Efforts to Prevent Marine Pollution Due to Port Activities

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Abstract: Prevention of marine pollution is an effort that must be done as early as possible to avoid or reduce marine pollution because marine pollution can have an impact on the lives of living things in the sea and around it. Many things can cause marine pollution, one of which is the operation of the port and the activities of the community living around the port. This study aims to determine the causes of marine pollution due to activities at the port and how to properly overcome it based onRegulation of the Minister of Transportation Number: PM. 58 of 2013 concerning Pollution Control in Waters and Ports which was amended by PM. 39 of 2021using descriptive methods. This research was conducted at the port of Pare-Pare because it is the main port in South Sulawesi, it is planned that this port will become an international port because it is located in the Gerbang Emas Special Economic Zone (KEK). The port of Pare-Pare has 3 (three) areas, namely the passenger port, the cargo port and the people's port. And there is a special port for oil and gas, so that many large ships dock at this port. Based on the results of observations, it is known that port activities that can cause marine pollution are refueling and port users who litter in the port environment.

Keywords: Marine pollution, Pare-Pare Port,: PM. 58 of 2013, PM. 39 of 2021

1. INTRODUCTION

Prevention of marine pollution is an effort that must be done as early as possible to avoid or reduce pollution in the sea. Pollution in the sea can have an impact on the lives of living things in the sea and around it. The impact of marine waste pollution in Indonesia will have an impact on the global context, because Indonesia is an archipelagic country surrounded by the sea. If the sea is polluted, of course it will affect the sea water which has a direct impact on the world's oceans. Marine pollution also affects the health of people living on the coast, this can make coastal areas filled with garbage, smell bad and polluted water conditions. This will cause many diseases.

Many things can cause pollution in the sea such as ship activities, port operations and activities of people living around the port (Tangel, 2019). The port as a place for government activities is also used for business activities which are used as a place for ships to dock, for passengers to board and disembark and for loading and unloading goods (Law number 17 of 2008). In addition, to facilitate activities at the port, other

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 2024)*, Advances in Engineering Research 274,
https://doi.org/10.2991/978-94-6463-841-7_16

activities are also carried out, such as refueling ships that are docked and buying and selling activities carried out by traders and users of port services. These activities at the port can cause marine pollution. Ship operations, oil spills when refueling, waste from ship waste due to loading and unloading activities and other activities such as culinary activities, spills from unloading cargo mixed with oil and oil from ballast residue and washing water (Siburian R, et al. 2017).

The volume of cargo that goes down or up the port is directly proportional to pollution in the port (Wahyuni SR, et al., 2023). The magnitude of the impact of pollution caused by activities in this port must be addressed immediately. Especially in ports that have high operational intensity, such as the Pare-Pare port in South Sulawesi. This port is the main port in South Sulawesi, it is planned that this port will become an international port because it is located in the Gerbang Emas Special Economic Zone (KEK). Pare-Pare Port has 3 (three) areas, namely the passenger port, the cargo port and the people's port. And there is a special port for oil and gas, so that many large ships dock at this port. Therefore, there will be many activities in the port that can have an impact on marine pollution.

Based on the description above, research is needed to determine the causes of marine pollution caused by activities in the port and efforts to prevent pollution. It is hoped that this research can be an input for port managers to prevent marine pollution.

2. RESEARCH METHODOLOGY

The research method used in this study is the Qualitative Descriptive method.The descriptive method aims to describe the pollution conditions in the Pare-Pare port. The port conditions that will be described are:

a. Condition of Pare-Pare port in the passenger port area, goods and special port used by PT. Pertamina (Persero).
b. Causes of marine pollution due to activities at Pare-Pare port.
c. How to control and prevent pollution at Pare-Pare port.

A. Data Collection and Data Analysis Techniques

1) Data Collection Techniques

a. Primary and Secondary Data Collection

Primary data was obtained by conducting observations, in-depth interviews and distributing questionnaires, while secondary data was obtained by conducting literature studies, both previous research and regulations related to marine pollution.

(1) Observation

Observations were conducted to determine the condition of marine pollution caused by activities at Pare-Pare port.

(2) In-depth Interview (In Depth Interview)

Interviews were conducted with the port manager, namely, PT. Pelindo Regional IV Pare-Pare Port Branch and the regulator, namely the Port Authority Harbor Master's Office (KSOP) of Pare-Pare Port.

(3) Questionnaire
The purpose of distributing the questionnaire was to determine the implementation of pollution prevention regulations at Pare-Pare port.

2. Data analysis
Data analysis using qualitative descriptive methods carried out by researchers is as follows:

a. Data collection
This stage involves collecting data through various techniques such as interviews,observation, or documentation study. The data collected is usually in the form of words, sentences, or narratives that are rich in meaning.

b. Data Reduction
At this stage, the data that has been collected is simplified, sorted, and focused on the things that are most important.things that are relevant to the research objectives. Data reduction helps eliminate unnecessary information.

c. Data Presentation
The data that has been reduced is then presented in the form of narratives, tables or diagrams.assist researchers in understanding the general picture of research findings. This presentation makes it easier for researchers to draw conclusions.

d. Drawing Conclusions and Verification
The final stage is drawing conclusions from the data that has been analyzed. These conclusions can be patterns, themes, or categories that emerge from the data. Verification is done to ensure that the conclusions are accurate and consistent with the existing data.

3. RESULT DISCUSSION

a. Pare - Pare Port

Pare-Pare Port is included in the operational area of PT. Pelindo Regional IV and under the regulation of the Pare-Pare Harbor Master and Port Authority Office (KSOP) of the Directorate General of Sea Transportation. PT Pelindo Regional IV Pare-Pare Branch manages 4 (four) ports, namely Cappa Ujung Port as a container or goods port, Nusantara Port which is a passenger port, Longtange Port as a people's port and PT. Pertamina (Persero) Special Port.

b. Causes of Marine Pollution

Based on the regulation of the Minister of Transportation Number: PM. 58 of 2013 concerning Pollution Control in Waters and Ports which was amended by PM. 39 of 2021, pollution in waters and ports can come from ships, other activity units and activities in ports, and pollution can be in the form of oil and other materials.

Based on the results of observations at Pare-Pare port, it is known that several activities at the port that can cause pollution at Pare-Pare port are as follows:

1) Ship refueling process

The process of refueling from a fuel tanker to a ship can cause oil spills from the fuel hose or pipe.

Figure 1. Oil drips when filling up with fuel

2) Garbage around Pare-Pare port

Based on the observation results, there is visible garbage around the waters of the Pare-Pare port which if not cleaned will pile up and can cause pollution. The garbage can be caused by several activities such as:

a) Passengers or users of Pare-Pare port services who litter.
b) Trash can come from ships that are carried by currents into the waters around the harbor.
c) People who throw garbage into the sea.
d) Garbage from the harbor that is carried out to sea.

2a 2b

2c

2d

Figure 2 a,b,c,d. Garbage in the Waters of Pare-Pare Harbor

3a

3b

3c

Figure 3 a,b,c.. Condition of the Waste Disposal Area at Pare-Pare Port

In Figure 3, it can be seen that the garbage is collected around the landfill or not thrown in the trash. Because the location of the trash can is on the edge of the sea, it can fall into the sea and cause marine pollution.

3. Efforts to Prevent Marine Pollution Due to Activities at Pare-Pare Port

PT. Pelindo Regional IV Pare-Pare Port Branch as the manager of Pare-Pare port and the Pare-Pare Harbormaster and Port Authority Office (KSOP) has made efforts to prevent marine pollution caused by Pare-Pare port activities based on the Regulation of the Minister of Transportation Number: PM. 58 of 2013 concerning Pollution Control in Waters and Ports which was amended by PM. 39 of 2021 as follows:

a. Procedure

Based on the results of interviews with PT. Pelindo Regional IV Pare-Pare Port Branch, it was conveyed that PT. Pelindo Regional IV Pare-Pare Port Branch has a marine pollution control procedure in the form of a Hazardous and Toxic Waste Management Procedure (B3) and Non-B3 Waste written in the Standard Operating Procedure (SOP) number: OPRS.R04 / PD.20.00.00 / 00-2023. The procedure can be seen in the Appendix to this study.

Hazardous and Toxic Waste (B3) at the Pare-Pare port is stored in the hazardous and toxic goods storage area (TPS B3) located at the Pare-Pare goods port which is then destroyed by burning, while non-B3 goods are disposed of in the trash bins provided in the port area which will then be

transported by garbage trucks belonging to the Pare-Pare regional government.

Figure 4. B3 Waste Storage Area (TPS)
Pare-Pare Port

Figure 5. Garbage Disposal Site at Pare-Pare Port

b. Personnel

PT. Pelindo Regional IV Pare-Pare Port Branch and KSOP Pare-Pare have personnel tasked with preventing marine pollution. PT. Pelindo Regional IV Pare-Pare Port Branch has 6 operators or implementers, 2 field commanders, 1 manager and 1 division, while KSOP Pare-Pare has 2 employees who have Pollution Control certificates.

SURAT TANDA TAMAT PENDIDIKAN DAN PELATIHAN
NOMOR : GF001723.K.I.018.21

Nomor Seri : K.0018

Kepala Balai Pendidikan dan Pelatihan Transportasi Laut (BPPTL) di Jakarta menyatakan bahwa :

Nama	:	MUHAMMAD ASRI
NIS	:	018.0321.0269
NIP	:	19730121 201409 1 002
Tempat & Tanggal Lahir	:	Nunukan, 21 Januari 1973
Telah tamat pendidikan dan pelatihan	:	

PENCEGAHAH PENCEMARAN

Yang dilaksanakan Balai Pendidikan dan Pelatihan Transportasi Laut di : Jakarta, 01 Maret s/d 29 Maret 2021

Sesuai Keputusan Menteri Perhubungan Nomor SK. 416 / BPSDM.P – 2014 Tentang Kurikulum Silabi, Persyaratan Administrasi Dan Akademik Bagi Peserta Diklat Teknis Fungsional Transportasi Laut Pada Balai Pendidikan Dan Pelatihan Transportasi Laut (BPPTL) Jakarta.

Mengetahui,
a.n. KEPALA BPSDM PERHUBUNGAN
KEPALA PUSAT PENGEMBANGAN SDM PERHUBUNGAN LAUT

Capt. SAHATTUA P SIMATUPANG, MM., MH
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Jakarta, 29 Maret 2021
KEPALA BALAI PENDIDIKAN DAN PELATIHAN TRANSPORTASI LAUT

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Figure 6. Pollution Prevention Expert Certificate

c. Equipment and Materials

Equipment and materials for pollution control at the port of Pare-Pare use equipment and materials from PT. Pertamina (Persero) which uses a special port of the port of Pare-Pare.

The equipment and materials owned by PT. Pertamina (Persero) are as follows:

1) Power Pack Oil Skimmer
2) Dispersant Pump
3) Oil Boom
4) Oil Containment Bag
5) Oil Dispersant
6) Skimmer
7) Rubber Inflatable Boat (RIB)

Figure 7. Power Pack Oil Skimer

Figure 8. Dispersant Pump

Figure 9. Oil Boom

Figure 10. Oil Boom 2

Figure 11. Oil Gallon

Figure 12.*Skimmer*

Figure 13.*Rubber Inflatable Boat*(RIB)

d. Exercise

Pollution control exercises are planned to be carried out 4 times a year or per quarter. This pollution control exercise is carried out by involving all personnel at the Pare-Pare port, such as from PT. Pelindo Regional IV Pare-Pare Branch, the Harbor Master's Office and the Pare-Pare Port Authority as well as from PT. Pertamina (Persero) which operates at the special dock of the Pare-Pare port.

Pollution control training was carried out using equipment owned by PT. Pertamina (Persero).

Figure 14. Documentation of Pollution Control Exercise

4. CONCLUSION

a. Conclusion

The conclusion of this study is as follows:

1. Marine pollution can be caused by several activities at Pare-Pare port, including the following:
   a. Ship refueling process
   b. Garbage around Pare-Pare port

2. Efforts to prevent marine pollution due to port activities implemented in Pare-Pare port meet the standards based on the Regulation of the Minister of

Transportation Number: PM. 58 of 2013 concerning Pollution Control in Waters and Ports which was amended by PM. 39 of 2021 are as follows:

a. Procedure

Pare-Pare Port has a marine pollution control procedure in the form of a Hazardous and Toxic Waste Management Procedure (B3) and Non-B3 Waste which is written in the Standard Operating Procedure (SOP) number: OPRS.R04/PD.20.00.00/00-2023.

b. Personnel

PT. Pelindo Regional IV Pare-Pare Port Branch and KSOP Pare-Pare have personnel tasked with preventing marine pollution who have competency certification.

c. Equipment and Materials

Equipment and materials for marine pollution control are available at the port of Pare-Pare, these equipment and materials belong to PT. Pertamina (Persero) which operates at the special port of Pare-Pare. The equipment and materials owned are as follows:

1) Power Pack Oil Skimmer
2) Dispersant Pump
3) Oil Boom
4) Oil Containment Bag
5) Oil Dispersant
6) Skimmer
7) Rubber Inflatable Boat (RIB)

d. Training

Marine pollution control training at Pare-Pare port is carried out on a scheduled basis, namely 4 times a year or quarterly.

b. Suggestion

Suggestions for future research related to this theme are:

1. Laboratory tests need to be carried out to determine the level of pollution in the sea or waters of Pare-Pare.
2. Pare-Pare Port needs to add trash bins so that discarded trash does not pile up in the port area.

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