Review of Oil Pollution Combat from Port Activities at Boom Baru Palembang Port

Vita Permata Sari[1,*] Novi Tri Susanto[2], Elfita Agustini[3], Surnata Surnata[4], Muhammad Aldi[5]

[1, 2, 3, 4, 5] Politeknik Transportasi Sungai, Danau dan Penyeberangan Palembang, Indonesia

Email: Vitadephub@gmail.com

Abstract : In Palembang City, PT. Pelabuhan Indonesia II (Persero) Palembang branch is a container and liquid bulk port located on the banks of the Musi River. The Musi River is a river used by coastal communities for cooking, washing, and bathing, and is also used as a shipping lane for large ships. The operations of PT. Pelabuhan Indonesia II (Persero) Palembang Branch can have an impact on oil pollution in the waters and ports, which can have a major impact on aquatic ecosystems, natural resources, and the survival and health of living things. Pollution can be caused by oil spills from various activities at the port such as transportation and refueling of oil and ship cleaning activities. The purpose of this study was to determine the procedures, personal competencies, equipment suitability, and the implementation of oil pollution prevention training originating from port activities at Boom Baru Port. The method used in this study is gap analysis. The results of the review of oil pollution control efforts originating from activities at the Boom Baru Port of Palembang have not been implemented, because PT. Pelindo Regional 2 Palembang as the operator of the Boom Baru Port of Palembang has not yet completed the requirements for oil pollution control efforts originating from port activities in the form of procedural requirements, personnel competency, suitability of equipment and materials and training that should have been carried out by PT. Pelindo Regional 2 Palembang to oil pollution control personnel at the Boom Baru Port of Palembang.

Keywords: Oil Pollution, Water, Port, Gap Analysis

1. INTRODUCTION

Waterways and ports are crucial areas from an economic and ecological perspective [1]. Ports serve as nodes in hierarchical transportation networks, gateways to economic activity, sites for modal shifts, supporting industrial and trade activities, and serving as a symbol of national identity and national sovereignty [2][3]. Waterways, on the other hand, serve as a means of transportation, connecting one landmass to another, as a means of prosperity, defense, and sovereignty [4].

Maritime environmental protection must be strictly enforced as a commitment by port operators to preserving the environment for future generations [5][6]. The aquatic environment holds a wealth of natural resources, therefore, it is crucial to protect it from pollution caused by port activities and other sources of environmental pollution [7]. This pollution can be caused by human activities, either directly or indirectly, into the

A. Yulianto et al. (eds.), *Proceedings of the International Conference of Inland Water and Ferries Transport Polytechnic of Palembang on Technology and Environment (IWPOSPA-TE 2025)*, Advances in Engineering Research 302,
https://doi.org/10.2991/978-94-6239-731-6_13

aquatic environment, resulting in impacts such as damage and endangering the sustainability of aquatic life [8]. This will undoubtedly have a negative impact on ecosystems, habitats, aquatic biota, and a decline in coastal environmental quality [9][10][11].

Oil pollution in waters and ports is a serious issue that significantly impacts aquatic ecosystems [12], natural resources, and the survival and health of living organisms. This pollution is usually caused by oil spills from various port activities, such as transporting and refueling oil, and ship cleaning. However, oil pollution reduces water and soil quality, endangering marine life that relies heavily on water, such as fish, seabirds, and coral reefs [13][14].

Reporting from lautsehat.id on Friday, January 29, 2021, there were 4 cases of oil spills in Indonesian waters, namely the oil spill that occurred in Balikpapan Bay in March 2018 due to the MV Ever Judger ship dropping anchor and breaking a Pertamina pipe, causing 5,000 liters of oil to spill and pollute the waters of Balikpapan Bay. The second case occurred in Kerawang in July 2019 where the YYA-1 well belonging to PHE ONWJ leaked and the oil spill polluted the waters along the coast in Karawang [15][16][17]. The third case occurred in the Seribu Islands in August 2020 which was confirmed by the Food Security, Agriculture and Maritime Affairs Agency (KPKP) of the Seribu Islands Regency regarding an oil spill in the Pari Island area to the waters of Tidung Island along 2 kilometers which resulted in the death of a number of marine biota and damage to residents' seaweed cultivation. The fourth case occurred in the Riau Islands which occurs every year, where oil spills in the Riau Islands which include the islands of Batam and Bintan have occurred for decades, but the government does not yet know the source of the oil spill [18].

Palembang City has the Musi River which is used as a shipping lane and has a port, one of the ports in Palembang City is PT. Pelabuhan Indonesia II (Persero) Palembang branch or better known as the Boom Baru Palembang Port which has a port area of 24 hectares and the new land used as a port is around 18.5 hectares. PT. Pelabuhan Indonesia II (Persero) Palembang branch is a State-Owned Enterprise engaged in the port sector that provides services both in the provision of loading and unloading services and the provision of waterway transportation services. In providing waterway transportation services, PT. Pelabuhan must provide the best service, this must be supported by various aspects, for example the availability of passenger terminal facilities for passengers to board from the port to passenger ships (embarkation) or the needs of passengers to disembark from ships to the port (debarkation) [19][20][21].

The Ministry of Transportation has mandated that every Port Authority, Port Business Entity, and ship must provide environmental pollution mitigation equipment. Therefore, researchers deemed it necessary to conduct this research considering that the Boom Baru Port area in Palembang is a center of maritime and industrial activity with significant potential to produce oil waste from various activities such as loading and unloading, ship maintenance, and fuel leaks. Oil waste that is not properly managed can pollute waters, damage coastal ecosystems, and disrupt the economic activities of surrounding communities that depend on the fisheries and water transportation sectors. In addition to its ecological impact, oil pollution also has the potential to cause health problems for the public and port workers due to exposure to hazardous substances contained in the oil.

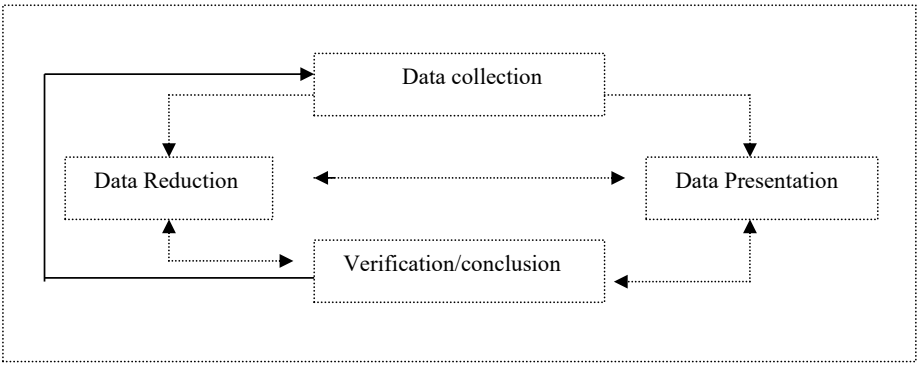
This research is important to obtain actual data and information regarding pollution levels, the main sources of oil waste, and the effectiveness of the management system that has been implemented. The results of the research will be the basis for formulating more effective prevention and mitigation strategies, including the development of waste processing technology that is appropriate to the local conditions of Boom Baru Port. In addition, this research supports the government's efforts to enforce environmental regulations and national maritime policies, especially the obligations contained in Transportation Regulation Number 58 of 2013 concerning Pollution Control in Waters and Ports and contributes to improving the quality of sustainable port environmental management.

2. METHODOLOGY

This study uses a qualitative approach, considering that in this study the researcher intends to gain an in-depth understanding of the review of oil pollution mitigation originating from port activities. The method or approach used is a qualitative method. According to Effendy (2010:117), "Qualitative research is research that explains and analyzes human behavior individually and in groups, principles or beliefs, understanding or thoughts, and perceptions or assumptions." Moleong (2011:6) states that qualitative research is "Research that produces analytical procedures that do not use statistical analysis procedures or other quantification methods."

The research conducted is a qualitative research using a descriptive method with an inductive approach. Descriptive research aims to create a systematic and accurate description or writing of the facts, characteristics, and relationships between the phenomena being investigated by studying existing problems. Research with a descriptive approach is one form of research method used in research conducted by describing/illustrating systematically, factually, and accurately the facts, characteristics, and relationships between the phenomena being investigated to then obtain a clear picture of the review of oil pollution mitigation originating from port activities.

This technique for presenting processed data uses an interactive model which includes three analysis components, namely reduction, data presentation and drawing conclusions (Miles and Huberman, 1992:20).



Source: Interactive Model Analysis (Miles and Huberman, 1992: 20)

Figure 1. Diagram block

Based on the figure, the following explanations can be found:

a. Data reduction, defined as the process of selecting, focusing on simplifying, abstracting, and transforming raw data emerging from field notes and writings. Therefore, data obtained from the field will be sorted by selecting what is necessary and ignoring what is unnecessary.
b. Data presentation, intended to facilitate researchers in-depth understanding of the whole or specific parts, in this case, the implementation of oil pollution control from port activities at Boom Baru Port, Palembang.
c. Verification, researchers attempt to find meaning from the collected data by drawing conclusions. Verification is carried out continuously throughout the research process, from the initial entry into the research location to the data collection process. The resulting conclusions will answer the question of how oil pollution control from port activities at Boom Baru Port, Palembang, is implemented, including procedures, personnel, equipment, materials, and training conducted in accordance with Minister of Transportation Regulation No. PM 58 of 2013.

3. DISCUSSION

This research was conducted through interviews with port managers and the Class I Port Operational Authority (KSOP) of Palembang. The results provide an overview of how oil waste management resulting from activities at the Boom Baru Port in Palembang is handled. The issues addressed were analyzed using gap analysis, in accordance with Minister of Transportation Regulation No. PM 58 of 2013 concerning Pollution Control in Waters and Ports.

One of the activities causing oil pollution at Palembang's Boom Baru Port is the loading of Crude Palm Oil (CPO), as this activity uses pipes connected to CPO transport vessels. This activity can be seen in the following image:

Figure 2. Implementation of Loading CPO onto Ships at Boom Baru Port, Palembang

During the CPO loading activity onto the ship, the research team also obtained information from the loading crew that the workers were stevedoring workers (TKBM) provided by the PT. Pelindo Regional 2 Palembang cooperative, and none of the TKBMs had a special competency certificate for oil pollution management.

Oil pollution resulting from CPO loading activities always occurs due to gaps in the loading pipes onto ships that can cause oil to leak through these gaps. This oil pollution also occurs in ports and waters, as can be seen in the following image:

Figure 3. Oil Pollution at Boom Baru Port, Palembang

The requirements for pollution control at Boom Baru Port originating from oil due to port activities in accordance with the Minister of Transportation Regulation Number 58 of 2013 are implemented based on the results of an assessment of the established requirements, namely procedures, personnel, equipment and materials, and training.

Based on the results of interviews and observations conducted by the research team, the results obtained can be seen in the table below:

Table 1. List of Pollution Control Requirements at Boom Baru Port, Palembang

NO	Description	Information	Adjust/No Adjust	Research Results
A	**Procedure**			
1	Tier 1 pollution control procedures	Mandatory, containing at least: 1. Structure, responsibilities, duties, functions, and work procedures of the operational organization, at a minimum: a. Mission coordinator b. Field command c. Operator 2. Reporting and communication system 3. Technical and operational guidelines	No Adjust	The Port Operator has a Standard Operating Procedure (SOP) related to pollution control, but it is only an internal regulation that does not comply with the requirements of PM number 58 of 2013.
2	Tier 2 pollution control procedures	Adapt	-	
3	Tier 3 pollution control procedures	Adapt	-	
B	**Personnel**			
1	operator or implementer	1. Personnel competency is demonstrated by a skills certificate issued by an institution and/or training body approved by the Director General. 2. Personnel can be provided by companies operating in the pollution sector and/or cooperatives, and evidenced by a written agreement. 3. Minimum of 6 people.	No Adjust	The port operator employs personnel from cleaning staff provided by the cooperative and personnel from PT. Musi Hijau Lestari, a partner in the field of pollution control
2	Supervisor or field command	Minimum of 1 person	No Adjust	
3	Manager or administrator	Minimum of 1 person	No Adjust	
C	**Equipment And Materials**			

NO	Description	Information	Adjust/No Adjust	Research Results
1	Oil boom	Minimum 1.5 times the length of the largest ship anchored at the port	No Adjust	Port operators do not have the equipment and materials to deal with oil pollution in waters and ports.
2	Skimmer	must be there	No Adjust	
3	Temporary storage	The minimum maximum amount of potential oil pollution that can be inhaled in 10 hours per day	No Adjust	
4	Sorbent	Minimum capacity to absorb 10% of the maximum potential amount of oil pollution	No Adjust	
5	Dispersant	Minimum able to decompose 10% of the maximum potential amount of oil pollution	No Adjust	
D	**Exercise**			
1	Communication and reporting exercises	Done at least 4 times in 1 year	No Adjust	The port operator never carried out training or had personnel participate in training used to combat pollution in waters and ports.
2	Table top exercise	Done at least 4 times in 1 year	No Adjust	
3	Deployment equipment exercise	Done at least 2 times in 1 year	No Adjust	
4	Combined and integrated training	Done at least 1 times in 1 year	No Adjust	

4. CONCLUSION

review of oil pollution control efforts originating from activities at the Boom Baru Port of Palembang has not been implemented. This is because the operator of the Boom Baru Port of Palembang has not yet completed the requirements for oil pollution control efforts originating from port activities in the form of procedural requirements, personnel competency, suitability of equipment and materials and training that should have been carried out for oil pollution control personnel at the Boom Baru Port of Palembang in accordance with the mandate of the Minister of Transportation Regulation Number 58 of 2013 concerning Pollution Control in Waters and Ports.

Acknowledgement

Thankyou for Politeknik Transportasi Sungai, Danau dan Penyeberangan Palembang and all parties involved in this research

References

[1] Undang-Undang Dasar (UUD) Tahun 1945
[2] Undang Nomor 17 Tahun 2008 tentang Pelayaran
[3] Peraturan Pemerintah RI Nomor 21 Tahun 2010 tentang Perlindungan Lingkungan Maritim
[4] Indriantoro, N., & Supomo, B. (2013). Metodologi Penelitian Bisnis Untuk Akuntansi & Manajemen.Yogyakarta: BPFE
[5] Kementerian Perhubungan. (2013). Peraturan Menteri Perhubungan Nomor 58 Tahun 2013 tentang penanggulangan pencemaran diperairan dan pelabuhan. Kementerian Perhubungan. Jakarta
[6] Kementerian Perhubungan. (2020). Keputusan Menteri Perhubungan Nomor 263 Tahun 2020 tentang Prosedur Penanggulangan Keadaan Darurat Tumpahan Minyak (Tier-3) dilaut. Kementerian Perhubungan. Jakarta.
[7] Miro (2005). Manajemen Transportasi. Batam
[8] Muhaddats. (2023) Tinjauan Penanggulangan Pencemaran Pada Perairan Dan Pelabuhan Penyeberangan Lembar. Palembang
[9] https://www.cnnindonesia.com/nasional/20240618155801-20-1111168/minyak-tumpah-dari-kapal-bunker-cemari-singapura-sampai-di-ri
[10] https://p2k.stekom.ac.id/ensiklopedia/Limbah_minyak
[11] https://e-journal.uajy.ac.id/3425/3/2BL00962.pdf
[12] http://repository.poltektranssdp-palembang.ac.id/176/3/BAB%20II%202021.pdf
[13] Moeleong, Lexy J. 2011. Metodologi Pendekatan Kualitatif, Edisi Revisi, Bandung: Remaja Rosida Karya.
[14] MARPOL 73/78 ANNEX 5 Tahun 2013 yang berisi tentang kewajiban dan tanggung jawab Negara-Negara anggota dalam menjaga pencemaran lingkungan maritim.
[15] https://lautsehat.id/peristiwa/lautsehat/4-kasus-tumpahan-minyak-di-perairan-indonesia/
[16] International Maritime Organization (IMO). (—). MARPOL Annex I: Regulations for the Prevention of Pollution by Oil. IMO.
[17] Peraturan Presiden Republik Indonesia Nomor 109 Tahun 2006 tentang Penanggulangan Keadaan Darurat Tumpahan Minyak di Laut
[18] Pranyoto, Pranyoto, “Pengaruh Pengetahuan dan Kesadaran SDM Terhadap Sikap Dalam Upaya Penanggulangan Pencemaran di Perairan dan Pelabuhan”.
[19] https://jurnal-perspektif.org/index.php/perspektif/article/view/141
[20] Purwendah, Elly Kristiani dan Djatmiko, Agoes, “Peran Syahbandar Dalam Penegakan Hukum Pencemaran Minyak di Laut Oleh Kapal Tanker”. https://jurnal-perspektif.org/index.php/perspektif/article/view/141
[21] Cholis Imam Nawawi, Pramudyasari Nur Bintari dan Try Ananda Yusma Bhakti, “Penanganan Pencemaran Lingkungan yang Disebabkan Minyak di Pelabuhan Panjang”. https://ejournal.poltekpel-banten.ac.id/index.php/ejmi/article/view/119