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International Law on Marine Pollution from Ballast Water

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Introduction of non-indigenous (alien) species in ballast water from ships are one of the greatest threats to marine ecosystem worldwide. New approaches to prevent and reduce the release of Alien Invasive Species (AIS) from ballast water are under consideration nationally and internationally. Problem that arise from this kind of pollution not only has impact on environmental, but also in some aspects like health, shipping and biodiversity. Based on this matter, IMO as the responsible organization about marine matter, adopted a new convention namely as The International Convention for the Control and Management of Ships' Ballast Water and Sediments *on February 2004. The legal framework on ballast water comprises a complex of interconnected provisions.*

Keywords: marine pollution, ballast water

I. Introduction

The topic of environmental problems began to emerge and continue to grow after the 1972 Stockholm Declaration, one of which is the pollution of the marine environment. Marine pollution defined as the entry or the inclusion of living things, matter, energy, and / or other components into the marine environment by human activities so that quality get down to a certain level that causes the marine environment not in accordance with standard quality and / or function.[2]

Marine pollution, mainly caused by a vessel, divided into two groups. First, the marine pollution caused by ships operating activities. The operations of

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[1] Having Bachelor degree from Faculty of Law, University of Indonesia.

[2] Indonesia, Government Regulation of Pollution Control and / or destruction of the Sea, PP No. 19 In 1999, LN 32 of 1999, TLN 3816, article 1 paragraph 2.

[3] Andrew N. Cohen, Ships' Ballast Water and the Introduction of Exotic Organisms into the

these vessels can be a result of removal of oil tank leaks and disposal of vessels issued by the tank vessel. Second, the marine pollution caused by accidents, such as a shipwreck, collision, and breakup of the ship tank. Marine pollution caused by ships ballast water, including in the form of marine pollution caused by vessels resulting from vessel operations.

Problem of marine pollution caused by disposal of ballast water from ships docked at the international attention in 1973, when the United Nations Conference on Marine Pollution, which requested the WHO to examine the possibility of epidemic disease that is contained in ballast water.[3] This action made in connection with the discovery of several foreign marine species that are toxic or viral disease microorganisms. Ballast water containing various kinds of things found on the waters where ballast water taken, such as viruses, bacteria, protozoa, phytoplankton, zooplankton, and fish. Where a few of these organisms can form colonies in the new areas, where ballast water dumped by ships.[4]

II. Definition and Pollution Caused by Ballast Water

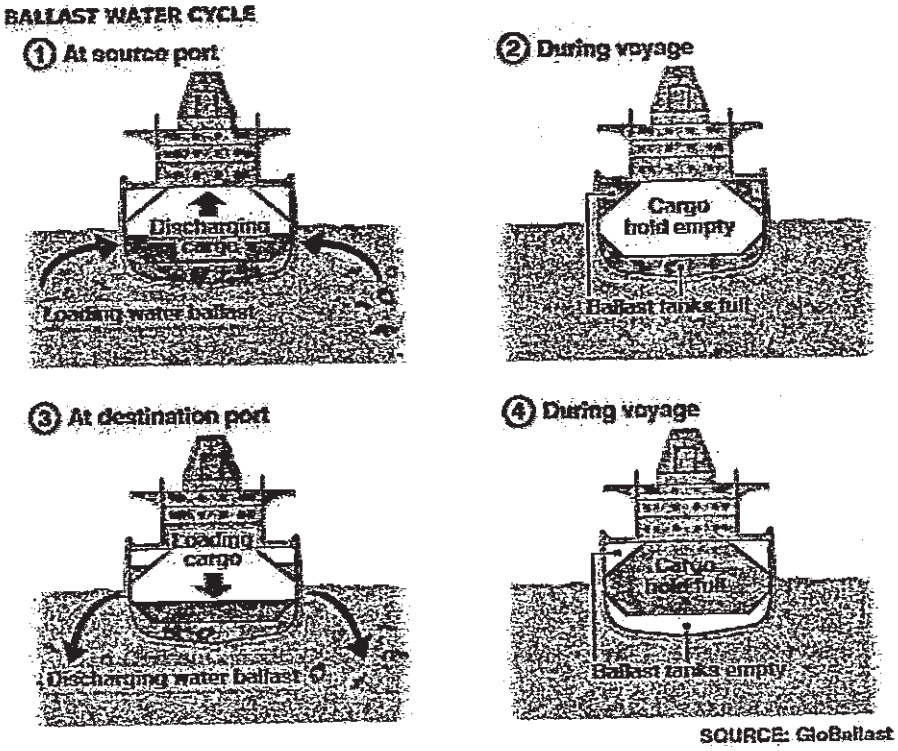
Definition of ballast water is the kind of material that used to give weight and / or balance an object.[5] Ballast water or water ballast or the ballast water is water carried in ships to maintain stability, balance, and integrity of the ship structure.[6] Water comes from a port where the cargo ship released, and the weight of the load replaced by water so the boat remains in a balanced position.

For example, ballast water is generally inserted into the ballast tank at the same time issued a cargo ship into the harbor, and water is removed at the time the ship carrying the load again. Depending on the place where ballast water taken, then the ballast water may be salt water, freshwater or brackish water, and the water may contain organisms that live in water waters where water taken.[7]

San Francisco Estuary: Current Status of the Problem and Options for Management, pp. 29, http://www.sfei.org/bioinvasions/reports/1998-BallastWater224.pdf, downloaded on February 19, 2010.

[4] Water Encyclopedia, http://www.waterencyclopedia.com/Ge-Hy/Human-Health-and-the-Ocean.html, downloaded on March 28, 2010.

[5] Globallast, The Problems, http://globallast.imo.org/index.asp?page=problem.htm & menu = true, downloaded on February 2010.



In modern ships, the use of weights with the use of water due to its efficient and economical in maintaining the balance board when not transporting cargo.[8]

Ballast water is the main cause of the entry of foreign species into marine ecosystems where they should not be located. When these foreign species survive in the new ecosystem and settled, they may result in losses to the economy, the environment and has implications for human health.[9]

It estimated that approximately 7000 migratory marine species each day without being detected to the parts of the ocean to the ocean one another. These species carried in ships ballast water tanks. As part wasted during the process of ballast water discharge to a new environment, the animals who do

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[6] Asih Saraswati, the "International Convention for the Control and Management of Ships' Ballast Water and Sediments", Indonesian Journal of International Law, vol.1-3, (April 2004), pp. 616.

[7] EPA, Factsheet: Ballast Water ANF Aquatic Invasive Species, http://www.epa.gov / owow / invasive_species /factsheet.html, downloaded on February 2010.

[8] Asih Saraswati, loc. cit., pp. 616; Globallast, loc. cit.

[9] EPA, loc.cit.

not want this presence can become invasive, competing with local plants and animals, to cause permanent changes in ecological and economic losses.[10]

Shipping activity is the most important part of world trade. Ballast water is an essential part of a sailing vessel, to maintain the balance of the cargo ship when the ship to be empty after unloading activities.

At the time of filling the tank ship balancing, the water that pumped into water tanks is surrounding the ship when the ship docked ship. This pumped water contains various kinds of organisms that live in these waters. These organisms will eventually sail into the waters of another, and joined the ship at the time wasted taking new loads.

Some of the organisms that carried this would not last the entire trip. But most survive, castaway in new waters, and colonized the region to live and food to the local organisms. Even with the possibility of a predator of the worst local animal, or causes the water and everything in it becomes unsafe for human consumption.[11] For example comb jelly (*Mnemiopsis leidyi*), a type of jellyfish found in the waters of the Black Sea, thought to have originated from the United States through ballast water. Consequences of entry of this species into the Black Sea are almost disappearance of fish species, anchovies, which became the subject of the Russian and Turkish fisheries.[12]

Until now, still difficult to predict which organisms can survive in ballast tanks during the voyage or about why some organisms can survive and others do not. In general, large organisms in ballast tanks estimated to survive on the prey organisms with smaller size. In addition, if the situation does not allow for microorganisms and plankton to survive from the onslaught of large organisms, protection measures to taken is by producing spores and takes refuge in it. In the form of spores, the organism can survive in a long time without food and in salinity and temperature differences that are different from the region of origin.[13]

In the case of marine pollution due to oil spilled into the sea, there are still possibilities for ocean waters to return in its original state before the contami-

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[10] WWF International, Silent invasions: The Spread of Marine Invasive Species via Ships' Ballast Water, http://assets. panda.org / downloads / silent_invasion_briefing.pdf, downloaded on February 2010.

[11] Ibid.

[12] MIT Sea Grant, Marine Bioinvasions Fact Sheet: Ballast Water, http://massbay.mit.edu/exoticspecies/ballast/fact.html, downloaded on February 2010.

[13] WWF International, loc. cit.

nated oil. However, not so with the introduction of foreign species into marine waters. Natural conditions of the ocean, directly or indirectly help these foreign species to adapt and live in a new environment,[14] so that they will compete with local marine plants and animals to be alive. Once alien species into new areas, its growth will be rapid, some native animals such areas could be reduced in number or low, making it impossible to restore such waters as they should.

Table of aquatic bio-invasions

Name	Native to	Introduced to	Impact
Cholera *Vibrio cholerae*	Various strains with broad ranges	South America, Gulf of Mexico and other areas	Some cholera epidemics appear to be directly associated with ballast water
Cladoceran Water Flea *Cercopagis pengoi*	Black and Caspian Seas	Baltic Sea	Reproduces to form very large populations that dominate the zooplankton community and clog fishing nets and trawls, with associated economic impacts
Mitten Crab *Eiocheir sinensis*	Northern Asia	Western Europe, Baltic Sea and West Coast North America	Undergoes mass migrations for reproductive purposes. Burrows into river banks and dykes causing erosion and siltation. Preys on native fish and invertebrate species, causing local extinctions during population outbreaks. Interferes with fishing activities
Toxic Algae(Red/Brown/ Green Tides) Various	Various species with broad ranges	Several species have been transferred to new areas in ships' ballast water	May form Harmful Algae Blooms. Depending on the species, can cause massive kills of marine life through

Source: IMO Website

A. Ecology Issues

The success of the entry of alien species into new waters depend on several factors supporting, such as a lack of predators or prey, abundant food source, the ability of good tolerance of pollution, disease and competition among species, with species of origin of migrants in these waters.[15]

Event entry of foreign species into a new water known as the second leading cause of biodiversity loss. On U.S. soil, the researchers found that 1880 species in the U.S. are classified into class destroyers and potentially invasive. Alien species that managed to adapt and settle in new waters, the potential to cause problems, starting with a parasite on species of origin, competition with local populations to obtain food, and become the predator. Change of ecological conditions such as these cause damage to the normal functioning of these ecological systems.[16]

Event entry of alien species through ballast water may lead to competition and replace the main source of food and living space,[17] or could endanger the diversity and reduce the number of sea creatures.[18]

B. Health Issues

Introduction of nonhuman pathogens has shown widely in the field of damage to the ecology and economy of industrial activity, especially marine aquaculture and commercial fisheries.[19] The spread of pathogens into new areas expected as a major risk to human health.

[14] Ibid.

[15] Christopher F. and Richard C. Deacutis Ribb, 'Ballast Water and Introduced Species: Management Options for Narragansett Bay and Rhode Island ", Requierements Chapter 46-17.3 of the Rhode Island General Laws related to Ballast Water, (Rhode Island: Department of Enviroment Management, 2002), pp. 7-8.

[16] *Ibid*, pp. 5.

[17] For example in San Francisco Bay waters, where marine organisms native bay waters due to decreased amount of habitat invasion by the Asiatic Clam and mittens Chinese crab.Occurred in waters off the Northeast coast of the U.S., due to the entry of the green crab species (green crab) from ships anchored in the surrounding waters.

[18] P. Daszak, et. al., Emerging Infectious Diseases of Wildlife-threats to Biodiversity and Human Health, <http://www.sciencemag.org/feature/data/1040321.html>, downloaded on 4 April 2010.

[19] Disease-causing cholera in humans, infecting marine organisms such as plants and fish to become unsafe when consumed by humans. Vibrio cholerae is a species of live bacteria (free-living) in water and in association with plankton. A kind of attempt at destroying the oceans around the world are vibrio cholerae non-01/non0139.

Some researchers in the Gulf Chesapeake, U.S., who did research on bacterial, viral particles, also *Vibrio cholerae*,[20] found that the pathogens that cause disease in humans is apparently contained in ballast water from ships that enter the tank port or coastal waters from foreign ports.[21]

One of the impacts to human health from the entry of alien species to new waters is Paralytic Shellfish Poisoning (PSP). PSP is the effect resulting from the consumption of shellfish contaminated with Neurotoxins produced by several species like phytoplankton (microscopic plants that float on the surface of water) among a group of *dinoflagellates*.[22] Several countries around the Pacific Ocean has experienced significant growth phenomenon of toxic *dinofalgellates*, who co-migrate through the sediment in the tank of ship ballast water in crystalline form. In addition, there are also species such as Red Tides and sort incoming and growing algae in the waters of Japan and Australia. Where the existence of such species can be deadly for organism of origin and not safe for humans.

C. Economic Issues

Besides the impact on ecology and human health, there is also the impact of the introduction of foreign species into new waters. From the case studies conducted in the U.S., a report from the Congressional Office of Technology Assessment (OTA) in 1993, states that from 1300 the foreign species enter and settle in U.S. waters, about 15% of the total has caused damage to local ecosystems and / or economic conditions.[23] Another study of the impact of invasive species to the economy, both in the form of aquatic species and plants, conducted by Cornell University, updated the data created by the OTA, estimates that the cost of which is used to prevent and control the alien species has reached 137 million U.S. dollars per year.[24]

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[20] Christopher F. and Richard C. Deacutis Ribb, loc. cit., pp. 5.

[21] Hallegraeff and Bolch, Transport of Toxic Dinoflagellate cysts via Ships' Ballast Water, http://www.sciencemag.org/feature/data/1034581.html, downloaded on 4 April 2010.

[22] Christopher F. and Richard C. Deacutis Ribb, loc. cit., pp. 9.

[23] Ibid.

[24] "Freedom of High Seas" and "The principle no harm." Maria Helena Fonseca de Souza, The International Law on Ballast Water: Preventing Biopollution, (Boston: Martinus Nijhoff Publishers, 2008), pp. 41; Patricia Birnie and Alan Boyle, International Law & The Environmental, ed.2, (New York: Oxford University Press, 2002), pp. 351.

The negative impact of the introduction of foreign species into new waters, including loss of income derived from fishing activities, costs for cleanup efforts from the blockage, and the cost for replacement and repair dock. In addition to the cost of doing research is also a burden to be borne in order to prevent and reduce pollution caused by the entry of foreign species.

III. Customary International Law and Ballast Water

Customary international law has long intervened in the problem of the use of sea and marine pollution prevention. In the customary international law relating to marine issues, discovered two important aspects to use. The second aspect is the freedom of the high seas and will ban cross-border pollution.[25] Both these aspects affect the regime of control and regulation of ballast water and sediment ship. One example is the distinction between territorial waters, which falls under the jurisdiction of coastal States, with high seas freedom to which all valid for all nations. Both these rules have existed since the era of Roman law and are valid until today as part of the law of the sea that had codified in UNCLOS.[26]

Under the common law of international sea, this can ensure that the ship had crossed the international shipping standards with respect to prevention of pollution, only the state flag.[27] This is in accordance with article 94 UNCLOS, which contains the obligations of flag states to enforce its jurisdiction and control the activities admistratively, technically and forth from the ship or aircraft registered in the state flag.[28]

When viewed from the condition that the state flag the ship is held responsible for ships registered in the country, so whenever a ship that sailed suspected or cause pollution to the marine environment, then the state flag of the vessel is responsible for environmental pollution caused by vessel.

Related to these environmental problems, with the adoption of the 2004

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[25] UNCLOS, article 25 (1): "The coastal State May Take The Necessary Steps in its territorial sea ..."; Article 87 (1) and (2):" The High Seas are open to all States ... "" These freedoms Marshall be exercised by all States with due regard for the interests of other States in on their exercise of the freedom of the High Seas ... "

[26] Maria Helena Fonseca de Souza, op. cit., pp. 43.

[27] UNCLOS, article 94 (1): "Every State Marshall effectively exercise its Jurisdiction and control in administrative, technical and social matters over ships flying its flag.

[28] Maria Helena Fonseca de Souza, op. cit., pp. 43.

Convention on Ballast and Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organism and Pathogens in 1997, and the establishment of national regulations with respect to ballast water, there will be a legal basis effective for the prevention of sea pollution caused by ballast water and sediment of the ship.[29]

In addition to the flag state responsibility, one aspect of customary international law is the no harm principle is also an important element in the international legal regime to prevent marine pollution caused by ballast water and sediment ship. These principles emphasize the obligation of states to prevent, reduce, and control pollution, and to avoid cross-border environmental damage.[30]

There are several factors associated with the obligation of states to prevent the pollution of the marine environment across national borders. These factors relate to economic issues and technological readiness or ability of the state to provide adequate technology in order to prevent the pollution of the marine environment.[31]

Customary international law can be inferred from state practice with it is believed that such action is necessary as a rule as binding.[32] Today, the concept promoted in the state showed a widely accepted practice, includes several factors from the attitudes and actions of the state, namely:

1. National law;
2. Court decisions;
3. Statements made by government or parliament, mass media, international conference, and meeting of international organization such IMO.[33]

Some of the attitudes and actions of these countries to be quite a testament to the will of one country in order to create a framework of rules on ballast water. One which can be realized by using the IMO Resolution A.868 (20) on Guidelines for the Control and Management of Ships' Ballast Water to Mini-

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[29] Ibid.

[30] UNCLOS, article 192: "States have the obligation to protect and Preserve the marine environment."

[31] Maria Helena Fonseca de Souza, op. cit., pp. 45.

[32] Ibid.

[33] IMO, What it is? OMI, Ce qu'elle est? OMI Que es?, Pp. 3-5, http://www.imo.org/includes/blastDataOnly.asp/data_id% 3D27414/IMOWhat-it-isweb009.pdf, download on February 19, 2010.

mize the Transfer of Harmful Aquatic Organism and Pathogens in 1997 to volunteer to be implemented in national legislation, as well as the signing and ratification Ballast Convention in 2004.

A. IMO Resolution A.868 (20)

International Maritime Organization or IMO often called is a special agency or a specialized agency of the United Nations, which have competence to regulate on cruise security issues and prevention of sea pollution caused by ships.[34] Task or the role of the IMO can be found in the UNCLOS, which states that the IMO as an international organization of standards and provisions are used as reference by the participating countries UNCLOS with respect to shipping safety and marine pollution prevention.

IMO Resolution included in the soft law,[35] but does not mean that the provisions in it have no binding force. An example is rule, which is a habit that contained in the resolution, have the force of law.[36] At the IMO resolution on ballast, water adopted by the flag state and coastal state and the port through the national law of each country, the resolution has a binding effect with respect to efforts to control ballast water and sediment regulation of vessel.

IMO Resolution MEPC established by regarding the control and regulation of ballast water and sediment ship, produce a basis for explaining the common law with respect to ballast water and to form a new customs law.[37] In accordance with the practices undertaken by the relevant state regulations con-

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[34] "Soft law is a paradoxical term for defining an ambiguous Phenomenon. Paradoxical Because, from a general and classical point of view, the rule of law is usually Considered "hard", ie, compulsory, or it Simply does not exist. Because the reality Ambiguous designated Thus, considering its legal effects as well as its manifestations, is often Difficult to identify clearly, but a new process of normative creation soft law does exist and certainly constitutes part of the contemporary law-making process but as a social Phenomenon evidently it overflows the classical and familiar legal categories by Which scholars usually DESCRIBE and explain both the creation and the legal authority of international norms. In other words soft law is a troublemaker Because it is either not yet or not only law ". Ibid, pp. 81.

[35] UNCLOS, article 196 (1): "States take all measures Marshall Necessary to Prevent, reduce and control pollution of the marine environment resulting from the use of technologies under control or on their Jurisdiction, or the Intentional or accidental introduction of species, alien or new , to a particular part of the marine environment, Which May cause significant and harmful changes thereto. "

[36] Maria Helena Fonseca de Souza, op. cit., pp. 83.

[37] Ibid, pp. 92.

tained in IMO resolution, it can be considered the fulfillment of the objective elements of common law. Received and the adoption of IMO resolution A. 868 (20) on Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organism and Pathogens, by the coastal states and port and flag states over their respective national laws can be regarded as the fulfillment of the subjective element of common law.

IMO Resolution concerning the control and ballast water and sediment regulation boat first appeared in 1973. Known as the Resolution 18 of the Research into Effect of Discharge of Ballast Water Containing Bacteria of Epidemic Diseases. Then in 1993, the assembly issued IMO Resolution 774 (18), which is a Guideline for Preventing the Introduction of Organisms and Pathogens from unwanted Ships' Ballast Water and Sediments discharges. This resolution shows that the emergence of the disease may arise because of water that mixed with port ballast water containing bacteria and viruses in large numbers that cause a health threat to humans, animals, and plants.

Resolution of the IMO ballast water is the last before the end of a convention formed in Resolution A.868 (20), with the name of Guidelines for the Control and Management of Ships' Ballast Water to minimize the Transfer of Harmful Aquatic Organisms and Pathogens. Through this resolution, Assembly to find ways to encourage countries, in order to understand this issue based on some proper methods, technological developments, and the approach taken with prudence in order to protect the environment.[38]

Resolution A.868 (20) applies to all types of vessels from participating countries and pointed to the flag state to perform administrative activities, pointing to the port state government to create guidelines that apply at a port area. However, with the condition that all rules, regulations, and guidelines that apply in each participating country must follow the guidelines of resolution A.868

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[38] IMO Assembly Resolution A.868 (20), Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens, guidelines 3: "The Guidelines are directed to Member State and cans apply to all ships; however, a port State authority determine the extent to Marshall Which do apply they want. "; guidelines 4 (2):" The Guidelines allow port State to Exempt ships within the area under Jurisdiction on their part or from all the relevant provisions. Notwithstanding, any administration Wishing to Apply restrictions to ballast water operations Guidelines Should still follow this, Pls help developing legislation or procedures they want. "

[39] Maria Helena Fonseca de Souza, op. cit., pp. 96.

have (20). In the arrangement Resolution A.868 (20) is, there are also provisions regarding the role and responsibilities of the state flag, and about the administrative problems of the ship.[39]

Although the guidelines produced by Resolution A.868 (20) is regarded as soft law, the rules are not binding, but the effect of these legal instruments of state action, simply indicates that the IMO resolution on ballast water are the basis of international law to control water ballasts.[40] This resolution has directly influenced the codification of international law in terms of efforts to prevent marine pollution caused by ballast water and sediment ship. Thus, the resolution indirectly has juridical effect, for countries that have adopted such a resolution provisions into domestic law of each.

B. The International Convention for the Control and Management of Ships' Ballast Water 2004 (BWM Convention)

At the meeting, MEPC considers that the disposal of ballast water is a problem that is potentially dangerous for the marine environment through the introduction of foreign aquatic species that are invasive to a new water. Thus, the MEPC, in 1996 adopted Guidelines for the Implementation of Annex VI of MARPOL 73/78 to minimize introduction of foreign species and unwanted pathogens into the waters of a country, through ballast water and sediment ship.[41]

Previously, the regulation of ballast water will become a part of the MARPOL 73/78. However, before becoming part of the provisions of MARPOL 73/78, it realized that the impact caused by ballast water and invasive foreign species that have carried on with the differences in the effects produced by oil, as a principal concern of MARPOL 73/78. Many parties are aware that it takes a special method to implement the activities of control and regulation of ballast water and sediments of the ship.

Finally, the IMO Council agreed to convene a diplomatic conference in order to establish a convention on ballast water controls and settings and deposition vessels. Meeting or a diplomatic conference held in 2004. The 2004

[40] MEPC / IMO, 38th session, http://www.imo.org/Newsroom/mainframe.asp?topic_id = 109 & doc. id = 2374, downloaded on March 2010.

[41] Maria Helena Fonseca de Souza, op. cit., pp. 98.

Convention on Ballast have the same structure with the IMO convention on marine pollution due to oil, namely MARPOL 73/78.[42]

Same as Resolution A.868 (20) which preceded the present Convention, the settings contained in the 2004 Convention on Ballast applies to all types of ships carrying ballast water as an operational part of the ship while sailing.[43] In this convention, there are exemptions vessels, which because it caused by the construction of the vessel is not required then the application of the provisions of the Convention on Ballast.[44]

1. Principles

There are several fundamental principles related to environmental protection. These principles can always be found in the resolutions, declarations and decisions of the Court of International Justice and other international courts, is also present in customary international law and treaty law.[45]

Ballast Convention endorsed a set of principles known in international environmental law with respect to ecosystem protection efforts. Several of these principles may also be found in the UNCLOS and the CBD, such as precautionary principles, international cooperation and technology transfer, and no harm principle. The purpose of the existence of these principles is to achieve success in the efforts of environmental protection and ecosystem reliance of entry of invasive aquatic species.[46]

a. Precautionary Principle

Precautionary principle is a condition whereby in the event of a threat to human health or environmental threat and that there is no scientific explana-

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[42] MEPC / IMO, session 44, http://www.imo. org / Newsroom / main frame.asp? 1 topic_id = 35 & doc_id = 1367, downloaded on March 2010.

[43] Ballast Convention, article 3 (2): "This Convention Marshall not apply to: (a) ships not Designed or constructed to carry ballast water; ... and (f) Permanent Ballast Water in sealed tanks on ships, that is not subject to discharge. "

[44] Patricia Birnie and Alan Boyle's, op. cit., pp. 280; Maria Helena Fonseca de Souza, op. cit., pp. 102.

[45] Maria Helena Fonseca de Souza, op. cit., pp. 103.

[46] Ibid, pp. 104.

tion for the existence of a threat. Where this condition does not become an excuse for anyone to not take precautions will the damage.[47]

Precautionary principle implemented based on the opinion, namely the notion that human activity often has negative impacts that cannot be fully anticipated at any time, or not possible to give certainty to conduct a preventive procedure.[48]

Lack of awareness of the marine environment and lack of rapid technological and knowledge and information to address the problem of pollution of the marine environment, has led to adoption of the precautionary principle into international treaties. Among them is the 1997 Protocol of MARPOL 73/78, the opening section.[49] In practice, the precautionary principle will use in the event of a serious threat or there is a permanent damage to the environment. In addition, if there is no clarity to the results of research on the threat of such damage.[50] In applying the precautionary principle, we need an adequate facility for the construction of sludge treatment and disposal of water ballast in the harbor.[51]

Ballast in the Convention in 2004, also found some application of the precautionary principle. An example is that the entire port states implement the precautionary principle by means of identification and provision of information to all ships, which are in an area to take water ballast, which of these waters not known whether there is any invasive aquatic species.[52]

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[47] Ibid.

[48] MARPOL 73/78, the Protocol in 1997, opening the third paragraph: "recalling Principle 15 of the Rio Declaration on Environmen" Which calls for the application of a precautionary approach."

[49] Maria Helena Fonseca de Souza, op. cit., pp. 105.

[50] Ballast Convention, Article 5 (1): "Each Party undertakes to Ensure that, in ports and terminals designated by That Party Nowhere cleaning or repair of ballast tanks occurs, adequate facilities are provided for the reception of Sediments, taking into account the Guidelines developed by the Organization. Marshall Such reception facilities operate without causing undue delay to ships and Marshall Provide for the safe disposal of Standard and Poor Sediments That does not impair or damage on their environment, human health, property or resources or Those of other States. "

[51] Ballast Convention, Annex, Section C, Regulation C-2: Concerning Ballast Water Uptake warnings in Certain Areas and Related Measures State Flag.

[52] UNCLOS, Part XII: Protection and Preservation of The Marine Environment: Part XIII: Marine Scientific Research; Part XIV: Development and Transfer of Marine Technology.

b. International Cooperation and Technology Transfer

As for the cooperation and technology, either transfer can be found in the UNCLOS,[53] specially set about the cooperation between states, directly or indirectly, through an international organization that has competence on that matter.

Ballast Convention also governs the principles of international cooperation and technology transfer. In article 13 (3) argued that a general obligation which the neighboring states, which have the same vision and purpose in protecting the marine environment with respect to similar geographical conditions, to conduct regional cooperation.

Under more specific obligations on the provision of technical assistance, as set out in article 3 (1) Ballast Convention, participating countries were asked to provide assistance, either directly or through the IMO and other competent international organizations, to countries that require or request technical assistance to and control ballast water and sediment regulation of vessel. Furthermore, in Ballast Convention, article 13 (2), which is similar to article 16 of the CBD on Access to and Transfer of Technology, asked the state beach and port and flag states to cooperate in a cooperative, in accordance with their national law respectively with respect to issues of technology transfer.[54]

c. No Harm Principle

This principle is one of the efforts undertaken to prevent or reduce the occurrence of cross-border pollution.[55] One of the instruments of international law that regulates this principle is the UNCLOS.[56] In addition, in the 2004 Convention on Ballast article two (6) and (7), states that the application of this principle is a general obligation of the state flag, as well as coastal and port states.

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[53] Maria Helena Fonseca de Souza, op. cit., pp. 109.

[54] Ibid.

[55] UNCLOS, article 194 (2): "States take all measures Marshall Necessary to Ensure That activities under on their Jurisdiction or control are so conducted as not to cause damage by pollution to other States and on their environment ..."

[56] Maria Helena Fonseca de Souza, op. cit., pp. 110.

2. Obligations and Jurisdiction of the State Flag

Obligations of flag states under the provisions of the 2004 Convention on Ballast can divide into four sections:[57]

a. Ensure that actions taken by the flag state in accordance with that specified in the convention.
b. Develop a plan of arrangement (management) of water ballast and other related matters.
c. Issued a "Certificate of Ballast Water Settings"
d. Set on the issue of ballast tank sediments.

The main obligations of the flag State based on the 2004 Convention on Ballast is to ensure that the ship, whether using the flag as a sign of their country of nationality or who are under his authority, meets all the provisions contained in these conventions.[58] The main purpose of the flag state where obligations required to ensure that ships that were under his authority has complied with the provisions of the conventions is to create foundations or pillars for ballasts and controls.[59]

3. Responsibilities and rights of coastal States and Port

Ballast in the Convention, concerning the responsibilities and the rights of coastal States and port divided based on four main areas, namely:

a. Sediment Reception Facilities

In article 5 (1) Ballast Convention in 2004, said that

"Each Party undertakes to Ensure that, in ports and terminals designated by Party Nowhere That cleaning or repair of ballast tanks occurs, adequate facilities are provided for the reception of Sediments, taking into account the Guidelines developed by the Organization. Marshall Such reception facilities operate without causing undue delay to ships and Marshall Provide for the safe disposal of Standard and Poor Sediments That does not impair or damage on their environment, human health, property or resources or Those of other States."

[57] Ballast Convention, Article 4 (1): "Each Party Marshall That Require ships to Which Which and applies this Convention are entitled to fly its flag or operating under its authority complies with the requirements set forth in this Convention, including the applicable standards and requirements in the Annex, and Marshall take effective measures to Ensure That Those Those ships comply with requirements. "

[58] Maria Helena Fonseca de Souza, op. cit., pp. 110.

[59] Ibid.

[60] Ballast Convention, Annex B section on 'Management & Control Requirements for Ships."

b. Communication of Information
Concerning the problem of communication between member states with information regarding the convention with regard to implementation problems BWMP, provided for in article 14 BWM Convention in 2004. Obligations of coastal states is also included for the reception facilities as well as set out in Annex I of the Convention on Ballast 2004.

c. Inspection
Similar to the MARPOL 73/78 Convention on Ballast in 2004 set the set on the question of inspection or examination of ships that docked at the port of his country. This check done in order to ensure that the vessel has complied with the provisions regarding the prevention of pollution and meets the standards stipulated in these conventions. This provision can be found in article 9 (1) BWM Convention in 2004.

d. Protected Areas
At the 2004 Convention on Ballast, there are two forms of protection areas with respect to the implementation of standards and operational requirements.[60] First, on all ships that carries ballast water in international shipping,[61] referred to as Tier 1. Second, when the ship enters a particular area, then the standards applicable to the ship control and further arrangements with respect to transport and dispose of ballast water,[62] referred to as Tier 2.

IV. Policies regarding Sea Pollution Due to the Ballast Water in Some Countries

A. Australia

Australia issued a regulation regarding ballast water management at the date of July 1, 2001. This provision known by the name of the Australian Ballast Water Management Requirements (The Requirements). This provision intended to mitigate and reduce damage to the marine environment resulting from the introduction of harmful aquatic organisms in Australian waters through ship ballast water.[63]

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[61] Ibid, section C of the 'Special Requirements for Ships'

[62] Australian Quarantine and Inspection service (AQIS) (1), Ballast Water, http://www.daff.gov.au/aqis/avm/ballast, downloaded on May 29, 2010.

[63] AQIS (2), the Australian Ballast Water Management Requirements, ver. March 4, 2008, http://www.daff.gov.au/data/assets/pdf_file/0004/713884/bw-requirements.pdf, downloaded on May 2010.

The legal basis of the implementation of the requirements are enforced under the laws of the Quarantine Act 1908, where the Quarantine Act, is an Australian national provisions relating to entry and exit arrangements organisms from Australian waters.[64] Provisions regarding ballast water management in The Requirements in line with the Convention on Ballast 2004 issued by the IMO. Where they both have the goal to minimize the transfer of harmful aquatic species contained in ballast water from ships and ballast tank sediments. However, there are several different provisions of the IMO that exist in the requirements.[65]

One of the different provisions of the IMO regulations on ballast water is if the ballast water of a ship has received treatment, which has conducted an exchange at sea with the method or manner which was consistent with the provisions of the requirements or provisions of any other ballast water in accordance with the Convention Ballast 2004, the vessel is allowed to dispose of its ballast water in Australian waters or ports.[66]

B. Canada

Problems related to ballast water in Canada is the authority and responsibility of the Canadian Cost GUARD (CCG). Regulation of ballast water is set in the Ballast Water Control and Management Regulations (SOR/2006-129), issued on June 8, 2006 date. The regulation is a derivative or an additional regulation (annex) of the Canada Shipping Act, 2001.[67] Terms of Ballast Water Control and Management Regulations are a provision, which has the obligation to make mandatory supervision.[68] Terms of SOR/2006-129 applies to all ships in waters under the jurisdiction of Canada,[69] also listed on the Vessel Traffic Services (which include ECAREG, NORDREG, and CVTS Offshore).[70]

But there are exceptions to the application of these SOR/2006-129, namely that these rules do not apply to vessels that sail exclusively in waters under Canadian jurisdiction or to the ships operating in waters of the Great Lakes (United States) and the waters around Saint Pierre and Miquelon islands.[71] In addition, this rule does not apply to vessels which are used for purposes of research and rescue operations, or a cruise ship that has a size of less than 50m

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[64] AQIS (3), the Australian Ballast Water Management Requirements, http://www.daff.gov.au/aqis/avm/vessels/ballast/requirements, downloaded in May 2010.

[65] Ibid.

and has a maximum ballast water capacity of 8m3, other than that this rule does not apply to vessels which Permanent carry ballast water in sealed condition or vessels owned or operated for non-commercial interests of the government.[72]

C. China

Regarding ballast water management in China, especially Hong Kong, organized under the authority of Hong Kong Marine Department.[73] The ships are owned by Hong Kong are not required to comply with or conform to the provisions contained in the IMO Guidelines. However, the owner or the captain obliged to adopt and comply with standards set by the IMO Guidelines whenever the vessel docked at the port to a country, which is subject to the provisions of the IMO Guidelines.[74]

Hong Kong to use some of the provisions or standards set by the IMO Guidelines, in this case is IMO Resolution A.868 (20), with regard to marine environmental pollution problems management caused by aquatic invasive species from ship ballast water. Some of these guidelines, in accordance with that announced by the Hong Kong Merchant Shipping Information, Marine Department,[75] are as follows:

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[66] Ballast Water Control and Management Regulations (SOR/2006-129), Opening paragraph 1.

[67] BW m-¬Ã¼ Û-"È, Current International Ballast Water Regulations and Guidelines, http://www.krs.co.kr/kor/dn/rul/pdf/BW% EA% B5% AD% EA% B0% 80% EB% B3 % 84% 20% EA% B7% 9C% EC% A0% 9C.doc.pdf, downloaded on May 2010.[68] SOR/2006-129, article 2 (1): "These Regulations apply to Every ship in waters under Canadian Jurisdiction That Is Designed or constructed to carry ballast water ..."

[69] BW m-¬Ã¼ Û-"È, loc.cit.

[70] SOR/2006-129, article 2 (1) letter (a) and (b): "(a) the ship operates exclusively in waters under Canadian Jurisdiction or, (b) the ship operates in the United States waters of the Great Lakes Basin or the French waters of the islands of Saint Pierre and Miquelon Pls it operates in waters outside Canadian Jurisdiction. "

[71] *Ibid*, article 2 (2): "(2) These Regulations do not apply to (a) ships Used search and rescue operations for pleasure craft or That are less than 50 m in overall length And that have a maximum capacity of eight ballast water m3, (b) That ships carry permanent ballast water in sealed tanks and Standard and Poor That it is not subject to discharge, or (c) ships That Are Owned or operated by a state and Used in government noncommercial service. "

[72] BW m-¬Ã¼ Û-"È, loc.cit.

[73] Ibid.

[74] Hong Kong Marine Department, Hong Kong Merchant Shipping Information, http://www.mardep.gov.hk/en/msnote/msin_index.html, downloaded on May 28, 2010.

[75] Hong Kong Merchant Shipping Information, adopted IMO guidelines for ballast water management, http://www.mardep.gov.hk/en/msnote/pdf/msin0624.pdf, downloaded in May 2010.

1. Guidelines for Ballast Water Exchange (G6)
   (IMO Resolution MEPC. 123 (53))
   These Guidelines contain guidelines in terms safety and operational at the time of ship ballast water at sea change.[76]
2. Guidelines for Ballast Water Management Equivalent Compliance (G3)
   (IMO Resolution MEPC. 124 (53rd))
   These guidelines help in deciding the same compliance with the provisions of the Ballast Water Management for the cruise ship, which commonly used for recreational activities or race, or ships used for research and rescue operations that are generally less than 50m in length and have a maximum ballast water capacity of 8m3.[77]
3. Guidelines for Ballast Water Management and Development of Ballast Water Management Plan (G4)
   (IMO Resolution MEPC. 127 (53))

These Guidelines contain guidance on the general principles of ballast water management, and provides guidance in terms of content or content of the Ballast Water Management Plan (BWMP) in accordance with the Regulations contained in the B-1 of the 2004 Convention on Ballast.[78]

D. Singapore

Singapore has adopted three different approaches in order to control and manage ballast water. First, Singapore guarantee that any action taken to address the problem of ballast water in Singapore port waters and conducted in accordance with IMO Guidelines. Second, Singapore is actively contribute and cooperate in research and development efforts towards ballast water management, with the belief that action could help to complement the knowledge internationally on ballast water and aquatic invasive species contained therein. The establishment of the Strategic Ballast Water Research Programme (BWSRP) marked active action from Singapore.

Thirdly, Singapore has been and will continue its collaboration with other countries concerning ballast water management problems through government agencies and research institutions. This collaboration makes other countries to affect, mutually, the ability to develop further collaboration among the member

[76] Ibid.
[77] Ibid.

countries of IMO. To date, Singapore has established bilateral cooperation with some countries, such as the United States, to promote and facilitate research in order to address the problem of ballast water. One example of such bilateral agreement is a Memorandum of Understanding (MoU) between the Institute of Environmental Science and Engineering of Singapore (IESE) with the U.S. Cost Guard R&D Centre.

E. Philippines

As a country which joined the IMO in 1964.[79] Philippines has to use some international regulations adopted by the IMO MARPOL 1973/1978 and Resolution A.868 (20) 1997 concerning Guidelines for the Control and Management of Ships' Ballast Water.

As mentioned above, although the Philippines has not ratified the Convention on Ballast, but as a reference to conduct ballast water management in the Philippine territory IMO Resolution A.868 refer to (20).

F. Regional Initiatives

One form of co-operation initiative (cooperative) with respect to regional control and management of ballast water is the Global Ballast Water Management Programme (GloBallast). This initiative established by IMO together with the Global Environmental Facility (GEF) and United Nations Development Programme (UNDP). This program is temporary, when the purpose of holding the program have been achieved and the 2004 Convention on Ballast has met the requirements for entry into force, then the program ends.

In general, the goal of this initiative is to assist developing countries to reduce the risk and impact of marine pollution caused by the transfer of AIS through ballast water of ships with respect to international shipping activities. This objective achieved by the cooperation in the field of technology. Besides the existence of this initiative is as a basis for preparing developing countries to ratify the 2004 Convention on Ballast and provide standard mechanisms needed

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[78] IMO, Membership, http://www.imo.org/, downloaded in May 2010.

[79] Globallast Monograph Series, no.6, 1sr East Asia Regional Workshop on Ballast Water Control and Management, http://data.iucn.org/dbtw-wpd/edocs/2010-003.pdf, downloaded on May 31, 2010.

to regulate marine pollution problems caused by air ballast in the form of national regulation.

Activities conducted by this regional initiative are to conduct research and identify strategies used as a reference to conduct ballast water management. The location of the program conducted at six area samples, namely: Sepetiba (Brazil), Dalian (China), Mumbai (India), Kharg Island (Iran), Saldanha (South Africa) and Odessa (Ukraine). Election of six area samples representing six of the world's developing regions, namely South America, Asia Pacific, South Asia, Red Sea and the surrounding region, Africa and Eastern Europe.

There are several similar elements found in the six state regions to become the example, the particulars of helped government agencies from several fields related to the issue:

1. Overlapping national arrangements concerning the problem of pollution of AIS through ballast water.
2. Different legal approach to the issue of ballast water pollution, for example, under the provisions of environmental law, health and law of the sea.
3. National and international legal framework based on the preventive principle and the precautionary principle, especially those that have been set in the 1973/1978 MARPOL, UNCLOS in 1982, and the CBD in 1992.
4. The effect of IMO Resolution A.868 (20) in the national law states examples of the region.

Awareness of the impact caused by the 1973/1978 MARPOL, UNCLOS in 1982, CBD 1992, which were adopted by the regional countries, for example, that there is urgency to adopt a rule or convention in order to provide an arrangement that was international and comprehensive for the presence of water pollution through ballasts.

V. Ballast Water Arrangements in Indonesia

With regard to the protection and conservation efforts, Indonesia has an arrangement in the form of Invitation Act, namely the Law No.32 year 2009 on the Protection and Management of the Environment, and Government Regulation, Regulation no. 19 years in 1999 on Pollution Control and / or the Marine Environment. Both national regulations can be use as umbrella legislation for the

implementation of environmental protection obligations. In Article 1 paragraph 2 of Law No.32 of 2009, it said that:

> "Perlindungan dan pengelolaan lingkungan hidup adalah upaya sistematis dan terpadu yang dilakukan untuk melestarikan fungsi lingkungan hidup dan mencegah terjadinya pencemaran dan/atau kerusakan lingkungan hidup yang meliputi perencanaan, pemanfaatan, pengendalian, pemeliharaan, pengawasan dan penegakkan hukum."

Thus, there is an assurance of setting up and implementation of environmental law in Indonesia and the state has an obligation to implement the provisions regarding environmental protection and management. In addition to these laws, there are also PP no.19 year 1999 regarding control of marine pollution and destruction. Government regulation issued with the aim to implement the objectives contained in legislation related to environmental issues and to implement mission in international conventions relating to the law of the sea or pollution control and / or destruction of the sea. In chapter 1 verse 9 PP no.19 year, 1999 said that:

> "Pengendalian pencemaran dan/atau perusakan laut adalag setiap upaya atau kegiatan pencegahan dan/atau penanggulangan dan/atau pemulihan pencemaran dan/atau perusakan laut."

Meanwhile, in article 2 of PP no.19 year 1999 says that:

> "Perlindungan mutu laut meliputi upaya atau kegiatan pengendalian pencemaran dan/atau perusakan laut bertujuan untuk mencegah atau mengurangi turunnya mutu laut dan/atau rusaknya sumber daya laut."

Although the provision contained in the Law No.32 year 2009 and PP no.19 year 1999 does not explicitly regulate marine pollution caused by ballast water. However, provisions regarding the obligation for Indonesia to manage and controlling environmental pollution and / or destruction of the sea in the two instruments with respect to the environment can be expressed as an umbrella provision for regulating the marine environment with respect to the prevention of pollution caused by ballast water. Particularly in the Law No.32 year 2009, there are several principles regarding the management of the environment, in which the principles are the principles that underlie the formation of the Convention on Ballast 2004. These principles include the following regarding state responsibility, conservation and sustainability, prudence, and biodiversity. In addition to ballast contained in the Convention in 2004, these principles are also contained in the 1982 UNCLOS, MARPOL 1973/1978 and the CBD in 1992, which Indonesia has ratified all three.

Indonesia's policy relating to the prevention of pollution caused by ballast water has set in the Law No.17 year 2008 about shipping and Government Regulation No.21 year 2010 concerning the protection of maritime environment.

In the Law no. 17 years in 2008 on the cruise, there is provision for the liability protection of maritime environment, which is in Chapter XII on the protection of maritime environment. Such provisions divide activities related to the maritime environment protection into two. In Article 226 (2) says that:

> "Penyelenggaraan perlindungan lingkungan maritim sebagaimana dimaksud pada ayat (1) dilakukan melalui:
> a. pencegahan dan penanggulangan pencemaran dari pengoperasian kapal; dan
> b. pencegahan dan penanggulangan pencemaran dari kegiatan kepelabuhanan."

In Chapter XII, Article 229 expressly states that every vessel prohibited from dumping ballast water into coastal waters, except when the vessel has met the requirements in terms of distance, volume, and quality of disposal. Will further ballast water regulations in Indonesia regulated in the PP No.21 year 2010 concerning the protection of maritime environment. Pollution caused by ballast water, in this government regulation put into the form of pollution caused by ships operations.[80]

In accordance with that stipulated in Law No.17 of 2008, article 5 of Regulation No.21 year 2010 was also confirmed that each vessel are prohibited from transferring waste and other materials (ballast water) from the operation of ships. In Chapter III on the prevention of environmental pollution originating from the goods and hazardous materials on board, there regulations regarding ballast water management, where management is a process management system of mechanical, physical, chemical and biological done to eliminate, reduce or avoid disposal of harmful aquatic organisms from ballast water and sediment.[81]

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[80] Indonesia, Government Regulation About the Maritime Environment Protection, PP No. 21 In 2010, LN No. 27 In 2010, Supplement No. 5109, PSL. 3 (2).

[81] Ibid, explanation of article 14 (1).

VI. Conclusion

Marine pollution caused by ballast water is the worst threat to marine ecosystems around the world. This is because when other forms of marine pollution, such as chemicals and pollution caused by solid waste, may still be reduced, eliminated, or dismissed. However, pollution caused by living organisms tends to fixed because of its ability to reproduce and spread. In addition, the impact of pollution and damage caused by invasive alien species or alien invasive species (AIS) is permanent.[82]

Scientific conditions have caused the emergence of a framework of international law to develop understanding and provide awareness of standards in making a regulation of this kind of environmental pollution. In the beginning of customary international law until the law of international treaties, the foundation of the international legal regime for the handling of this pollution is the duty of the AIS (general duty) of the state to prevent cross-border pollution and liabilities (specific obligation) for the vessel to the flag state effectively carry out its jurisdiction over his ships, to ensure that the ship was under its sovereignty has met safety and environmental standards that have been accepted internationally.

Secondly, there is awareness of potential problems between countries that caused by contamination due to ballast water, bringing the discussion of marine pollution caused by this biological invasion into the international rules regulating the obligation of states to deal with marine pollution problems of this kind. There are four international legal instruments governing international obligations for countries to protect and preserve the marine environment and to prevent global ecological problems, such as the introduction of AIS via ship ballast water and sediment. Four instruments are 1973/1978 MARPOL, UNCLOS 1982, IHR amendments in 2005, and the CBD in 1992. A key part of the instrument lies in the prevention and precautionary based on the results of scientific research, international cooperation, and technology transfer.

Codification of pollution problems caused by the AIS through ballast water carried by ships IMO, developing software from a set of legal rules to rules that are forcing (the hard law). Adoption of rules of international law, namely the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 IMO is as a form of consciousness that there is no

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[82] Maria Helena Fonseca de Souza, op. cit., pp. 31.

international legal instrument that regulates specifically and systematically about these issues. This Convention provides for the rights and obligations of flag states, port and beaches, as well as providing technical guidance in order to conduct ballast water management and control. Ballast Convention 2004 viewed as a pioneer in determining the technical and legal rules on the development of maritime law is an international agreement that shows the evolution or development of a traditional concept of sovereignty became a cooperative sovereignty.

Regarding the third point, regarding the national regulation related issues ballast water regulation. Some countries already have a set of regulations regarding the control and management of ballast water in their respective countries. National regulations of various countries is provided with under policies contained in IMO Resolution A.868 (20) on Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens, and that is the result of policy national of the country concerned.

To be able to handle the problem of marine pollution caused by ballast water should be a comprehensive system. Which means to cope with the handling of this pollution cannot only emphasize on the environment sector alone. But the visits also from the human health sector, the shipping industry readiness, preparedness in the field of economic and technological field. Also on this ballast water pollution problem, as mentioned earlier, is cross-border pollution. Where are the ships that sail from a country, resulting in the introduction of invasive alien species into the waters or ports through ballast water in other countries.

Thus in order to produce a sustainable and effective arrangement between countries, there is a need of national and international cooperation by states. The existence of the Convention on Ballast in 2004 as a codification of the regulation, control, and management of ballast water needs to translate into national laws in countries wishing to implement it. This intended to allow the provisions contained in the 2004 Convention on Ballast could performed effectively by considering the conditions and circumstances of the countries that apply them.