Protecting the marine environment during the transport of hazardous materials is not limited to the actions of governments and other international actors are also involved in the process. International organizations are considered as one of the important players in the international arena that can be effective in the various stages of the development, implementation and ultimately monitoring of international rules and regulations. In the rule-making phase, these institutions generally provide a good platform for drafting an international treaty. NGOs often, in consultation with other actors, including governments and government agencies, prepare for the drafting of binding or non-binding international instruments, thus helping to develop international rules in this area (Howarth, 2006). International organizations, whether governmental or non-governmental, can also play a valuable role in the implementation phase. These institutions have an effective role in providing various types of assistance to government institutions, both in the development of domestic laws and regulations and in the implementation of these rules. Providing a variety of guidelines for the development of internal rules and regulations or to provide the necessary training to transport operators of such goods, is one of the most important activities that can be expected from these institutions (Hubert, 2015). International organizations can be considered as associations where governments (at the first level) and other international actors (at the lower level) interact to provide specific behavioral patterns and follow its implementation in international relations. These institutions play an effective role in formulating international rules and regulations (around the areas in question), anticipating executive solutions and, if necessary, monitoring the performance of other actors. Transportation of hazardous materials by sea is no exception. Various organizations and institutions at the international and regional levels play a role in protecting the marine environment during the transportation of such materials. Some of the most important such organizations are (Koivurova & Nengye, 2019):

- Specialized institutions of the United Nations
  - o United Nations Economic and Social Council
    - o United Nations Environment Program (UNEP)
    - o International Maritime Organization (IMO)
    - o International Rail Transport Organization (OTIF)
    - o Committee of Experts on the Transport of Hazardous Substances of the Economic and Social Council of the United Nations
    - o Subcommittee of Experts for the Transport of Dangerous Goods
  - Regional commissions and institutions
    - o European Union
    - o Central Commission for Navigation on the Rhine

- o Supervision of European inland navigation
- o Isignet project or international safety guide for inland navigation of boats (vessels for marine transport, especially for transporting gaseous materials and liquids) and terminals
- o Industrial safety platform of European technology
- o Non-profit association European Association of Dangerous Goods Safety Consultants
  - United Nations Economic Commission for Europe
  - Economic and Social Commission for Asia and the Pacific
  - International arrangements
    - o Coordinated global system
    - o Working group for the transfer of hazardous materials

Environmental pollution can be transmitted from the territory of a country's territorial sea to another country and cause damage to the people and the environment of that country. Therefore, governments should not act contrary to the principles of international law and against the marine environment. Gradually, in accordance with the Stockholm Declarations of 1972, Rio 1992, and in particular since the ratification of the Convention on the Law of the Sea in 1982, the concept of a common environment has broadened the scope of coastal State law to such an extent that Apply the foreign flag in their port; Even when the ship is accused of causing pollution in the open waters or coastal waters of another state (Viliger, 1969; UNEP, 2000). This has progressed to the point that the 1982 Convention on the Law of the Sea obliges countries to establish judicial structures and domestic laws to compensate victims, and calls on countries to cooperate with each other in regional and international instruments. Specially compile. Given the current developments in the field of international environmental law, especially with the conclusion of various treaties on the subject of prevention, the claim is strengthened that governments will be held responsible for failure to take preventive measures and information. Therefore, governments should pay attention to the fact that with the ratification of various conventions on the one hand and the strong presence of international authorities and organizations to protect the marine environment on the other hand, the necessary minimums regarding the exploitation of the marine environment must be observed. In this regard, both the governments and the above-mentioned organizations should pay the utmost attention to, firstly, the revision and, secondly, the implementation of specific and clear laws and regulations, and in this regard, due to the protection of the marine environment, makes every effort.

#### 4. Conclusion

Conclusions about the discussion can be summarized as follows:

- Considerations related to the sovereignty of states as well as the unwillingness of states to delegate absolute powers in their jurisdiction in any way are among the



most important factors that prevent the ratification and implementation of binding international treaties to protect the marine environment. Be. In any case, sovereignty considerations are so important that international environmental institutions should go as far as possible beyond the basic relationship of international law, ie the relationship between government and government, and focus on promoting and encouraging communication between NGOs and inter-agency agencies. And the promotion of new rules, values and expectations of international agencies and non-governmental organizations can advance the ratification and continued effective implementation of international environmental agreements on the transport of hazardous substances, especially in the field of Based on the history of ratification of binding conventions in other areas, it can be hoped that over time, such activities will lead to the ultimate goal, and thus we can wait for the emergence of dynamic systems to protect the ecosystem. The sea, especially in the field of protection of this territorial territory during maritime transport, which are based on binding rules and regulations.

- As it turns out, the interests of governments in the exploitation of the seas are different, so that the tourism industry is valuable to one government while maritime transport has priority for another government; Or that the food resources of the third state are completely dependent on the maritime territory; Here it is necessary to state that if only a part of the seabed has huge and valuable oil and gas resources, we can see a progressive state of conflict of interest. Therefore, given the priority of governments to use the sea, it has always been very difficult to establish coordination between right-wing governments, but it is impossible in such a way that this difference in interests leads to differences due to the lack of a coordinated system for interest. Vector from the sea. 3 Regional and international conventions play a major role in providing any solution to marine environmental problems at the international level. Therefore, although the relevant conventions have dealt with this issue in some way or directly, the inclusion of ethical expressions instead of the necessary legal provisions cannot cause the contractors to comply with the said provisions.
- The absence of domestic laws in some governments regarding the protection of the marine environment is an inescapable gap in this area, because domestic laws in their progressive state encourage governments to ratify regional conventions and ultimately international ones. Unfortunately, in the field in question, and in the first case, many governments do not have domestic laws to protect the marine environment. In the second case, despite the ratification of regional and international conventions in this area, many governments are willing to They are not members of it and in case of accession, they refuse to pass laws in their domestic law in accordance with the said convention. Otherwise, it will lead to a lack of coordination in effective measures to combat this violation.
- Due to the lack of a long history in the field of transport of dangerous goods (as it is considered today), this area of law lacks well-known and effective customs in the international arena and is therefore the responsibility of courts and arbitral tribunals. It is international that in this field, by studying the disputes and disputes, as in other legal fields, the ground for recognizing custom, establishing judicial and arbitration procedures, and following it, establishing custom to formulate laws and regulations. Insufficient development of human science and knowledge on issues related to the marine environment is also important. Human knowledge and science have not yet been able to cover all aspects of the marine environment, and so governments are using the Convention-Framework system to design appropriate legal structures in line with the growth of human knowledge. Also, the costly protection of the marine environment and the lack of financial resources are other obstacles to protecting and protecting the marine environment; Expensive marine environmental protection, especially for developing countries that do not have sufficient financial resources to protect the marine environment and therefore have serious problems in implementing many of the rules of international law that require financial costs. They face major challenges.
- Contrary to the damage done to people, property and security that can be identified, due to the vastness of the marine environment, it is very difficult to recognize and know about the violations and pollution in this area. Therefore, many damages to the marine environment remain unknown, and this has led to damage to this watershed without the knowledge of the international community, and this is due to the lack of a permanent and active monitoring body in the international arena. Obviously, if the cause of the damage to the marine environment informs, retaliatory measures will be taken to reduce or eliminate the source of the damage, while in the absence of information, this issue will be the responsibility of regulatory agencies. Unfortunately, the lack of an institution with the characteristics expressed in the international arena is evident.

Finally, it should be noted that the development of a progressive legal system to protect the marine environment is the responsibility of governments, and if governments comply with the rules and regulations of international maritime law, on the one hand, the interests of the seas can be used more effectively. On the other hand, it established lasting peace and stability in the seas and the environment of the seas. But what is important is that achieving the ultimate goal of protection and preservation of the marine environment is not possible only with the approval of documents and the establishment of requirements, but must be the collective will of the subjects of international law to protect and prevent environmental pollution.

Marine, take on a jazz face. In other words, the effective subjects in the protection of the marine environment must create a spiritual and psychological obligation in order to take a firm and coordinated step in this direction.

### Conflict of interest

The authors declare that they have no conflict of interest.

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#### Author Contributions

**Hooman Fathi:** Proposed the plan, conceived the experiments, and analyzed the data.

#### Seyed Bagher Mirabbasi

Authored or revised drafts of the paper, and approved the final draft.

#### Mansour Pournouri

Revised data.

#### Ethics Statement

Vice Chancellor for Science and Research Branch, Islamic Azad University, Tehran, Iran

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