

The difference between threshold of oil sludge discharge to the sea based on MARPOL 1973/1978 and the provision of oil sludge threshold in Indonesia's seawater quality regulation that causes pollution in Bintan Coast, Indonesia

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Abstract. The coast of Bintan, Indonesia, has long been polluted by oil sludge. pollution caused by oil sludge in coastal areas continues and worsens during the north monsoon season, and has not been resolved to date. This occurs because there are differences in determining the threshold for disposing of oil waste into the sea based on MARPOL 1973/1978 and the provision of oil sludge threshold in Indonesia's seawater quality regulation that causes pollution in Bintan Coast, Indonesia. Research into this provision must be carried out immediately in order to stop the pollution that occurs. The research carried out is prescriptive research, which aims to obtain advice regarding what should be done about the problem being studied. Legal materials collected through field research and book research will be researched qualitatively. The results of its application provide an understanding of the realization of the correct implementation of the normative legal rules being investigated. So it is necessary to amend the threshold for oil waste disposal regulated in MARPOL by adapting to the sea water quality standard regulations for each country, especially in this case there is a clear difference in the threshold compared to the provision of oil sludge threshold in Indonesia.

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1 Introduction

The 1972 Stockholm Declaration provides an understanding for humans to protect the environment, so that future generations might still enjoy environmental sustainability [1]. Therefore, the environment needs to be maintained and preserved [2]. Environmental pollution is an issue that the worldwide community cannot ignore in today's world [3]. But pollution still occurs. One of them is marine pollution caused by the discharge of oil sludge. One of them, as an example of such pollution that has never been resolved, occurs on the coast of Bintan, Indonesia. Pollution from oil sludge, a hazardous waste, has been going on for years and is still going on today [4]. The fact shows contamination on the coast of Bintan. Due to oil sludge, it still occurs to this day and this occurs because of the dumping of oil sludge from ships, as MARPOL allows the disposal of oil sludge from ships.[5] The pollution has an impact on coastal areas in terms of the economy, fishermen's catches, fisheries, and marine biota [6].

The international community's responsibilities in carrying out conventions and agreements to safeguard marine environment at global, regional, and national grade is anticipated to bring answers to marine environmental concerns. Because the International Maritime Organisation, abbreviated as IMO, regulates worldwide marine pollution control [7]. One of them regulates the threshold for oil sludge disposal which is regulated based on international regulations with the establishment of MARPOL 1973/1978 (MARPOL) by the IMO. This is done to prevent marine pollution due to oil sludge that exceeds the threshold. Discharge of oil sludge that exceeds the threshold determined by MARPOL is an illegal oil sludge discharge.

Apart from international regulations regarding the threshold of oil sludge in these waters, it is also regulated in Indonesian national law. Oil sludge is a type of Toxic and Hazardouse, as stipulated in Indonesia Legal No. 6 of 2023 Concerning the Stipulation of Indonesia Legal No. 2 Years 2022 Concerning Job Creation into Law (cipta kerja). Several provisions in Legal No. 32 of 2009, Oil Sludge is a type of B3 (Toxic and Hazardous Waste), as regulated in Appendix IX of Repuclic Indonesia Regulation, Undang-Undang Nomor 22 Tahun 2021(Act No. 22 Years 2021), on the sector of Implementation of Environmental Management and security. Appendices IX and XIII of the Republic Indonesia legal No. 6 of 2021 of the Minister of Environment and Forestry on Hazardous and Toxic Waste Management Procedures and Requirements. Oil sludge, a hazardous and deadly waste, must not be disposed of in the environment.

However, the reality is that oil spills are still occurring off the coast of Bintan, Indonesia, and are exacerbated during the north wind season [4, 7]. As the following evidence of pollution.

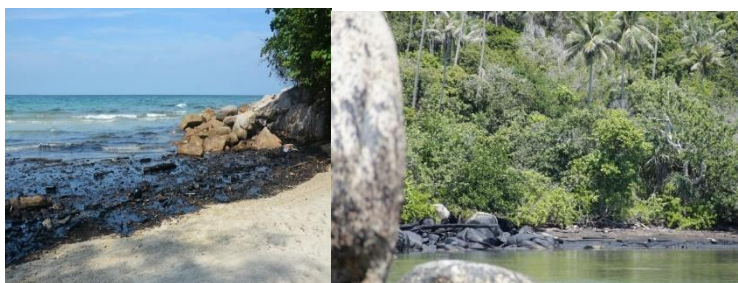


Fig. 1. Bintan coastal marine pollution due to oil sludge based on Riau Islands Province Environmental Service, Indonesia



Fig. 2. Oil Collected in Drums and Sacks based on Riau Islands Province Environmental Service, Indonesia.

Therefore, research is needed on the determination of the threshold of oil sludge discharge into the sea allowed by MARPOL 1973/1978 and the determination of the oil sludge threshold allowed in the seawater quality standard regulations in Indonesia in order to stop the pollution that occurs and realise the progressiveness of maritime environmental protection. Pollution occurs due to differences in the threshold for discharging oil sludge into the sea based on MARPOL 1973/1978 with the provisions on oil sludge thresholds in Indonesian sea water quality regulations which causes pollution on Bintan Beach, Indonesia. So it is necessary to do research on this problem.

2. Method

The Socio legal research method was used in this study. This research is divided into the study of relevant legislation, and the application to concrete events in order to achieve the defined objectives, which are realised via real acts and legal papers. The outcomes of its application will

provide an understanding of the realisation of the correct execution of the normative legal rules that are being investigated. As a result, secondary and primary data are required [9][10]. The nature of the research conducted is prescriptive research, which is a study that aims to obtain suggestions regarding what should be done regarding the problem under study, namely, threshold determination of oil sludge discharge to the sea which is allowed by MARPOL 1973/1978 and the threshold determination of oil sludge which is allowed in the regulation of seawater quality standards in Indonesia to realise the progressiveness of maritime environmental protection. Furthermore, Legal materials gathered through field and book research will be examined qualitatively. A qualitative method is the analysis of non-numerical data by disclosing and extracting the truth gathered from the field and literature..

3. Result and Discussion

The ocean has the potential for pollution. Marine pollution also has potential hazards from oil spills. The potential hazards of oil spills to the marine environment are to habitats, marine life and others. Factors that influence the spread of oil spills are oil type and weathering rate, geographical location, oceanographic conditions, season and clean-up techniques. The pollution has an impact on coastal areas in terms of economy, fishermen's catch, fisheries, and marine biota [6]. Among the impacts is the pollution of the sea on the Bintan Coastal, Indonesia due to oil sludge as follows.



Fig. 3. Fishing gear damaged by oil sludge based on <https://lihatkepri.com/2020/02/20/sludge-oil-kembali-cemari-perairan-bintan/>.



Fig. 4. Female Hawksbill Turtle Found Covered in Oil in Bintan [11].

However, the reality is that oil spills are still occurring off the coast of Bintan, Indonesia, and are exacerbated during the north wind season. The Indonesian coast of Bintan has long been polluted by oil spills. This situation has persisted for several years. Efforts to combat the pollution have been inadequate, so it occurs annually during the north wind season. The oil sludge's source is the discharge of oil sludge from ships. [4]. Furthermore, being the coastal/Littoral State of the Strait of Singapore, Bintan's shoreline, now is part of Indonesia's maritime waters. In the Singapore Strait, there are User States. The area serves as an international maritime route, with the Malacca Strait and the Singapore Strait providing access to international trade from the West to East Asia and Asia to west. As a result, the region is quite crowded. Under present conditions, the SOMS (Strait of Malacca and Singapore) is one of the maritime with busiest routes in the world. One-third of the world's commercial commodities transit across the strait. According to projections, marine traffic in the region will expand dramatically [12]. So there are many ships in these waters and the potential for sludge oil discharge.

Oil sludge is classified as a hazardous waste. Human actions such as purposeful dumping, inappropriate treatment, and management cause oil sludge to infiltrate and contaminate the environment. The components in oil sludge are cytotoxic, mutagenic, and possibly carcinogenic

[13]. Oil leaks from ships are a major source of pollution. Oil spills are caused by a variety of maritime operations, including transport, container ships, chemical carriers, general cargo ships, and passenger or cruise ships. Oil spills may have major physical and chemical consequences on marine and coastal areas. And it has economic ramifications. It has various impact on the economics, aquaculture, fisheries, and tourism and it is "heightened" by ships transporting enormous amounts of oil (bunkers) [14]. Pollution by oil discharge is the main marine pollution from vessels [15].

Oil sludge is classed as hazardous waste under the Basel Convention's Annex IV sections A and B. Waste in the form of oil sludge is governed not only by the Basel Convention, but also by Indonesian legal arrangements. Article 22 of Indonesia legal No. 6 of 2023, Stipulation of Government Regulation in Lieu of Legal No. 2 of 2022 defines waste. Several provisions of legal No. 32 of 2009 covering Environmental Protection and Management are amended as follows, Article 1 point (20) Waste is the residue of a business and/or activity and based on Article 1 point (22) Hazardous and toxic waste, hereinafter referred to as Waste, is the residue of a business and/or activity that contains Hazardous and toxic waste. It is regulated under Article 69, that every person is prohibited from (1) bringing hazardous and toxic waste onto the Republic of Indonesia's territory; (2) dumping waste into environmental media; and (3) dumping hazardous and toxic waste into environmental media.

Waste in the form of oil sludge is governed not only by the Basel Convention, but also by Indonesian legal regulations. Article 22 of Legal No. 6 of 2023 on the Stipulation in Lieu of legal No. 2 of 2022 on Job Creation defines waste. Several provisions of Legal No. 32 of 2009 have been changed as follows: (20) Article 1 point Waste is the residue of a company or activity, and according to Article 1 point (22) Hazardous and toxic waste, also known as Toxic and Hazardous Waste, is the residue of a business or activity that contains Hazardous and toxic waste. It is regulated under Article 69, that every person is prohibited from (1) (d) introducing hazardous and toxic waste into the territory of the Unitary State of the Republic of Indonesia; (e) disposing of waste into environmental media, (f) disposing of hazardous and toxic waste into environmental media. Oil Sludge is a type of waste as regulated in Appendix IX of legal no. 22 of 2021. Explanation of Article 316 Letter b, the utilisation of Toxic and Hazardous Waste as a substitute for energy sources includes the utilisation of oil sludge, oil sloop, and used oil, which is used as an alternative fuel in the cement industry. And the management of oil sludge is regulated in Appendix IX and XIII of the Regulation of the Minister of Environment and Forestry of legal No. 6 of 2021 concerning Procedures and Requirements for Hazardous and Toxic Waste Management. Therefore, the disposal of oil sludge, which is waste, that is prohibited from being disposed of into environmental media. Oil sludge that pollutes the Bintan Coast is disposed of in the waters carried by the current and pollutes the Bintan Coast. The ocean has the potential for pollution. Marine pollution also has potential hazards from oil spills. The potential hazards of oil spills to the marine environment are to habitats, marine life and others. Factors that influence the spread of oil spills are oil type and weathering rate, geographical location, oceanographic conditions, season and clean-up techniques. The pollution has an impact on coastal areas in terms of economy, fisheries catch, fisheries, aquaculture, marine biota [6]. The impact of such pollution occurs on the Bintan Coast due to oil sludge discharge from ships. When ships perform tank cleaning or oil sludge discharge, this has the potential to cause marine pollution due to the waste. Oil sludge is a hazardous waste [15, 16] pollution from hazardous waste in the form of oil sludge from ship activities has the potential

to pollute the sea [18]. Oil Sludge comes from ship activities. oil Sludge is pumped then collected into a holding tank. The oil sludge is stored in the ship and then disposed of ashore or burned in an incinerator. However, this ashore disposal is often considered not cost efficient by the ship. Alternatively, if not transferred to ashore, the oil sludge must be processed through oil filtering equipment [19]. Any visible amounts of oil at sea or in nearby waterways indicate that seawater quality criteria have been breached. Given that the disposal method uses cargo tanks that were previously used to transport oil, they retain high enough quantities of oil hydrocarbons to damage the sea / beach if they are not treated first aboard the ship before being dumped into the sea. According to MARPOL 1973/1978, the amount of oil concentration and the amount of water and oil mixture discharged at any place at sea is limited, with the limitation that the total amount of oil discharged during the voyage (voyage / en route) does not exceed 15 litres per mile or ppm for those sourced from machinery spaces of all types of ships, and does not exceed 30 ppm for tank cleaning from tankers, with the tankers' position must be at a distance of [20]. Oil sludge is a kind of hydrocarbon. According to Appendix VIII of Legal no. 22 of 2021 regarding Seawater Quality Standards, oil hydrocarbons, also known as Total Petroleum Hydrocarbons (rPH), for ports is 1 mg/L and 0.02 mg/L for Marine Biota.

$$\frac{1\text{ mg}}{1\text{ L}} = \frac{1\text{ mg}}{1.000\text{ g}} = \frac{1\text{ mg}}{1.000.000\text{ g}} = \frac{1\text{ parts}}{1.000.000\text{ parts}} = 1\text{ ppm}$$

Thus, it is necessary to calculate the Seawater Quality Standard, especially in the Bintan Coast of Indonesia based on Appendix VIII of Legal No. 22 of 2022. In addition, the restrictions that have been imposed in MARPOL need to be reviewed by the MEPC which is part of the IMO, because of the increasingly widespread environmental issues that arise as well as the increasing number of ships and the density of ships crossing shipping lanes and must look at the thresholds and quality standards of seawater in each littoral state in order to stop the pollution that occurs and does not occur again every year.

Therefore, the Marine Environmental Protection Committee (MEPC) must consider the above matters. In accordance with the IMO mandate, the MEPC is permitted to evaluate all issues relevant to the prevention and control of marine pollution from ships. MEPC is specifically responsible for tasks related to the approval and revision of regulations or other measures provided for in legal instruments within the scope of the IMO. Therefore, it is necessary to change the oil waste disposal thresholds regulated in MARPOL through MEPC by adapting to the sea water quality standard regulations of each country, especially in this case there is a clear difference in these thresholds compared to the oil sludge threshold provisions in Indonesia, should be considered for inclusion in MARPOL 73/78 by an MEPC Resolution, in compliance with IMO Article 38 [21]. This must be done immediately in order to realize progress in protecting the marine environment. In particular, Bintan's waters have been polluted due to differences in these thresholds.

4 Conclusion

The threshold for the discharge of oil sludge from ships is determined based on international regulations with the threshold for the discharge of oil sludge regulated through international arrangements made by MARPOL 1973/1978 (MARPOL) by the IMO. This is done to prevent marine pollution due to oil sludge that exceeds the limit. Apart from international regulations regarding oil mud thresholds in these waters, it is also regulated in Indonesian national law

regarding sea water quality standards. However, the fact is that pollution due to oil mud in the coastal area of Bintan, Indonesia, is still ongoing and gets worse during the north wind season, and has not been resolved. This occurs because there is a difference in the threshold for discharging oil sludge into the sea based on MARPOL 1973/1978 with the oil sludge threshold provisions in Indonesian sea water quality regulations which causes pollution on Bintan Beach, Indonesia. Therefore, the restrictions imposed by MARPOL need to be reviewed and changed by MEPC, one of the departments of IMO. MEPC must also consider mandatory thresholds and standards for sea water quality in each coastal country to prevent the recurrence of environmental pollution. Therefore, the Marine Environmental Protection Committee (MEPC) must consider the above matters. In accordance with IMO mandate. Therefore, it is necessary to change the oil waste disposal thresholds regulated in MARPOL through MEPC by adapting to the sea water quality standard regulations of each country, especially in this case there is a clear difference between these thresholds compared to the oil sludge threshold provisions. in each country, especially Indonesia, amendments must be considered in MARPOL 73/78 through the MEPC Resolution, in accordance with IMO Article 38 [21]. This must be done immediately in order to realize progress in protecting the marine environment. In particular, Bintan waters have been polluted due to differences in these thresholds. This certainly needs to be done immediately in order to realize progress in protecting the marine environment.

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