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Knowledge Of Ship's Crew On Hazardous And Toxic Waste Handling Based On Application Of Government Regulation Np. 101 Year 2014 On Type 1000 Ship

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Abstract

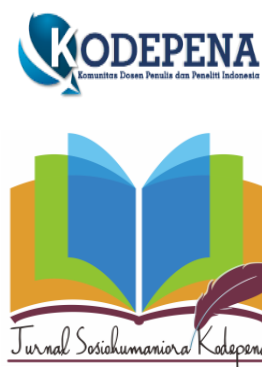
Commercial ships that are engaged in shipping and have several types of ships, one of which is the type 1000 ship. The purpose of this study is the knowledge of ship crews on the handling of B3 waste on ships with an approach using government regulation number 101 of 2014.. The method used used quantitatively with direct observation and interviews. During the voyage, the ship produces hazardous and toxic waste (B3). The management of hazardous and toxic waste refers to Government Regulation No. 101 of 2014 concerning the management of hazardous and toxic waste (B3) which on board the ship during the sailing trip to the nearest port consisting of 76.9% B3 sorting/separation, 30% storage, 53.8% collection, 53.8% storage, transportation, collection and disposal 53.8%, level of understanding of regulations SOP 84.6%. Its nature is to damage the environment, endangering health, so every producer of B3 waste is due to the presence of a. activities that produce B3 waste are required to manage the B3 waste they produce. Knowledge of B3 on crew members regarding the definition of B3 is 69.2%, while B3 management is 46.2%. The results of this study found a new and different view, compared to previous research at PT. Holcim which was conducted on land, the results were as a substitute for fuel and raw materials. The results of this study used a hazardous waste management approach. Good knowledge will affect the management of b3 waste, so that it will reduce environmental pollution when the waste is in the port area. Due to the nature of the waste that is explosive like a TL lamp, it is reactive and easily ignites.

Keywords: Ship, B3, knowledge, regulation

INTRODUCTION

Merchant ship is a ship which uses to carry the passenger and also carry the cargo. Ship is a ship which carry passenger and also the goods on the sea. Ship based on

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the size differently with the boat. Ship has the function as the transportation of goods and carry the passenger in a big amount. Kind of the ship in cruise has different name and shape. Kinds of ship are Roro ship, Tanker ship, cruise ship, Cargo ship, barge ship, and Carrier ship. Based on the survey of solid waste come from Cargo ship in deck, ship bridge, engine room, crew room, saloon, stern and kitchen consist of uneaten food 31%, plastics 10%, paper 25%, iron 8%, cloth 9%, glass 4%, and the others 13% 13% (Zaki,2009). The existence of dangerous and poisonous material at the seaports caused of the port has function as loading and unloading port (Unair News, 2020). Certainlyat the port has waste B3 identification. According to Government regulation in 2014 (chapter 3-9) identification based on source (not specific in table 1), specific sources (table 3 and 4), characteristic test. Remembering to the managing of B3 waste consists of series of reduction activities, saving, collecting, carrying, using and managing/ hoarding. Kind of B3 waste which in the ship type 1000 they are used oil, lubricant, used TL lamp, used printer ink, electronics waste, expired chemical material, used packaging (for example bottle of aseptic gel). The amount of dangerous and poisonous material impact/B3 have big spectrum, although the crew didn't realize the impact of B3 waste. Realized that the clean and healthy environment actually already guaranteed in UUD 1945 where is in line with the concept of development sustainable with the purpose is 'sustainable development goals'/SDGS.

The negative impacts which appear those are environment pollution which the cause of the indication of B3 waste which can pollute the port and waters environment. According Sitepu 2018, which study about waste management in Arar Harbor that is need a waste management sustainable, and apply the zero waste technology and do the law enforcement (Andayani, 2018). Pangau, 2017 stated in his study that there is B3 waste from the supporting port activity in Tanjung Priok, (Pangau, 2017) about B3 use the government regulation no.11 in 2014 about B3 in shipyard II Koja Bahari Shipping still have not fulfill the requirements that is in identification B3 waste management stage,the frequency of carrying B3 waste and management facility of B3 waste (Restu, 2018). The important in waste managing governance B3 waste as a step to environment repair, so need a understanding in knowledge from the crew about waste B3 management. This is important because of the impact not only for the crew but also for the passenger and waters and land. Some previous research about the waste B3 waste management enough to do in health facility environment and in harbor environment but there is some differences between other researches that is did in merchant ship type 1000. So that the newly have perspective between others researchers. Where, the level of knowledge from the crew very influence to the B3 waste management in the ship during sail until dock to the next harbor. Based on that thing, as the part of Tri Dharma Penelitian, so do the study research about the knowledge of the crew of dangerous and poisonous waste management based on the applied of government regulation no.101 in 2014 in ship type 1000.

METHOD

Data Collection Technique:

Data collection techniques are carried out in several ways:

Primary Data: Data taken directly from the research from the research object. Primary data was carried out by observation and literature study. Direct observation using questionnaires, checklist instruments on: B3 waste sources, sorting, packaging, storage, collection transportation. This research uses a closed questions and alternative answers have been determined so that the respondent just has to choose the desired answer.

Data analysis using descriptive: Analytical techniques used in analyzing data by creating a picture of the data collected regarding the situation being studied, in the form of presentation in the form of frequencies or graphs and diagrams. The method use is quantitative with direct observation and interview.

RESULT AND DISCUSSION

In the activity process of dangerous and poisonous waste management will cause the impact of environment and for the workers in ship area, for example decrease of environment quality. Based on the result of research conducted in ship type 1000 can be described as follows:

Table 1. Understanding of Hazardous Waste

| No | Category | Frekuensi | % |
|--------|----------|-----------|------|
| 1 | Enough | 7 | 53,8 |
| 2 | Good | 6 | 46,2 |
| Amount | | 13 | 100 |

Based on table 1 found that the understanding about B3 waste from the crew about the meaning, kinds, characteristics and the color of B3 dustbin got the result amount 7 respondents understanding B3 waste are good enough (53,8%), and 6 respondents understanding B3 waste are good (46,2%).

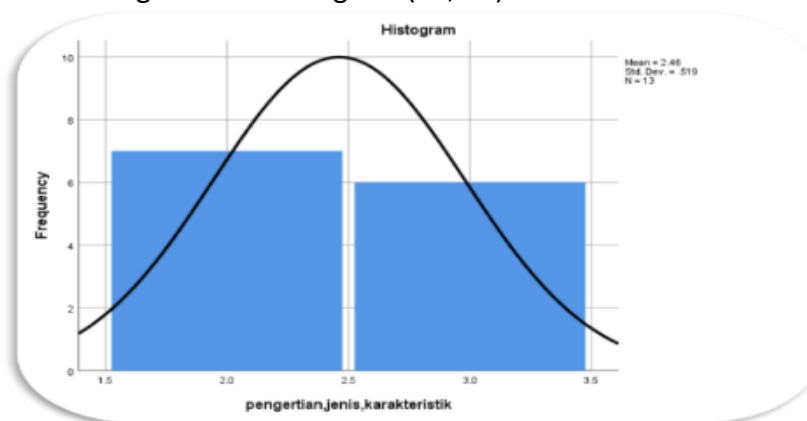


Figure 1. Understanding of B3 waste

Table 2. B3 waste sorting/segregation

| No | Kategori | Frekuensi | % |
|----|----------|-----------|-------|
| 1 | Enough | 2 | 23,07 |
| 2 | Good | 10 | 76,9 |

| | | |
|--------|----|-----|
| Amount | 13 | 100 |
|--------|----|-----|

Based on table 2 got that about sorting the B3 waste about sorting which is conducted in ship, the implementation of B3 waste separation, the sorting of pharmacy waste, sorting between medical B3 waste, and the importance of waste B3 management got result of 3 respondents, sorting/separating B3 waste are enough (23,07%) and 10 respondents sorting/separating B3 waste are good (76,9%).

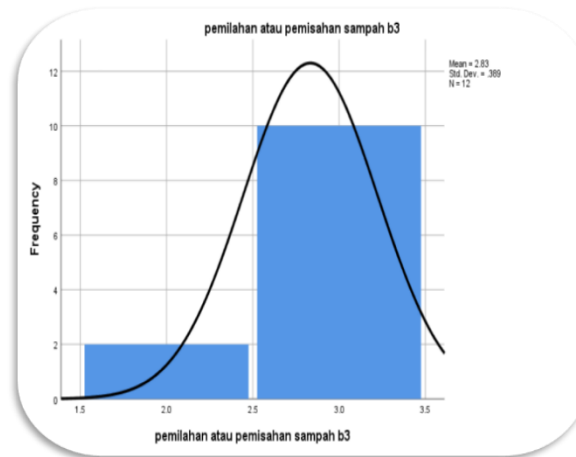


Figure 2. Segregation or separation of B3 waste

Table 3.Characteristics of Hazardous waste

| No | Category | Frekuensi | (%) |
|--------|-------------------------------------|-----------|------|
| 1. | Infectious and bandages are correct | 8 | 61,5 |
| 2. | Syringe | 2 | 15,4 |
| 3. | Bandage | 1 | 7,7 |
| 4. | Infectious | 2 | 15,4 |
| Jumlah | | 13 | 100 |

Based on table 3 got the characteristics B3 waste who thinks that infectious and bandage are correct about 8 respondents (61,5%), 2 respondents choose before syringe (15,4%), 1 respondents choose bandage (7,7%), and 2 respondents choose infectious (15,4%). Based on table 4 got that understanding about the SOP about 3 respondents (23,1%), 1 respondent choose not understand about the SOP (7,7%), and 8 respondents choose understand and know about SOP (61,5%).

Table 4.Understand about SOP

| No. | Category | Frekuensi | (%) |
|-----|---|-----------|------|
| 1 | Never heard of standart operating procedures | 3 | 23,1 |
| 2 | Don't understand the standar operating procedures | 1 | 7,7 |

| | | | |
|---|---|---|------|
| 3 | Understand and understand about standar operating procedures | 8 | 61,5 |
|---|---|---|------|

Based on table 4 got that understanding about the SOP about 3 respondents (23,1%), 1 respondent choose not understand about the SOP (7,7%), and 8 respondents choose understand and know about SOP (61,5%).

DISCUSSION

The result of research which conducted in ship type 1000 to understanding about dangerous and poisonous material waste is enough or 53,8%, although in sorting stage about 76,95. On the determination of characteristics B3 waste about 61,5% understand about the standard of the operational dangerous and poisonous material waste procedure in the ship. The result of research which conducted by Delgado in 2017 about the percentage of infectious characteristics B3 waste in household 19,5% (Delgado, 2007).

According to Nursalam, 2001 stated that the easy of someone in receiving the information so that it gets bigger the knowledge which someone has (Nursalam, 2001). The knowledge about dangerous material waste can get from education, counseling by health agencies, health education or agency that has the authority in terms of b3 waste. The understanding of dangerous and poisonous waste according to Terry, 2019 that the concentration even small so that the B3 waste which specific classified in household so stated as dangerous waste. This thing stated in his research about understanding in B3 waste management in society (Putra., et al, 2019).

This thing in line with the government regulation no.101 in 2014 that kind of dangerous and poisonous material waste in smallest dose or concentration so still contain dangerous and poisonous material/B3. For example is battery stone, used neon and bulb, used paint packaging, or kind of the things can make irritation or can caused health problems like the mercury in battery stone (Astuti, 2007). It was also stated in the study that the most B3 waste product is from oil-based paint products. This is same with the result obtained due to the use of paint on the ship type 1000, the amount of oil-based paint that is obtained because the use of paved paint is quite large, certainly this uses to repair the condition of the ship which already damaged. The other factor about B3 is B3 waste that can affect health in this case are passengers and crew members who work. The process of polluting this B3 waste can be through water, air, and biota.

So that, if exposed to it will cause acute, chronic and other effects. Observing this, it is necessary to understand standard operating procedures. The understanding of B3 waste at ports, especially shipping, is a form of implementing environmentally friendly ports (green port)), which has been mandated in the law no 21 in 2010 on the protection of the maritime environment. The mandated provisions are very clear that Article 58 states that everyone who enters the territory of the Unitary State of the Republic of Indonesia, produces, transports, distributes, stores, utilizes, disposes of, processes or stores B3 is obligated to carry out B3 management, with a view to preventing and reducing B3. The risk of impact caused by B3 on the environment.

This research explain that 61,5% of the crew understand about the standard of this operational procedure. Therefore, it can be seen from some of the results in sorting and others that it shows that crew members who work on type 1000 vessels understand the implementation of B3 waste management activities because they are reinforced with a high level of knowledge. According to Jhony, 2010 stated that the increasing demand for transport by sea has the potential to pollute the environment at sea. Quinton, 2010, habituation of waste and garbage as a means of providing knowledge about waste and garbage at Arar Port, Sorong Regency. sea conditions. He further stated that there was a lack of awareness on the part of the ships who thought that it was not too important because it did not interfere with the ship's operations. This had become a bad habit, then supervision from the regulator was not optimal by not imposing sanctions on ships that violated the rules that did not comply with the consequences of the level less knowledge. Another factor also explained that the understanding of the crew members was lacking and was supplemented by the explanation of the MARPOL section in the previous explanation.

CONCLUSION

Dangerous and poisonous material even in little amount still stated as dangerous and poisonous material. To prevent risks or reduce the risk of impacts on the environment and health of humans and other living creatures in ports, especially on ships as commercial vessels, a level of knowledge and understanding is needed in applying standard operating procedures in the management of handling dangerous and poisonous waste. this is very important considering the ship as a bridge to deliver goods and sea passengers to support the realization of a green port and law enforcement as an effort to realize the creation of shipping safety and security at the port, namely by referring to regulations and operational standards and a high level of knowledge for officers and subordinates the word that is on the ship when it's sailing.

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