

# The implementation of garbage management plan in preventing marine pollution on Sultan Hasanuddin training ship

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# The Implementation of Garbage Management Plan in Preventing Marine Pollution on Sultan Hasanuddin Training Ship

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**Abstract.** To prepare the Sultan Hasanuddin Training Ship for garbage disposal, which can not be avoided from various onboard garbage ships, it is necessary to prepare the procedure that can prevent the disposal of garbage into the sea. Handling waste properly needs planning and preparation to not cause any marine pollution. Therefore, the research aims to determine the suitability of the handling procedure of garbage disposal, according to annex V of Marpol 73/78. The data were fully obtained according to the number of the training ship crews by collecting the results of direct observation, questionnaire, and literature study. The result of this quantitative descriptive research shows that the garbage handling procedure in Sultan Hasanuddin Training Ship has not been performed under an appropriate waste disposal procedure that meets the application of the garbage management plan. The results of observations and interviews show that the intention of the ship crew is still low due to knowledge limitations (information on the importance of protecting the maritime environment) in waste disposal according to the waste type and the availability of facilities (adequate and appropriate type of trash bin) in preparing the facilities for garbage container is not yet fulfilled. Therefore, it is necessary to continuously disseminate garbage disposal, especially the procedure for preventing waste disposal into the sea.

## INTRODUCTION

Many argue that the sea is the ideal garbage dump, both for the disposal of domestic and industrial waste. The vast area of the sea is predicted to destroy or dissolve any materials discarded into the sea. Still, the sea also has a limited breaking down power [1]. Besides, some materials are difficult to be destroyed. The continuous addition of garbage without good control can lead to increased pollution in the sea. Marine pollution harms the life of the biota, natural resources, and the life of marine ecosystems and human health [2]. Those effects are caused directly or indirectly by the disposal of garbage into the sea that comes from human activities including the activities on board ships, which resulted in the contamination of the sea waters [3]. The contamination or addition of something from out of the sea waters will disrupt ecosystem balance, endanger the life of the organism, and decrease the use-value to those waters [4].

There is an increasing number of pollutions in the ocean caused by various kinds of garbage disposed of the crew intentionally or unintentionally, as well as the oil spill of some of the ships that experience a collision, aground, and spills, so IMO (International Maritime Organization), issues regulations defined in MARPOL 73/78 ANNEX V about the measures to prevent pollution by garbage and other types of pollution [5]. Therefore, it is also necessary to have Garbage Management Plan on board to provide a systematic procedure in the implementation and Officer control functions on the disposal of all types of garbage overboard.

To reduce the marine pollution made by Sultan Hasanuddin Training Ship, it is required the entire crew to have the knowledge and abilities and the responsibility to prevent marine pollution. They should follow the rules of garbage disposal as well as the use of the equipment and other facilities on the ship to comply with the rules, which is expected to provide a marine environment that is clean and free from contamination. Since marine pollution has become a national and international problem, it needs to be addressed earnestly. Thus, the writer is interested in researching the title "The Implementation of Garbage Management Plan in Preventing Marine Pollution on Sultan Hasanuddin Training Ship." Based on the background of this research problem, the researchers formulate the problem as 'how is the understanding of ship's crew in handling the garbage on Sultan Hasanuddin Training Ship?

According to Marpol 73/78 ANNEX V (361), garbage is all kinds of food waste, domestic waste, but does not include fresh fish and parts thereof generated during the ship's normal operation and liable to be disposed and cleaned of continuously or periodically [5]. Marine pollution is a change in ocean conditions that are not favorable or damaged caused by the presence of objects as a result of human actions [6]. Foreign objects could be industrial residues, city waste, crude oil, oxide residues, the hot water from the cooling app, etc. Marine pollution is also known as a change in the marine environment that occurs due to human activities, directly or indirectly, in taking in material or energy into the sea [7]. It can be concluded that marine pollution is an entry or inserting substance or foreign objects into the marine environment that can change the quality of seawater, which can cause damage to the environment and ecosystem.

## RESEARCH METHOD

The research was conducted on Sultan Hasanuddin Training Ship of Politeknik Ilmu Pelayaran (PIP) Makassar. This study was performed from March to August 2021. The research employed a quantitative approach obtained from a population or a whole crew, which consisted of 17 respondents that were also the samples of the questionnaire used. Research methods (i) Field Research, which is carried out utilizing direct observation on the object under study, the data and information were collected, (ii) Survey Method (Observation), conducting direct observations in the field where the writer did the observation when performing activities on the ship. (iii) Questionnaire, which is a technique of data collection done by providing a set of written statements to the respondent (iv) Review of the literature (Library research), which is performed by reading and studying the literature and information related to the previous studies.

The presentation of this research uses the method of comparison by taking the data quantitatively to find or compare the similarities and differences about the procedure, work, ideas of a work procedure, or insights. Then, it will be described with words or sentences and then outlines the problems that arise based on experiences, observations, and questionnaire data obtained at the time of acquiring conclusions.

## RESULTS AND ANALYSIS

All ships under operation must comply with the requirements concerning the procedures for handling garbage to prevent pollution caused by the garbage from the ship crews.

The following excerpts from the interviews conducted with the crew of Sultan Hasanuddin Training Ship,

On July 20, 2021, H 13.30-14.00 GMT:8,

Researcher: "Why do you not discharge the waste in the required places?"

The A then said, "no one owns the ocean, so we don't need to worry about throwing out the trash."

On July 20, 2021, at 15.00 GMT:8 (The researcher saw the B do on purpose throwing the cigarette butts and its package into the sea),

Researcher: "Did you do the act (throwing garbage into the sea) intentionally or not?"

The B answered, "Yes, it was not on purpose, but the trash bin is quite far away, so yeah, I just throw it into the sea. It's also small trash, though".

July 20, 2021, Jam 18.00 GMT:8. The researchers saw the chef and the mess boy in the kitchen clean the eat and drink utensil for the crew.

In the observations, the food trash was not stored in the garbage container shelter but only put in the temporary container where later the mess boy threw it into the sea.

Researcher: "Why did you throw the food waste of the crew into the sea?"

The C and D, then the answer, "We have done this many times and the Officers are also often seen it without any prohibition on it. If the garbage is put in the container, it can produce foul odors and invites the cockroaches, rats, etc."

Based on the results of observation and questionnaire as well unstructured interview given on the crew of Sultan Hasanuddin Training Ship, the researchers obtained the following information suggested that waste management plan was not implemented:

There was the processed food trash that came from the kitchen or leftover food from plates that were dumped into the sea without regard to the rules that apply, where the waste of processed food or food remnants should be collected first or can be disposed of 12 nautical miles from the nearest land.

When the crews of Sultan Hasanuddin Training Ship do their daily work on the deck or in the engine room, the garbage (cotton waste, used oil, the results of the rust sweep, paint cans, etc.) that is generated from the maintenance in the deck or the engine still directly discharged into the sea.

The crew was still doing the disposal of garbage into the sea during the berthing time in port or mooring time, for example, drinking bottles, coating materials, or packaging materials

Based on that description above, there were many misunderstandings of the Sultan Hasanuddin Training Ship crew on the procedure of garbage disposal into the sea and the need to implement the garbage management plan to prevent marine pollution. In this case, the writers gave a stronger stand in the field by spreading the questionnaire with the data processing as follows :

Table 1 shows the responses of respondent responses regarding the understanding of the garbage disposal procedure onboard ship where each correct answer gets ten scores, with a total of 10 questions.

**TABLE 1.** Results of Respondent Responses Regarding the Understanding of the Garbage Disposal Procedure on Sultan Hasanuddin Training Ship

No	Respondent	Value (f)	Score	Category
1	Master	100	10	Highly Understood
2	Chief Mate	80	8	Understood
3	2 <sup>nd</sup> Mate	80	8	Understood
4	3 <sup>rd</sup> Mate	80	8	Understood
5	Deck Cadet	40	4	Less Understood
6	Deck Cadet	40	4	Less Understood
7	Chief Engineer	90	9	Highly Understood
8	2 <sup>nd</sup> Engineer	70	7	Understood
9	3 <sup>rd</sup> Engineer	70	7	Understood
10	Boatswain	30	3	Less Understood
11	Able Seaman 1	40	4	Less Understood
12	Able Seaman 2	40	4	Less Understood
13	Able Seaman 3	40	4	Less Understood
14	Oiler 1	30	3	Less Understood
15	Oiler 2	40	4	Less Understood
16	Oiler 3	40	4	Less Understood
17	Chief Cook	30	3	Less Understood

The Number of Respondents (N) = 17

Source: Results of processing data, 2019

The officer shall have been appointed directly by the Management of Politeknik Ilmu Pelayaran (PIP) Makassar who should be responsible for implementing the garbage management plan on Sultan Hasanuddin Training Ship. Furthermore, its implementation required the cooperation of all crew and under the plans that have been defined and the planned procedure should be disseminated. The procedure that has been prepared on the ships can always be adhered and implemented by :

Providing the posters in the form of an appeal that is easy to understand and put in a place that is easily seen by the entire crew. The poster is about the requirements of garbage disposal based on the *garbage management plan* (rules 3 and 5 of Annex V on the disposal of waste to the inside and outside special areas).

Carrying out the *safety meetings* at least once a month to do a briefing to the ship's crew about the problem of the garbage disposal implementation.

In improving the knowledge of each crew about the process of garbage disposal management, every Officer in the ship should set an example to his subordinates. In performing the activities onboard ship, especially regarding the process of garbage handling, sometimes there is an event not following the desired procedure. This is caused due to



lack of knowledge of the ship crew about this issue. Thus, good management is expected to overcome the problems or things that can make marine pollution caused by food waste and garbage during the operation of the ships. The garbage processing which is not following the procedure will negatively impact the marine environment and the marine biota and the sea ecosystems will die and become extinct. To prevent the occurrence of marine pollution caused by garbage, the implementation of activities ranging from collecting, processing, storing, or temporary storing container and discharging processes should be done with a full sense of responsibility and close supervision from officers and crew members on duty. For the things mentioned above concerning the garbage problem, the skillful officer and crew who fully understand the method or procedure of garbage handling are needed.

## CONCLUSION

Based on the results of discussion analysis in finding out the implementation of *Garbage Management Plan* on Sultan Hasanuddin Training Ship in preventing marine pollution, the writers conclude the following :

- The knowledge of the training ship crew regarding the garbage disposal into the sea will become pollution is still categorized as very low and the procedure in the *garbage management plan* is not implemented optimally.
- The procurement of facilities for garbage handling onboard ship is still in the form of a domestic trash bin and does not have a trash bin with a shelter that can be processed (burned etc.).
- The officers on Sultan Hasanuddin Training Ship have not provided a dissemination program yet to educate the importance of protecting the maritime environment.

## REFERENCES

1. A.G. Glover. And C.R Smith. The deep-sea floor ecosystem: current status and prospects of anthropogenic change by the year 2025. [Environmental Conservation](#), 30(3), pp.219-241. (2003).
2. M. S. Islam, and M. Tanaka, Impacts of pollution on coastal and marine ecosystems including coastal and marine fisheries and approach for management: a review and synthesis. [Marine pollution bulletin](#), 48(7-8), pp.624-649. (2004).
3. R.B. Clark, C. Frid, and M. Attrill. Marine pollution (Vol. 5). Oxford: Oxford university press. (2001).
4. A. Arleiny, M.T. Pramudita, S. Sutoyo, S. and M.R. Ramadhan, Implementation Of Prevention Of Pollution Of The Marine Environment By Hazardous Substances According To MARPOL ANNEX II Abroad The SV. MARVELA 18. [LIGAHUKUM](#), 1(2). (2021).
5. M. Julian. MARPOL 73/78: the International Convention for the Prevention of Pollution from Ships. [Maritime Studies](#), 2000(113), pp.16-23. (2001).
6. S.J. Craig-Smith, R. Tapper, and X. Font, The coastal and marine environment. In Tourism and global environmental change (pp. 121-141). Routledge. (2006).
7. M. Vikas, and G.S Dwarakish, Coastal pollution: a review. [Aquatic Procedia](#), 4, pp.381-388. (2015).

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