Implementation Of Handling Hazardous And Toxic Waste (B3) From The Covid-19 Patient That Manage By Hospital

Rezi 1, Istiyawati Rahayu2

1 Duta Bangsa University Surakarta, Email: rezi.wardhana@gmail.com
2 Duta Bangsa University Surakarta, Email: istiyawati@udb.ac.id

Abstract

On March 11, 2020, the World Health Organization (WHO) declared that Covid-19 was a global pandemic which was followed by the determination of the non-natural disaster for the spread of Corona Virus Disease 2019 (Covid-19) as a national disaster based on Presidential Decree of the Republic of Indonesia number 12 of 2020 (State Secretariat of the Republic of Indonesia, 2020). In Law No. 24 of 2007 concerning Disaster Management is defined that non-natural disasters are disasters caused by non-natural events or series of events, which include technological failure, modernization failure, epidemics, and disease outbreaks. With the enactment of this presidential decree, all resources are devoted to handling the victims special hospitals for handling Covid-19. All individuals who are in the hospital are at risk of being exposed to Hazardous and Toxic (B3) waste, not only to patients but also to individuals who work in hospitals such as medical, administrative and support personnel. As a result of careless management, officers who are in health care facilities that produce B3 waste or who are outside this source but who are tasked with handling this waste are at risk of being exposed to B3 waste. The purpose of this study is to determine the implementation of handling hazardous and toxic waste (B3) from the Covid-19 Patient Management Hospital. The approach used in research this is a sociological juridical approach, is a method that examines the law as the realities that live in society include social reality, cultural reality and so on. This research will be a research descriptive using qualitative data. In order to be more sensitive in capturing information qualitative, used a case study in the form of status research subjects with respect to a phase specific or typical of the whole personality in the form of individuals, groups and institutions or institution. The data collection method in this research uses literature study and the data sources used are primary data sources, namely the Environmental Law and other laws relevant to the research. Handling of waste from the source can be done in a number of steps that are easy for the general public to do, namely sorting, containerization and disinfection, and labeling. The continued handling of household infectious waste can be carried out with 2 options, namely transportation by special means (if provided by the local government) then the waste is transported and treated according to the B3 waste handling procedure. The second option is transportation without special means, following domestic waste handling procedures, however, on the condition that a health risk reduction procedure has been carried out and has been stored for 72 hours. It is hoped that this research can become one of the information and media for socializing the handling of infectious waste at household scale for the wider community.

Keywords: covid-19, handling hazardous, toxic waste

I. Introduction

As also stated in Law number 44 of 2009 concerning Hospitals, Hospitals are health service institutions that provide complete individual health services that provide inpatient, outpatient and emergency services. Plenary Health Service is a health service that includes promotive, preventive, curative and rehabilitative services, which in carrying out its activities need to be regulated with one of the objectives being to provide protection for the safety of patients, the community, the hospital environment and
human resources in the hospital. Hospital environmental sanitation is one of the programs that must be implemented by the hospital. Considering that the hospital is one of the places visited by many, this program is implemented so that the operational activities of the hospital do not disturb visitors and the community inside and outside the hospital. These disorders can take the form of nosocomial infections or environmental pollution. In order to reduce these impacts and risks, the government, in this case the Ministry of Health, issued the Indonesian Minister of Health Decree No. 1204 / Menkes / SK / X / 2004 concerning hospital environmental health requirements. On March 11, 2020, the World Health Organization (WHO) declared that Covid-19 was a global pandemic which was followed by the determination of the non-natural disaster for the spread of Corona Virus Disease 2019 (Covid-19) as a national disaster based on Presidential Decree of the Republic of Indonesia number 12 of 2020 (State Secretariat of the Republic of Indonesia, 2020). In Law No. 24 of 2007 concerning Disaster Management is defined that non-natural disasters are disasters caused by non-natural events or series of events, which include technological failure, modernization failure, epidemics, and disease outbreaks.

With the enactment of this presidential decree, all resources are devoted to handling the victims special hospitals for handling Covid-19. All individuals who are in the hospital are at risk of being exposed to Hazardous and Toxic (B3) waste, not only to patients but also to individuals who work in hospitals such as medical, administrative and support personnel. As a result of careless management, officers who are in health care facilities that produce B3 waste or who are outside this source but who are tasked with handling this waste are at risk of being exposed to B3 waste.

The indiscriminate disposal of this waste by health care institutions and research institutions can contribute to the spread of serious diseases, especially during a pandemic outbreak. Due to the importance of handling hospital medical waste during this pandemic, several researchers focused their studies on the management of hospital medical waste which was studied from various perspectives. Several studies have explained the definition of a pandemic and the negative impacts on health, economy, social security and global impact caused by pandemics and disease outbreaks. Other studies are related to exposure risk, medical waste management regulatory measures, medical waste management procedures, and control techniques, a review of hospital waste management in developing countries and medical waste in China. Although the research is related to handling the pandemic and managing its waste, it is not related to Covid-19. The occurrence of the Covid-19 pandemic in Indonesia requires massive efforts in the prevention and transmission of these infectious diseases in various ways. The principle of preventing the transmission of the Covid-19 infectious disease is through breaking the host / host / host chain. One of the efforts that can be done is to properly and correctly manage hospital medical waste which is categorized as Hazardous and Toxic Material (B3) according to the Minister of Environment and Forestry Regulation No. P.56 / Menlhk-Setjen / 2015 concerning Procedures and Technical Requirements for Hazardous Waste Management from Health Service Facilities (Kemenkumham RI, 2016). There are 296 tons of medical waste per day from 2,852 hospitals, 9,909 puskesmas, and 8,841 clinics.

Not all of them can manage their own waste. The medical waste generated from handling the COVID-19 pandemic is a potential problem. If the waste is not managed according to procedures, there is a potential for the virus to spread to residents, especially scavengers. Currently, many hospitals do not have adequate hazardous and toxic (B3) medical waste management technology. Based on the explanation above, the purpose of this study is to determine the implementation of handling hazardous and toxic waste (B3) from the Covid-19 Patient Management Hospital.

---

II. Method

The approach used in research this is a sociological juridical approach, is a method that examines the law as the realities that live in society include social reality, cultural reality and so on. This research will be a research descriptive using qualitative data. In order to be more sensitive in capturing information qualitative, used a case study in the form of status research subjects with respect to a phase specific or typical of the whole personality in the form of individuals, groups and institutions or institution.

The data collection method in this research uses literature study and the data sources used are primary data sources, namely the Environmental Law and other laws relevant to the research. Observation method, which is observation by looking at and observing yourself, then recording behavior and events that occur in actual circumstances or participating in observing and listening as much as possible. In this data collection, the writer made direct observations to related parties related to activities related to the implementation of guard services. Documentation methods, namely the collection, selection, processing and storage of information in the field of knowledge, as well as data collection and sorting based on research needs to be processed into information. Interview method, namely data collection by asking a number of questions orally to be answered orally as well. Interview is a form of communication between two people that involves someone who wants to get information from other people by asking questions based on specific objectives. Data analysis in research is an activity related to understanding, explaining, interpreting and looking for relationships between the data obtained. This activity can be done by providing patterns, arrangements, sequences, classifications, themes and so on so that the data can be understood and interpreted. Analysis in this form is more of a researcher effort to describe the data in a systematic, patterned manner so as to produce a good and complete understanding. The technique used by the writer in doing this scientific work is descriptive qualitative method. Data obtained from various sources. uses various data collection techniques (triangulation), and is carried out continuously until the data is saturated. Qualitative data analysis can

---

Implementation Of Handling Hazardous And Toxic Waste (B3) From The Covid-19 Patient That Manage By Hospital

Rezi, Istiyawati Rahayu

be defined as an effort made by processing data, compiling data, sorting it out, and looking for what is important and what can be learned.

III. Main Heading of the Analysis or Results

A. Theoretical Review

Hospital waste is all waste generated from hospital activities in the form of solid, liquid, paste (gel) or gas which can contain pathogenic microorganisms, are infectious, toxic chemicals and some are radioactive. Hospital solid waste is all hospital waste in solid form as a result of hospital activities consisting of solid medical waste and non-medical waste. Solid medical waste is solid waste consisting of infectious waste, pathological waste, sharps waste, pharmaceutical waste, cytotoxic waste, chemical waste, radioactive waste, pressure container waste, and waste with high heavy metal content. Hospital waste management efforts can be carried out by preparing the software in the form of regulations, guidelines, and policies that regulate the management and improvement of health in the hospital environment. Most hospitals carry out solid waste management by separating medical and non-medical waste (80.7%), but in the case of containers, around 20.5% use special containers with different colors and symbols. Meanwhile, the destruction and final disposal technology used, for infectious waste 62.5% was burned with an incinerator, 14.8% by landfill, and 22.7% by other means; for toxic waste 51.1% were incinerated, 15.9% by landfill and 33.0% by other means. Hospitals are the biggest producer of clinical waste. This clinical waste can be dangerous and cause health problems for visitors and especially to the officers who handle the waste and the community around the hospital. Clinical waste is waste originating from medical services, dental care, pharmacy, or the like; research, treatment, treatment, or education using substances that are toxic, infectious, dangerous or can be harmful, unless certain safeguards are taken. The stages of handling medical waste consist of sorting, container, collection, transportation, storage, and processing. According to the Indonesian Ministry of Health (2005) outsourcing comes from two syllables, namely out and source, which

according to the Oxford dictionary means contract out, which with free translation means operational cooperation (KSO).

As for the definition of outsourcing is the delegation of daily operations and management of a business process to outside parties (outsourcing service providers). Not all hospital units can be outsourced, for strategic and superior functions the hospital should not be outsourced, some that can be outsourced include catering, providing hospital linens, banking services, cleaning services, maintenance and repair of sophisticated equipment.

B. Generation of B3 Medical Waste During the Covid-19 Pandemic

The occurrence of the Covid-19 pandemic at the end of 2019 to 2020 resulted in a significant increase in the generation of medical waste in hospitals around the world. At the peak of the outbreak, hospitals in Wuhan produced six times more medical waste than before the crisis, namely producing up to 240 metric tons of medical waste a day and building new medical waste plants and deploying 46 mobile waste treatment facilities. The Persi study based on the Covid-19 case in China shows that the disposal capacity of medical waste was originally 4,902.8 tons / day then increased by 1,164 tons / day to 6,066.8 tons / day with the generation of medical waste 14.3 kg / day. Handling infectious diseases requires more medical equipment such as masks, glasses, protective clothing and so on, which will increase the rate of medical waste generation. The assumption that the generation of medical waste from Covid-19 patients is 2.5 kg / bed is higher than the daily medical waste generation of 0.6 kg / bed in 2018. In January 2020, the amount of B3 medical waste generated at RSPI Sulianti Saroso was 2,750 kg, increasing to 4,500 kg in March 2020, along with the increase in Covid-19 patients being treated at the hospital. The Director General of PSLB3 KLHK said that based on information from the Indonesian Hospital Association (Persi), the estimated increase in the volume of waste generation is around 30%.

Seeing the potential danger from medical waste handling Covid-19, the Ministry of Environment and Forestry (KLHL) issued guidelines for managing this waste. The

---

Implementation Of Handling Hazardous And Toxic Waste (B3) From The Covid-19 Patient That Manage By Hospital

guidelines are contained in Circular No. SE.2 / MENLHK / PSLB3 / 3/2020 concerning Management of Infectious Waste (B3 Waste) and Household Waste from Handling Corona Virus Disease (Covid-19) dated March 24, 2020 (KLHK RI, 2020). Some of the important things are as follows: laboratory equipment and samples that have been used are hazardous waste in the form of infectious waste (A337-1), so that it needs to be managed as hazardous waste as well as to control, prevent and break the transmission of Covid-19 and avoid the accumulation of waste generated from handling Covid-19.

C. Implementation of Handling of B3 Covid Medical Waste 19

To deal with B3 Covid19 medical waste, which is in very large quantity, it is necessary to have standard procedures for handling and processing B3 Covid-19 waste. Some of the procedures for handling B3 Covid-19 medical waste include:

a. Reduction and sorting at the health facilities There is a need for procedures to improve the effectiveness of managing and using B3 medical materials and personal protective equipment (PPE) so as to reduce the amount of waste that will be generated. In addition, it is necessary to have a procedure for sorting B3 medical waste so that it is not mixed with non-medical wastes.

b. Containment & Storage Containment procedures need to be an important concern to prevent Covid-19 infection for medical and paramedical personnel, as well as for personnel who will handle B3 waste to processing and landfill sites. It is necessary to establish a standard procedure for disinfection of waste prior to container and storage. Temporary storage of B3 Covid-19 medical waste requires special handling and security procedures to prevent transmission to officers. c. Transportation The procedure for transporting B3 Covid-19 medical waste follows standard technical procedures for the transportation of B3 waste and also standards for disinfection of waste before being transported to the processing facility. d. B3 Covid-19 medical waste processing is carried out in accordance with Circular No. SE.2 / MENLHK / PSLB3 / 3/2020 concerning Management of Infectious Waste (B3 Waste) and Household Waste from Handling Corona Virus Disease (Covid19) (KLHK RI. 2020), namely using a B3 waste incinerator with a minimum combustion temperature of 800oC with procedures strict management.

---

operation and monitoring. e. Landfill Landfill is only carried out for the rest of the incinerator of B3 waste into the landfill specifically for B3 with strict management, operation and monitoring procedures. Furthermore, SE MENLHK 2/2020 also describes the handling of infectious waste and household waste handling COVID-19, namely:

Infectious waste originating from health facilities\textsuperscript{10} a. Store in closed packages for a maximum of 2 days from the time it is produced; b. Transport and/or destroy the LB3 treatment using an incinerator facility with a minimum combustion temperature of 800 °C or an autoclave equipped with a chopper; c. The residue from the combustion or shredded autoclave results is packaged and attached with a ‘Toxic’ symbol and an LB3 label which is then stored in the temporary LB3 storage area to be submitted to the LB3 manager. 2. Infectious waste originating from ODP households a. Collecting infectious waste in the form of waste of personal protective equipment, a. among others, in the form of masks, gloves and personal protective clothing; b. Packaging separately using a closed container; c. Transport and destroy on LB3 processing; d. Delivering information to the public about the management of infectious waste from the community, as follows: 1. Waste of personal protective equipment, among others, masks, gloves, personal protective clothing, packaged separately using a closed container that says “Infectious Waste”\textsuperscript{11}; 2. Officers from the agency who are responsible for the environmental, hygiene and health sectors take the collection from each source to be transported to the designated collection location before being handed over to the LB3 processor. 3. Household waste and household-like waste a. All cleaners or garbage collectors must be equipped with personal protective equipment, especially masks, gloves and safety shoes which must be disinfected every day; b. In an effort to reduce the pile of mask waste, healthy people are encouraged to use reusable masks that can be washed every day; c. People who are healthy and use disposable masks must tear, cut or cut masks and pack them neatly before throwing them in the trash; d. The local government has prepared special mask bins in public spaces\textsuperscript{12}.

The validity period of SE MENLHK 2/2020 until the status of a certain state of emergency for the COVID-19 outbreak in Indonesia is revoked. Public knowledge about the management of this infectious waste is still very minimal. This infectious waste should be disposed of in landfills, through a sorting process first from other waste and then treated first before being disposed of in domestic trash (Ministry of Health of the Republic of Indonesia, 2020). However, many people do not know how to handle this waste properly. One of the causes of public ignorance in this waste management is the lack of educational facilities and socialization regarding this matter.

D. Discussion

Handling household infectious waste is an important effort to prevent the spread of the SARS-CoV-2 (COVID-19) virus. Handling of waste from the source can be done in a number of steps that are easy for the general public to do, namely sorting, containerization and disinfection, and labeling. The continued handling of household infectious waste can be carried out with 2 options, namely transportation by special means (if provided by the local government) then the waste is transported and treated according to the B3 waste handling procedure. The second option is transportation without special means, following domestic waste handling procedures, however, on the condition that a health risk reduction procedure has been carried out and has been stored for 72 hours. In addition to technical aspects, non-technical aspects are one of the aspects that support the sustainability of handling household infectious waste during the pandemic, including system support and government policies on handling infectious waste, increasing community knowledge about the types and handling of household infectious waste, as well as capacity building and health and safety procedures for cleaning and handling infectious waste.

IV. Conclusion

Domestic infectious waste during the COVID-19 pandemic could potentially become a medium for spreading the virus if it is not handled properly. The lack of information regarding the handling of infectious waste at household scale for the community is one of the factors that influence the handling of this infectious waste. In this paper, we will...
describe the handling of household infectious waste from the source to the follow-up treatment. The research was carried out in the form of a literature review of the national and international health and environmental guidelines. Handling of waste from the source can be done in a number of steps that are easy for the general public to do, namely sorting, containerization and disinfection, and labeling. The continued handling of household infectious waste can be carried out with 2 options, namely transportation by special means (if provided by the local government) then the waste is transported and treated according to the B3 waste handling procedure. The second option is transportation without special means, following domestic waste handling procedures, however, on the condition that a health risk reduction procedure has been carried out and has been stored for 72 hours. It is hoped that this research can become one of the information and media for socializing the handling of infectious waste at household scale for the wider community.

References


Implementation Of Handling Hazardous And Toxic Waste (B3) From The Covid-19 Patient That Manage By Hospital


