

Changes in International Legal Regulations Concerning the Protection of the Marine Environment

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ABSTRACT: Protecting the marine environment is one of the most serious challenges all over the world. In recent years, the International Maritime Organization has been strongly working on the introduction of further legal conditions aiming improvement of the marine environment protection. The article presents the lately introduced legal acts in this area and discusses the necessary steps to be taken to meet the IMO requirements. The aim of this study was to review the legal acts on the marine environment preservations well as the consequences resulting from the introduction of these legal acts for all participants of the transport chain. In this paper MARPOL, London and BWM Convention regulations were considered.

1 INTRODUCTION

The development of maritime transport, and the increased movement of ships on already crowded waters, entails the necessity to update the provisions on the prevention of marine pollution and to introduce new regulations of the marine environment protection.

International legal regulations relating to the protection of the environment refer to environmental law, and at the same time form part of the law of the sea. Protection of the marine environment is regulated by public international law and is sanctioned by common and regional conventions.

The need for constant changes and, at the same time, the development of legal protection of the marine environment is regulated in many legal acts. The schedule of implementing the convention includes both stages of introducing further requirements and the possibility of applying better solutions to improve the condition of the environment.

The Environmental Protection Committee of the International Maritime Organization is responsible for updating the regulations on the prevention of pollution of the marine environment. Regulations are issued in the form of resolutions.

The aim of this study was to review the legal acts on the marine environment preservations well as the consequences resulting from the introduction of these legal acts for all participants of the transport chain.

2 LEGAL ACTS REVIEW AND DISCUSSION

Nowadays great emphasis is placed on the protection of the environment. In short time period many legal acts were introduced into force. In this article MARPOL, London and BWM Convention regulations were analysed.

2.1. INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL)

The MARPOL Convention was created in response to insufficient regulations preventing the pollution of the marine environment in the face of the intensive growth of maritime transport, especially that involve tankers. The content of the convention was directly influenced by the accidents of two tankers - Torrey Canyon in 1968 and MT Amoco Cadiz in 1977. The provisions of the convention were introduced in 1973, and the provisions of the Protocol in 1978. Both elements form the main international convention, which covers the prevention of pollution of the marine environment by ships as a result of operational activities, such as tanks washing operations, or as the result of accidents.[1]

The Convention has been updated on an ongoing basis since its introduction. Amendments to the convention are introduced by the Marine Environment Protection Committee. A large number of resolutions have been introduced since 2016.

2.1 MEPC 271 (69)

The resolution was introduced on September 1, 2017. A new clause has been added to regulation 13, which deals with the emission of nitrogen oxides - Recording of the requirements for operational compliance with level III of NO_x emissions in the area of emission control.

The regulation introduces the obligation to control the on / off status of fuel engines installed on board, to which paragraph 5.1 of regulation 13 applies. All changes are to be recorded in the log, as required by the Administration. Records are made both upon entering and exiting an emission control area, or when the on / off status in such area changes. The status record should include the date, time and position of the vessel.

Additionally, in point 5.1. in paragraph 1, the symbol "NO_x" has been replaced by the symbol "NO₂". [8]

- The nitrogen oxide emission control zone includes:
- the area of North American waters, located off the coast of the Pacific Ocean of the United States and Canada,
 - the area of the sea off the Atlantic coast of the United States, Canada, France (Saint-Pierre-et-Miquelon) and the coast of the Gulf of Mexico of the United States
 - the area of the sea off the coast of the Hawaiian Islands: Hawai'i, Maui, Oahu, Moloka'i, Ni'ihau, Kaua'a, Lāna'i and Kaho'olawe
 - United States Caribbean Sea area, off the coast of the Atlantic and Caribbean Puerto Rico and the US Virgin Islands. [7]

2.2 MEPC 278 (70)

The amendments entered into force on September 1, 2017. The regulation concerns the system of collecting data on fuel oil consumption of ships. The system

involves a three-step treatment of the data it contains: data collection, data analysis, and then deciding on possible further measures. The following data is to be included in the system:

- The identity of the vessel
- IMO number
- Period of the calendar year for which the data is provided
- Start date (dd / mm / yyyy)
- End date (dd / mm / yyyy)
- Technical characteristics of the vessel
 - Ship type (please specify)
 - Gross tonnage (GT)
 - Net tonnage (NT)
 - Load capacity (DWT)
 - Rated power of the main and auxiliary combustion engine above 130 kW (specify in kW)
 - EEDI (if applicable)
 - Ice class
- Fuel oil consumption by type of fuel oil in metric tons and methods of collecting data on fuel oil consumption
- Distance travelled
- Hours underway.

After the ship submits a report with information on used fuel oil, the administration or an authorized organization will issue a certificate of compliance, which, like other documents, is subject to control by the Port State Inspection. [9]

2.3 MEPC 305 (73)

The amendment to the MARPOL convention adopted in 2018 prohibits the carriage of oil as ship fuel or necessary for operation, which does not meet the requirements of the convention. The exception is when the unit is equipped with an exhaust gas cleaning system - scrubber. Fuel oil as defined in the MARPOL Convention is: "any fuel supplied and intended for combustion for the purpose of propulsion or operation on board, including gas, distillate and residual fuel". The provisions of the amendment therefore do not apply to oil that is transported as a cargo. The oil used in connection with the propulsion of the vessel and its equipment must meet the maximum sulphur content requirement of 0.5%.



Figure 11. Emission Control Area
Source : <https://www.shipownersclub.com/louise-hall-sulphur-requirements-imo-emission-control-areas/>

The introduced provisions constitute a measure to ensure compliance with the provisions of the Convention. Enforcement of these regulations takes

place especially during the inspection of the Port State Control. The provisions of the amendment entered into force on March 1, 2020. [13]

However there are other ways to meet those requirement. Very attractive, especially from economic point of view, is to use dual fuel system. The dual-fuel engines are able to burn two fuel types – diesel fuel and for example the gas LNG or biomethane, that has low-sulphur content. [2]

The dual fuel engines are designed for both more environment friendly and cheaper exploitation of ships [4]. Dual fuel engines meet requirements of NOx Tier 3 and SOx Emission Control Area regulations.



Figure 2. Marine Dual Fuel Engine.
Source : https://www.yanmar.com/media/news/2020/05/22060342/marine_dual_fuel_engine.pdf

2.4 MEPC 286(71)

Regulation MEPC 286 (71) entered into force on 1 January 2019. The regulations points the data that should be included in bunker delivery note. Below, the information to be included in the bunker document, issued by fuel oil supplier:

- Name and IMO number of receiving ship
- Port
- Date of commencement of delivery
- Name, address, and telephone number of marine fuel oil supplier
- Product name(s)
- Quantity (metric tons)
- Density at 15°C (kg/m³)
- Sulphur content (% m/m)
- A declaration signed and certified by the fuel oil supplier's representative that the quality of the fuel oil supplied is in conformity with regulation of Annex VI, and the sulphur content of the fuel does not exceed 0,5 % outside the ECA and 0,1% in ECA. [10]

The information contained in the bunker delivery note confirms fuels quality. The document is the supplier's declaration that the delivered product meets all requirements of the resolution.

2.5 MEPC 301 (72)

Changes to Convention MARPOL, that Regulation MEPC 301 (72) had set, refer to Emission Control Area and required EEDI for ro-ro cargo ships and ro-ro passenger ships. Resolution entered into force on 1 September 2019.

The changes concerned new parameters for the energy efficiency index (EEDI) values for ships entitled to fly the flag of a State Party to the Convention. The parameters for determining the reference line value for cargo and ro-ro passenger ships have been changed. The establishment of a baseline is important for the calculation of the EEDI reduction index. [12]

This changes force first of all the shipowners to improve their ships' equipment and to introduce changes in the field of energy efficiency policy.

3 INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM THE SEA BY DUMPING OF WASTES AND OTHER MATTER

The Convention on the Prevention of Pollution from the Dumping of Wastes and Other Substances is one of the earliest multilateral environmental agreements. The introduction of the convention is an international opposition to dumping waste into the oceans, dredging for disposal and incineration at sea. The convention is a response to the need to adopt a more cautious and preventive approach to the provisions in force at that time. In contrast, the London Protocol of 2006 prohibits dumping waste into the sea. The possibility of applying for a permit for the disposal of waste at sea has been introduced. This is done in a limited amount and in a limited catalogue of waste that can be dumped after the permit at that time. Parties to the Protocol have responded to new activities such as carbon capture and storage and marine geoengineering.

3.1 Strategic Plan

The strategic plan was adopted on October 18, 2016. At the thirty-eighth consultative meeting, the Contracting Parties to the Convention on the Prevention of Sea Pollution by Dumping of Wastes and Other Substances. The strategic panelist was adopted to improve the implementation of the London Convention and Protocol, which will prevent marine pollution and accelerate the 2030 Agenda for Sustainable Development.

This Strategic Plan provides strategic orientations and highlights the goals set out in the London Convention and Protocol on which the Parties will cooperate until 2030. The Plan is a tool to guide, focus and prioritize the Parties' work. It is also a source of information about the cooperation of the Parties to improve the environment for the outside world.

The strategic plan sets out actions:

- Promotion of ratification or accession to the London Protocol
 - Strengthen the effective implementation of the London Protocol and the London Convention
 - External promotion of the work of the London Protocol and the London Convention
- Identification and resolution of emerging problems in the marine environment covered by the London Protocol and / or the London Convention

Table 1. Objectives of the Strategic Plan until 2030.

By the 2022year	By the 2026year	By the 2030year
Registration of 75% of the parties 100% of all parties with national authority	Registration of 85% of the parties 100% of all parties with national authority	Registration of 100% of the parties 100% of all parties with national authority
50% of sites with relevant national legislative bodies for implementation of the London Protocol	75% of sites with relevant national legislative bodies for implementation of the London Protocol	100% of sites with relevant national legislative bodies for implementation of the London Protocol
50% of parties with appropriate national legislative bodies to implement the London Convention	75% of parties with appropriate national legislative bodies to implement the London Convention	100% of parties with appropriate national legislative bodies to implement the London Convention
The London Protocol Compliance Group will have 15 members representing all five United Nations regions		

Source: Developed on the basis of the goals included in the strategic directions [14]

4 INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

One of the four greatest threats to the world's oceans are harmful aquatic organisms and pathogens. This organisms and pathogens are mostly being transferred in ships' ballast waters. Management and control of ships' ballast water and became a major environmental challenge for IMO. The result of discussions and several years for work was international instrument to address the transfer of harmful aquatic organisms and pathogens – International Convention for the Control and Management of Ships' Ballast Water and Sediments. The BWM Convention was introduced in February 2004, but it entered into force in September 2017.

Unfortunately the problem of invasive aquatic species in ballast waters, because of its' multi-disciplinary and complexity nature, hasn't been solved yet. The Maritime Environment Protection Committee is constantly working on it and as new technologies are available the guidelines are being reviewed and updated.

The first step was introduction of regulation D1 – the Ballast Water Exchange standard. The regulation indicate a procedure of water exchange :

- conduct ballast water exchange at least 200 nautical miles from the nearest land and in the water of at least 200 meters in depth.
- when a ship cannot meet the above criteria due to reasons such as short voyage duration or enclosed waters, the exchange is to be conducted as far from the nearest land as possible, but at least 50 nautical miles from the nearest land and in a water depth of at least 200 meters. [5]

4.1 Code for Approval of Ballast Water Management Systems

The Ballast Water Management System Code was introduced on October 13, 2019. The Code includes requirements for design, installation, performance, testing, environmental acceptability, as well as technical evaluation and certification procedures. It is intended primarily for manufacturers and shipowners as a reference to the assessment procedure for which equipment will be subjected to compliance with the requirements of the BWM Convention, especially in terms of meeting the D-2 standard - the treatment of

ballast water using approved type of Ballast Water Management System [11]. The D-2 standard specifies that ships can only discharge ballast water that meets the following criteria:

- less than 10 viable organisms per cubic metre which are greater than or equal to 50 micrometres in minimum dimension;
- less than 10 viable organisms per millilitre which are between 10 micrometres and 50 micrometres in minimum dimension;
- less than 1 colony-forming unit (cfu) per 100 millilitres of Toxicogenic *Vibrio cholerae*;
- less than 250 cfu per 100 millilitres of *Escherichia coli*; and
- less than 100 cfu per 100 millilitres of Intestinal Enterococci. [6]

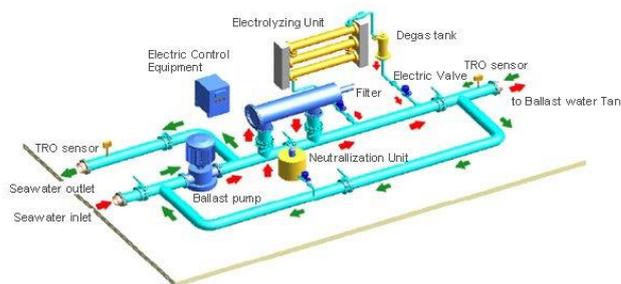


Figure 3. A typical ballast water treatment system on ship. Source: <https://www.marineinsight.com/tech/how-ballast-water-treatment-system-works/>

5 CONCLUSIONS

Undisputed is the fact that the maritime environment needs to be protected. Preservation of oceans and seas is being provided by legal actions. The most of the regulations introduced relate primarily to the protection of the atmosphere - protection against the emission of sulphur oxides and nitrogen oxides. A large part of the regulations are also rules preventing the transfer of living organisms in the ballast waters of ships.

Constantly developing technology, gives opportunity to conserve the natural sea environment, that is why the legal acts has to be updated continuously as well., The treaties, codes and guidelines developed by the MEPC have made an essential and valuable contribution to the progressive development of international environmental law, as well as to the law of the sea". [3]

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