

# Hazardous and Toxic Medical Waste Management at General Regional Hospital

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## Abstract

*This study aims at analyzing the management of hazardous medical waste at General Regional Hospital of Biak, Papua. The method used is descriptive research with a qualitative approach. The results showed that the General Regional Hospital of Biak, Papua had not implemented the Standard Operational Procedures (SOP) which had been determined in the handling the hazardous waste in the hospital, such as the container stage, transportation stage, and temporary storage stage up to the waste treatment stage. The lack of training for hospital staff has an impact on the implementation of hazardous medical waste management planning. The General Regional Hospital of Biak, Papua had not implemented the SOP for handling the hazardous waste in the hospital. The hospital need an adequate strategy for hospital hazardous medical waste management which can greatly assist in reducing the harmful effects of hospital waste.*

**Keywords:** hazardous waste, hospital, management

## Introduction

Over many years, medical institutions have played a very important role in various public health care activities. One of those included in a medical institution is a hospital<sup>1</sup>. In health care activities, hospitals have potential potency to produce waste that can pose a risk of environmental pollution. Hospital waste is included in a special category of waste, which is very dangerous because of its contagious and / or toxic characteristics<sup>2</sup>. The World Health Organization (WHO) said that about 75% to 90% of waste produced in all health care facilities can be considered non-hazardous; the remaining 10 – 25% cannot be ignored<sup>3</sup>. Even though the medical waste produced is less than domestic waste, the risk to the environment and human health has the potential to be greater if it is not handled properly<sup>4</sup>. Medical wastes are considered as hazardous waste because they contain toxic materials, infectious, or non-infectious wastes and they are considered as a hazard to millions of patients, health care workers, and visitors<sup>1</sup>. According to WHO, risks that are classified as risk waste such as infectious waste, pathological waste, sharps, pharmaceutical waste, genotoxic waste, chemical waste and radioactive waste<sup>5</sup>.

Based on the results of a research survey by Abd El-Salam<sup>6</sup> entitled *Hospital Waste Management in El-Beheira Governorate, Egypt*, shows that the separation of all waste in hospitals is not carried out according to consistent rules and standards where there is medical waste disposed of with household waste. Furthermore, the results of the study by Nemathaga et al.<sup>7</sup> entitled: *Hospital Waste Management Practices in Limpopo Province, South Africa: A case study of two hospitals*, suggest that public and medical waste are often mixed together during collection, and there is no waste separation. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste<sup>8</sup>.

The General Regional Hospital of Biak, Papua is like many other General Regional hospitals in Indonesia, the General Regional Hospital of Biak, Papua always tries to improve hospital waste management and implement good waste management, especially the management of hazardous medical waste. Although the Regulation of the Minister of Health<sup>9</sup> about hospital environmental health

has been issued to systematize hospital hazardous waste management, as well as the existence of Standard Operational Procedures (SOP) that has been made by the hospital for the handling of hazardous waste, but the authorities failing to implement an efficient system related to the management of hazardous medical waste, such as the container stage, the transportation stage, the temporary storage stage up to the processing stage. This is due to the weak enforcement of existing laws and regulations. In this case, the sanction given does not realize the community, whereas there are some regulations underlying waste processing <sup>10</sup>. Mauluddhina <sup>11</sup> states that the regulation established by the government is expected to be comprehensive and integral which finally can be an underlying concept in waste management.



**Figure 1: Temporary disposal site for hazardous waste in an open space without a roof (A, B, C, D and E). Incinerator engine that has been damaged and cannot be used anymore (F).**

In general, the problem that often occurs at the General Regional Hospital of Biak, Papua is that there are still errors in the management of hazardous medical waste, such as not giving hazardous waste symbols and labels on every hazardous waste packaging or container. In addition, hazardous waste that has been taken by officers from the source room which is then taken to the temporary storage area for hazardous waste, is not equipped with an official report of the handover, thus making it difficult for TPS officers to identify the origin of the waste (source location) and the characteristics of hazardous waste. Based on these problems, officers at the temporary storage area often get injured because they are pierced by a needle during the separation process of the hazardous waste at temporary storage area.

Another problem is that hazardous medical waste is often found which causes rot, cockroaches, flies, and rats in the temporary storage area of hazardous waste at the General Regional Hospital of Biak, Papua, this is caused by hazardous medical waste, which is only stored in the open and exposed to rain. The importance of medical institutions in designing and implementing in a comprehensive manner the management of hospital's hazardous medical waste can help protect the health risks of the public and hospital staff. Pertiwi et al.<sup>12</sup> stated that an evaluation of hazardous waste management in hospitals is very necessary because hazardous waste that is not managed properly can cause injury, environmental pollution, and nosocomial diseases. Through sustainable waste management, practices can go a long way in reducing the harmful effects of hospital wastes<sup>5</sup>. Therefore, this study was conducted to analyze the management of hazardous medical waste at the General Regional Hospital of Biak, Papua. This study is expected to be beneficial for the leadership of the General Regional Hospital of Biak, Papua for consideration of various policies needed to improve the management of hazardous medical waste.

## **Literature review**

Hospitals have a positive impact as a means of increasing the degree of public health as well as having a negative impact, namely producing waste, so it needs attention. The national production of solid medical waste for hospitals in Indonesia is estimated at 376,089 tons / day<sup>4</sup>. Therefore, inadequate handling and disposal of medical waste can have an impact on patients, relatives or carers, health workers, waste workers, scavengers, the community and the environment<sup>22</sup>. Hospitals as health care facilities are required to manage medical solid waste, from waste reduction, solid medical waste sorting, solid medical waste storage, solid medical waste transport, solid medical waste processing, solid medical waste burial, to solid medical waste landfill<sup>21</sup>.

In Indonesia, the Indonesian communities have traditionally used composting to dispose of their organic waste. Composting is the decomposition of organic wastes under controlled conditions to produce soil conditioner, compost, or organic fertilizers. Over the past 20 years, the practice of composting has been decreasing due to the increased use of chemical fertilizers. MSW management in Indonesia is becoming more complex everyday due to variety of reasons. The quantity of solid waste is expected to rise substantially due to rising population and increasing waste generation rate. However, the local governments are not equipped adequately to provide the proper service due to lack of the managerial capacity and resources required to shoulder the increasing responsibility<sup>13</sup>.

Legal foundations in waste management and the environment include legal provisions on the prevention and prevention of environmental pollution. Based on Article 20 paragraph (1) of Law No. 32 of 2009 on Environmental Protection and Management, the determinant of environmental pollution is measured through environmental quality standards. In accordance with Article 2 PP No. 27 of 2012 concerning Environmental Permits states that Every Business and/or Activity that must have an Amdal or UKL-UPL must have an Environmental Permit<sup>14</sup>.

## Experimental part

This type of study was a descriptive study with a qualitative approach. This approach was used to find in-depth information and understand the phenomenon that was happening naturally regarding the management of hazardous medical waste at the General Regional Hospital of Biak, Papua. This formulation of purpose became the focus and limitation of this study. The type of data used in this study consisted of primary data and secondary data. Primary data was obtained through direct observation to the research location which was carried out from August 2020 by looking at things related to the object of research such as the implementation of hazardous medical waste management, then making notes to get a clearer picture and provide clues to support the processed data more continue. Furthermore, interview was conducted in pre-research from August 2020 and in-depth interviews conducted to obtain information from competent informants related to hazardous medical waste management by using guided interview techniques conducted in September 2020 by bringing a series of complete and detailed questions.

The informants in this study were 10 hospital employees and one of them was the key informant. The 10 informants were chosen with the criteria that the informants were employees who had worked for a long time at the General Hospital in the Biak area, Papua and had direct activities with the object to be studied. The informants in this study consisted of the Head of Support, Section Head (KA.SIE) of Medical Support Installation, Head of Section (KA.SIE) of Non-Medical Supporting Installation, and all staff in charge of collecting and handling hazardous waste at the Biak General Regional Hospital, Papua. The Head of the Supporting Division acts as a key informant, the Head of the Supporting Sector was elected as the key informant on the grounds that the Head of Support was an employee who was responsible for the health care environment in the hospital who could provide more accurate information related to waste management medical hazardous at the General Regional Hospital of Biak, Papua.

Apart from direct observation and interview, primary data were also obtained through questionnaires related to hazardous medical waste management that were distributed to respondents during interview. For secondary data, the researcher collected data on the amount of hazardous medical waste in the last one year, the number of beds owned, as well as staff data at the Biak regional public hospital, Papua. These items were claimed as residues of hospital that later became waste-materials. The data is taken from the Head of Administration, Head of Sub Division of General Affairs and Civil Service, Head of Supporting Sector. In addition, secondary data is also obtained from scientific writings (related books / literature, reports, scientific papers and relevant research results).

## Results and discussion

### *The amount of medical waste produced by the hospital*

Hospital waste samples were collected in 2020. All hazardous medical waste was weighed every day for one month to determine the average amount of waste produced by each work unit in the General Regional Hospital of Biak, Papua.

Based on Table 1, it shows that the amount of hazardous medical waste produced every day at the General Regional Hospital of Biak, Papua is 95.50 kg for a bed capacity of 179 beds. Table 1 also shows that there is no data on the amount of waste produced from the isolation room for old Covid-19 patients and the isolation room for new Covid-19 patients. Based on the results of an interview with (LO) as the Head of Section (KA.SIE) of the Medical Support Installation at the General Regional Hospital of Biak, Papua (interview 02 September 2020) said that so far, the hazardous medical waste from the isolation room for old Covid-19 patients and the isolation room for new Covid-19 patients is not weighed, but it was processed directly by burning it using an incinerator with a measured distance. The hazardous medical waste from the isolation room for old Covid-19 patients and the isolation room for new Covid-19 patients takes precedence over the processing of hazardous medical waste from other hospital units.

**Table 1: Types and average amount of hazardous and toxic medical waste at regional hospital of Biak, Papua**

Hospital Units	The Amount of Hazardous Medical Waste Materials (kg/bed-day)									
	Infuse bottle	Glass bottle of Medicine	Syringe Bottle	Disposable	Masks, Hand sanitizer, cotton, gauze, bandage	Hose Infuse, Aboket	syringe	Diapers	Sputum Bottle	Total Kg/bed-day
Manswar room	2.1	5	2.4	3	1.2	1.4	1	2	1.2	1.21
Old Covid-19 patient isolation room	-	-	-	-	-	-	-	-	-	-
New Covid-19 patient isolation room	-	-	-	-	-	-	-	-	-	-
Manyoiri room	5.4	2	2	1.2	1.4	2	1.2	1.4	-	1.11
ICU room	2.4	1.2	2.1	1.1	1.3	1.3	1	2	-	1.38
Mambesak room	2.2	2	1.1	1.1	2	2.2	1	1.4	-	4.33
Suyaben room	2.4	4.3	2	2.1	1.3	1.3	2	4	-	0.99
Nifas room	7	5.2	1.3	1.2	2	1.1	1	4	-	1.7
VK room	5	3	2	1.2	1.4	1.3	1.1	2	-	1.42
Manesu room	2.2	2	1.2	1.3	1.4	1.3	1	2.4	-	3.68
I A Class room	2	2.1	1.3	1.2	2	1.1	1	4	-	4.22
I B Class room	4.4	2.2	3	1.2	2	1.1	1	2	-	2.43
Transit room I	4	5.2	3	2	3.1	2	1	4	-	2.12
Transit room II	5	3.2	3	1.3	2.3	2.1	1.3	3	-	1.41
Emergency room	3	4	2.2	1	2	1.2	1.1	-	-	0.63
I A Class room	2	2.1	1.3	1.2	2	1.1	1	2	-	6.35
I B Class room	4.4	2.2	3	1.2	2	1.2	1	2	-	8.5
Perinatology room	2.5	1.2	1.1	1	1.2	1.2	1	2	-	3.73
Radiology room	-	-	-	-	1.4	-	-	-	-	1,4
OK room	2.4	2.4	2	1.2	2	1.2	1.2	2	-	7.3
Apotecary	-	-	-	-	2	-	-	-	-	2
Surgery room	2	1.2	2	1.2	1.4	1.3	1.2	-	-	10.3
Ponel room	-	-	-	-	1.4	-	-	-	-	1.4
CT-Scan room	1	1		1	1	1	-	-	-	5
Laboratory				2	2.3	-	2.4	-	2,1	8.8
Dentist room		1	1	1	1.2	-	1	-	-	5.2
Forensic rom	2	-	-	1.2	1.3	1.4	2	-	-	7.9
Total	95.50									

The same opinion with (LO), (YS) as Head of the Sanitarian Installation at the General Regional Hospital of Biak, Papua said that there is no weighing hazardous medical waste originating from the isolation room for old Covid-19 patients and the isolation room for new Covid-19 patients, because the waste is directly brought down by the cleaners from the source room to the hospital temporary waste area, and the officers also use special personal protective equipment (PPE).

To obtain the validity of the data, the researcher then triangulated by conducting an interview with (DP) as the Head of Support at the General Regional Hospital of Biak, Papua (interview 07 September 2020) which stated that: For hazardous medical waste, Covid-19 patients are no longer weighed but they are immediately destroyed using an incinerator, so there is no data on the amount of waste produced by Covid-19 patients. It is sufficiently important to know the amount of waste produced for each room, especially the amount of waste originating from Covid-19 patients. As well as the opinion of Tsakona et al.<sup>2</sup> explaining that it is important to know the quantity of waste produced (by type) in order to examine the various treatment options. A fundamental prerequisite for the successful implementation of any medical waste management plan is the availability of sufficient and accurate information about the quantities and composition of the waste produced<sup>15</sup>. A study has proven and suggested some steps in waste management, namely (a) waste filter, (b) waste packing, (c) waste transporting, (d) temporary shelter, and (e) landfill (final shelter)<sup>16</sup>.

### ***The hospital hazardous medical waste management***

For the management of hazardous medical waste at the General Regional Hospital of Biak, Papua, it can be seen from the following interviews. Based on the results of an interview with (LO) as the Head of Section (KA.SIE) of the Medical Support Installation at the General Regional Hospital of Biak, Papua said that the hazardous medical waste in the hospital is packaged in a separate special container, that is yellow for the category of infectious waste for sharp objects and infectious waste for sharp metal types, yellow for infectious waste for non-sharp objects, and red for toxic pharmaceutical waste. As for the shortcomings so far in the process of containerization of hazardous medical waste, there is no symbol and label for hazardous waste in each packaging or container of hazardous waste, so that when the waste reaches the temporary waste area, it is really difficult for the temporary waste area officers to identify the type and amount of waste from each room in the General Regional Hospital of Biak, Papua. From these problems, it has an impact on the absence of data held by the General Regional Hospital of Biak, Papua regarding the amount of waste produced every day for each room.

Furthermore, (YS) as Head of the Sanitarian Installation at the General Regional Hospital of Biak, Papua (interview 03 September 2020) said: The flow of hazardous medical waste management begins with the container process, where the containers in each room are taken every day or 2/3 full are collected in two shifts, shift 1 is carried out at 06.00-09.00 AM and shift 2 is carried out at 12.00 – 03.00 PM by the officer. The officers are required to use personal protective equipment such as gloves, masks, helmets, and work shoes every time they start carrying out tasks. Even so, there are still frequent cases of needle sticks because they do not comply with the established Standard Operational Procedures (SOP), as well as the lack of training for hospital hazardous medical waste management officers on proper hazardous medical waste management.

The same opinion was expressed by (SH) as Section Head (KA.SIE) of the Non-Medical Support Installation at the General Regional Hospital of Biak, Papua (interview, 04 September 2020) said: The collection of hazardous medical waste follows a predetermined route, while the trolley used is a special trolley for hazardous medical waste. The trolley containing hazardous medical waste is immediately taken to a temporary storage area to be sent to partners in waste management. For hazardous medical waste, part of it is destroyed at the TPS using a combustion incinerator with a temperature of 1200.

However, the problem with the General Regional Hospital of Biak, Papua is that there are 3 available incinerators, but only 1 can be used because 2 other inventors are damaged, so the use of the incinerator at the Biak General Regional Hospital, Papua often exceeds the capacity it should be and often the incinerator engine is damaged, and this makes waste burning is not optimal and often occurs hazardous medical waste sediment at temporary waste area because it is stored for too long and is

destroyed or final processing. In addition, the temporary waste area for hazardous medical waste at the Biak General Regional Hospital, Papua does not have a roof and is in an open state so that it often causes fouling when the hazardous medical waste is exposed to rain.

Likewise, the opinion of (CK) as the Coordinator of Waste Management at the General Regional Hospital of Biak, Papua (interview, 04 September 2020) said: For infectious and potential hazardous and toxic medical waste, a leak-proof, puncture-proof container is inserted with a yellow plastic bag lining and tied with a rope. For medical waste hazardous sharp metal, put in a special container (safety box) and coated with red plastic. However, what has become a weakness of the General Regional Hospital of Biak, Papua, so far is that the containers used have not been given a symbol and label so that the officers find it difficult to identify the type of waste and the amount of waste produced per day for each room. The transport trolley uses a special trolley that has a waste container that matches the composition of hazardous medical waste, but sometimes the waste container is not closed and is very risky to the hospital environment, especially the health of workers and visitors.

To obtain the validity of the data, the researcher then triangulated by conducting an interview with (DP) as the Head of Support at the General Regional Hospital of Biak, Papua (interview 07 September 2020) which stated that: In the implementation of hazardous medical waste processing activities, the initial procedure begins with separating medical waste and household waste into their respective holding areas. At least one day or 2/3 of the plastic bags have been filled, the cleaning service immediately binds the plastic bags for temporary storage. Furthermore, the waste collection site is cleaned or disinfected every time it is emptied according to Standard Operational Procedures (SOP). Although the implementation is not optimal because in the General Regional Hospital of Biak, Papua, there are often unbundled and open plastic bags of hazardous medical waste, as well as waste storage areas that cause rot and insects because the cleaning staff only performs cleaning or disinfecting the bag. The plastic in the container has leaked.

The next stage is to carry out / move the waste, which is the plastic waste bag in each room, is taken by the waste transport officer to be transferred to the waste storage and for medical waste, which is immediately taken to a temporary storage area near the incinerator for further burning. There are 3 incinerators at the General Regional Hospital of Biak, Papua, but only 1 incinerator can function and 2 of them are damaged so that the use of the incinerator at the General Regional Hospital of Biak, Papua often exceeds the capacity it should have. Furthermore, after the activity is complete, it is based on the Standard Operational Procedure (SPO), which is the equipment is emptied, washed, disinfected and in the sun. However, at the General Regional Hospital of Biak, Papua, these activities have not been carried out optimally because dirty and rotten equipment is often found because they are not washed, disinfected, and dried in the sun when the transportation / transportation activities are finished. Then the final stage is the activity of destroying hazardous medical waste with an incinerator, that is hazardous medical waste burned at a temperature of 1200, and then the result of combustion in the form of ash is disposed of at the disposal of general waste.

Regarding the data obtained at the research location, it shows that at the General Regional Hospital of Biak, Papua has a standard Operational Procedure (SOP) which regulates the implementation of hazardous medical waste management which refers to the Minister of Health Regulation Number 7 of 2019 concerning health of hospital environment which states that the handling of hazardous medical waste must be carried out appropriately, starting from the container stage, the transportation stage, the temporary storage stage to the processing stage<sup>9</sup>. However, the implementation of hazardous medical waste management activities at the General Regional Hospital of Biak, Papua has not yet complied with the predetermined Standard Operational Procedures (SOP).

In the process of containerizing hazardous medical waste at the General Regional Hospital of Biak, Papua, it begins with a separation process from the source room by a cleaning service, by separating medical waste and household waste into their respective shelters, for at least one day or have been filled with 2/3 plastic bag. For hazardous medical waste plastic bags, it is still often found that they are not bound and left open, as is the case with the hazardous medical waste storage area in each source room, cleaning or disinfecting is only done if the plastic bag in the container is leaking and not cleaned or disinfected every time it is emptied according to a predetermined Standard Operational Procedure

(SOP). Based on these facts, it is often found an area to store waste that causes rot and insects. In addition, each packaging or container of hazardous waste does not provide a symbol and label for hazardous waste, so that when the waste reaches the temporary waste area it is very difficult for the temporary waste area officers to identify the type and amount of waste from the source room, and this has an impact on the zero data available in the General Regional Hospital of Biak, Papua regarding the amount of waste produced every day for each room.

Furthermore, the transferring / moving stage where the plastic waste bag in each room is taken by the waste transport officer to be transferred to the waste storage. For medical waste, it was immediately taken to a temporary storage area near the incinerator for incineration. The collection of hazardous medical waste is carried out every day or 2/3 full, it is collected in two shifts, shift 1 was carried out at 06.00-09.00 AM and officers or cleaning services carried out shift 2 at 12.00-03.00 PM. Furthermore, for the transportation of hazardous medical waste, it uses a special trolley that has a waste container that matches the composition of hazardous medical waste, but sometimes the waste container is not closed and is very risky to the hospital environment, especially the health of the workers and visiting patients. In addition, after the transferring activity is completed, the special trolley that has been emptied by the clerk or the cleaning service is not washed, disinfected, and dried based on the standard Operational Procedure (SOP) that has been determined, so that it is often found dirty trolley and gives off a bad smell.

The next stage is send the waste to the temporary storage, where hazardous medical waste at the General Regional Hospital of Biak, Papua, which is immediately taken to a temporary storage area near the incinerator for subsequent burning. For the temporary waste area for hazardous medical waste at the General Regional Hospital of Biak, Papua which does not have a roof and is in an open state so that it often causes fouling when the hazardous medical waste is exposed to rain. Likewise, the final processing stage or the activity of destroying hazardous medical waste, that is at the General Regional Hospital of Biak, Papua, the destruction activity is carried out using an incinerator with a temperature of 1200, then the results of combustion in the form of ash are disposed of in a public garbage disposal. As for the number of incinerators that can be used for the destruction of hazardous medical waste at the General Regional Hospital of Biak, Papua is not balanced with the amount of waste produced, where the use of the incinerator often exceeds the capacity it should often leads to the deterioration of hazardous medical waste in the temporary waste area because it is stored for too long before it is destroyed or finalized.

The research results also show that in the management of hazardous medical waste at the General Regional Hospital of Biak, Papua, there are still hazardous medical waste management officers who do not comply with the rules according to the predetermined Standard Operational Procedures (SOP), such as not using protective self equipment, such as gloves, masks, helmets and work shoes every time you start doing tasks. Based on these facts, it often results in the hazardous medical waste management the officer at the General Regional Hospital of Biak, Papua, being injured by a needle stick. The main danger of medical waste is the risk of infection from microorganisms or viruses in the waste, infection usually occurs due to a sharp object puncture or needle injury<sup>17</sup>. Therefore, the officers, either cleaning services or waste officers, are required to use personal protective equipment to minimize work accidents<sup>18</sup>. In addition, the lack of training for workers who are tasked with managing hazardous medical waste is one of the factors that results in the lack of understanding of officers about proper hazardous medical waste management at the General Regional Hospital of Biak, Papua.

To optimize the hazardous medical waste management process at the General Regional Hospital of Biak, Papua, an adequate hazardous hospital waste management strategy is needed and can be very helpful in reducing the harmful effects of hospital waste. One of them is by providing special training to the officers about the proper management of hazardous medical waste, because so far the problem in managing hazardous medical waste at the General Regional Hospital of Biak, Papua is the lack of understanding of officers about the management of hazardous medical waste and lack of special training for hospital hazardous medical waste management officers. The training is a teaching and learning process using certain techniques and methods, in order to improve the expertise and / or skills of a person or group of people in handling tasks and functions through systematic and organized



procedures that take area in a relatively short time<sup>19</sup>. A study claims the important aspect of making waste management, where RSUD. Hadji Boejasin has not implemented these ways<sup>20</sup>.

In the training, an environment was created in which hazardous medical waste management officers at the General Regional Hospital of Biak, Papua, could acquire or learn specific attitudes, skills and behaviors related to hazardous medical waste management, as well as given instructions to develop the skills needed used immediately in order to improve its performance. In addition, the importance of monitoring the daily implementation includes monitoring the collection of hazardous medical waste, monitoring the cleaning of equipment, monitoring the storage warehouse for hazardous medical waste, and monitoring the use of personal protective equipment that can assist in the proper management of hazardous medical waste and based on Standard Operational Procedures (SOP).

## Conclusions

The hazardous medical waste management at the General Regional Hospital of Biak, Papua is not based on the Standard Operational Procedure (SOP), which has been determined in the handling of hazardous medical waste, such as the container stage, the transportation stage, the temporary storage stage up to the waste treatment stage. In addition, there is no data available at the General Regional Hospital of Biak, Papua on the amount of hazardous medical waste produced every day for each room and the lack of training for officers has an impact on the implementation of hazardous medical waste management planning, and the lack of awareness, as well as knowledge about proper hazardous medical waste management. The importance of an adequate hospital management strategy for hazardous medical waste, such as providing special training to officers on the management of hazardous medical waste as well as conducting daily monitoring activities including: supervision of collection of hazardous medical waste, supervision of cleaning of equipment, supervision of warehouse for storing hazardous medical waste, and advising the use of personal protective equipment can assist in the proper management of hazardous medical waste and based on predetermined Standard Operational Procedures (SOP). Therefore, it can reduce the harmful effects of hazardous medical waste at the General Regional Hospital of Biak, Papua.

## Acknowledgment

Author would thanks to Institute of Political and Social Science (IISIP) of Yapis Biak for facilitating this research.

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## **Nakládání s nebezpečným a toxickým zdravotnickým odpadem ve Všeobecné krajské nemocnici**

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### **Souhrn**

*Tato studie se zaměřuje na analýzu nakládání s nebezpečným zdravotnickým odpadem ve Všeobecné regionální nemocnici v Biaku na Papui. Použitou metodou je deskriptivní výzkum s kvalitativním přístupem. Výsledky ukázaly, že Všeobecná oblastní nemocnice v Biaku na Papui nezavedla standardní operační postupy (SOP), které byly stanoveny při nakládání s nebezpečným odpadem v nemocnici, jako je fáze kontejnerů, fáze přepravy a fáze dočasného skladování až do fáze zpracování odpadu. Nedostatečné proškolení nemocničního personálu má dopad na realizaci plánování nakládání s nebezpečným zdravotnickým odpadem. Všeobecná oblastní nemocnice v Biaku na Papui nezavedla SOP pro nakládání s nebezpečným odpadem v nemocnici. Nemocnice potřebuje adekvátní strategii pro nakládání s nemocničním nebezpečným zdravotnickým odpadem, která může výrazně pomoci snížit škodlivé účinky nemocničního odpadu.*

**Klíčová slova:** *nebezpečný odpad, nemocnice, management*