

ENVIRONMENTAL HEALTH-BASED MEDICAL WASTE MANAGEMENT: IMPLEMENTATION OF LOCAL GOVERNMENT RESPONSIBILITIES IN CENTRAL JAVA

^aAnggraeni Endah Kusumanigrum,^b Rohmad Pujiyanto

ABSTRACT

Purpose: Medical waste, generated by hospitals, clinics, and other healthcare facilities, has the potential for harm if not managed properly. The responsibility of the Central Java local government in managing medical waste is the main focus in this study. This study aims to determine the extent of the implementation of local government obligations in Central Java in carrying out their obligations to manage medical waste in maintaining environmental health.

Methods/design/approach: This research uses descriptive analysis methods and case studies, by collecting data from primary and secondary sources, such as government policies, regulations, and medical waste management practices.

Results: The results showed that the Central Java regional government has taken significant steps in an effort to manage medical waste by taking into account environmental health principles. They have issued regulations governing the collection, treatment, and disposal of medical waste, as well as providing guidelines to health facilities in the implementation of safe medical waste management practices. However, the study also revealed a number of challenges in implementing local government responsibilities. Some hospitals and clinics may still not fully comply with existing regulations, and medical waste management infrastructure may need to be improved in some areas.

Conclusion: Environmental health-based medical waste management is a crucial aspect in maintaining public health and environmental sustainability in Central Java. Local governments have taken significant steps, but there are still challenges that need to be overcome. With further efforts in improving infrastructure, awareness, and supervision, it is expected that medical waste management in Central Java will become more effective, safe, and sustainable. It will support public health and contribute to the sustainable development goals in Central Java.

Keywords: medical waste management, environmental health, government responsibility, local government.

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^a Doctor in Law, Associate Professor, Faculty of Law, Universitas 17 Agustus 1945 Semarang, Indonesia,
E-mail: anggraeni@untagsmg.ac.id, Orcid: <https://orcid.org/0000-0001-7118-0406>

^b Doctor in Law, Doctoral Program Students, Faculty of Law, Universitas 17 Agustus 1945 Semarang
E-mail: rohmadpujiyanto@untagsmg.ac.id, Orcid: <https://orcid.org/0000-0002-7717-2877>



GESTÃO DE RESÍDUOS DE SERVIÇOS MÉDICOS BASEADA EM SAÚDE AMBIENTAL: IMPLEMENTAÇÃO DE RESPONSABILIDADES DO GOVERNO LOCAL EM JAVA CENTRAL

RESUMO

Objetivo: Os resíduos médicos, gerados por hospitais, clínicas e outras instalações de saúde, têm o potencial de causar danos se não forem gerenciados adequadamente. A responsabilidade do governo local de Java Central na gestão de resíduos de serviços de saúde é o foco principal deste estudo. Este estudo tem como objetivo determinar a extensão da implementação das obrigações do governo local em Java Central no cumprimento de suas obrigações de gerenciamento de resíduos hospitalares na manutenção da saúde ambiental.

Métodos/desenho/abordagem: Esta pesquisa utiliza o tipo de pesquisa jurídica empírica, Pesquisa jurídica empírica é a pesquisa ou observação no campo ou pesquisa de campo cuja pesquisa se concentra na coleta de dados empíricos no campo Esta pesquisa utiliza métodos de análise descritiva e estudos de caso, por meio da coleta de dados de fontes primárias e secundárias, tais como políticas governamentais, regulamentações e práticas de gerenciamento de resíduos de serviços de saúde.

Resultados: Os resultados mostraram que o governo regional de Java Central tomou medidas significativas em um esforço para gerenciar resíduos hospitalares levando em consideração os princípios de saúde ambiental. Eles emitiram regulamentos que regem a coleta, tratamento e descarte de resíduos médicos, bem como fornecem orientações às instituições de saúde na implementação de práticas seguras de gerenciamento de resíduos médicos. No entanto, o estudo também revelou uma série de desafios na implementação das responsabilidades do governo local. Alguns hospitais e clínicas podem ainda não cumprir totalmente os regulamentos existentes, e a infraestrutura de gerenciamento de resíduos médicos pode precisar ser melhorada em algumas áreas.

Conclusão: A gestão de resíduos médicos baseada na saúde ambiental é um aspecto crucial na manutenção da saúde pública e da sustentabilidade ambiental em Java Central. Os governos locais deram passos significativos, mas ainda há desafios que precisam ser superados. Com mais esforços para melhorar a infraestrutura, conscientização e supervisão, espera-se que o gerenciamento de resíduos médicos em Java Central se torne mais eficaz, seguro e sustentável. Apoiará a saúde pública e contribuirá para os objetivos de desenvolvimento sustentável em Java Central.

Palavras-chave: gestão de resíduos de serviços de saúde, saúde ambiental, responsabilidade governamental, governo local.

1 INTRODUCTION

Attention to medical waste management is increasing along with global issues, such as climate change and increasing awareness of the importance of protecting the environment. Central Java, as part of Indonesia, contributes to global responsibility in reducing the environmental impact of medical waste management. Therefore, improving sustainable medical waste management practices is also part of Indonesia's commitment in achieving sustainable development goals.

Medical waste management is a critical issue in maintaining public health and



environmental sustainability in Central Java, Indonesia. Central Java has one of the highest population density provinces in Indonesia, and the rapid growth of the health sector in the region has significantly increased medical waste production. Medical waste is of various types, including syringes, expired drugs, infectious materials, hazardous chemicals, as well as medical solid waste, and all of them have potential hazards if not managed properly.

However, medical waste management in Central Java does not always reach adequate standards. Some of the problems that often arise involve a lack of adequate understanding of safe medical waste management practices, limited infrastructure that supports medical waste management, as well as low levels of compliance with existing regulations. The impact of this inability to manage medical waste can include environmental pollution, potential disease transmission, as well as risks to the health of medical staff and the general public.

The local government of Central Java has a major role in carrying out its responsibilities in managing environmental health-based medical waste. They need to develop effective policies and regulations, provide guidelines and training to health facilities, and monitor and evaluate the implementation of medical waste management across the province. In addition, strong collaboration between governments, health facilities, and communities is also required to achieve the goal of successful medical waste management.

Therefore, research on the implementation of local government responsibilities in environmental health-based medical waste management in Central Java is very important. With a better understanding of the efforts made, obstacles faced, and recommendations for improvement, it can assist the government and other stakeholders in improving more effective and safe medical waste management practices in the province. This will not only support public health, but will also support the achievement of sustainable development goals that emphasize the importance of balancing quality health care and environmental sustainability.

2 THEORETICAL FRAMEWORK

2.1 MEDICAL WASTE

Waste (refuse) is a part of something that is not used, disliked or something that must be disposed of, which generally comes from activities carried out by humans



(including industrial activities), but which is not biological (because human waste is not included in it) and is generally solid (because used water is not included in it)[1]. Medical waste is waste that comes from medical services, dental care, veterinary, pharmaceutical or the like, as well as waste generated in hospitals when carrying out treatment / treatment or research.

B3 waste is waste from health service activities that are no longer used. B3 waste tends to be infectious and toxic chemicals that can affect human health, worsening environmental sustainability if not managed properly. Puskesmas B3 waste is all waste generated from Puskesmas activities in solid and liquid form.

Waste that belongs to the group of infectious waste, namely:

1. Blood and body fluids,
2. Laboratory waste of an infectious nature,
3. Waste originating from isolation activities, and
4. Waste derived from activities that use test animals.

Sharp object waste is waste that can puncture and can cause injuries and has been in contact with patients (contaminated with blood). The following are included with sharp waste, namely: hypodermal needles, intravenous needles, pasteur pipettes, knives, glass.

Waste generated from health care facilities includes solid waste, liquid waste, and gaseous waste, which includes waste:

- a. Infectious characteristics;
- b. Sharps;
- c. Pathological;
- d. Expired chemicals, spills, or packaging residues;
- e. Radioactive;
- f. Pharmacy;
- g. Cytotoxic;
- h. Medical equipment that has a high heavy metal content; and
- i. Gas cylinders or pressurized containers.

Waste from health care facilities contains microorganisms that have the potential to endanger health facility service patients, staff and the general public. Another potential danger is microorganisms that are resistant to drugs and spread into the environment. In addition, waste treatment and disposal can pose indirect health risks through the release of pathogens and toxic pollutants into the environment. The things that are risky during



waste treatment and disposal include;

1. Disposal of untreated health care waste in landfills can lead to contamination of drinking, surface, and groundwater if they are not properly constructed.
2. Treatment of healthcare waste with chemical disinfectants can result in the release of chemicals into the environment if they are not handled, stored and disposed of in an environmentally friendly manner.
3. Inappropriate combustion of incineration materials results in the release of pollutants into the air and forms ash residues. When burned materials contain or are treated with chlorine can produce dioxins and furans, which are carcinogens for humans Incineration of heavy metals or materials with high metal content (especially lead, mercury and cadmium) can cause the spread of toxic metals in the environment.

Health services in addition to seeking cure, are also depots for various kinds of diseases originating from sufferers and from visitors with career status. This disease germ can live and develop in the environment of health facilities, such as air, water, floors, food and objects of medical and non-medical equipment. From the environment, germs can get to the workforce, new sufferers. This is called a nosocomial infection.

Proper management in the stages of collection, separation, storage, transport and treatment of waste must be carried out appropriately and safely to prevent hospital nosocomial infections. Diseases such as hepatitis B, hepatitis C and AIDS also deserve concern regarding proper hospital waste management. People involved in medical waste management are at risk, while performing this type of hospital service. This can be prevented by public awareness of the dangers of hospital waste.

2.2 THE CONCEPT OF LOCAL GOVERNMENT RESPONSIBILITY

The concept of the welfare state as a modern concept of the state has given greater power to the government to act.[1] One of the important tasks carried out by the Unitary State of the Republic of Indonesia is to protect and create general welfare for its people. In that order, the State has the obligation to facilitate the fulfillment of all rights of every citizen. As a state that aims to promote general welfare, the inherent function of advancing general welfare has several consequences for the administration of government, namely the government must play an active role in interfering in the socio-economic life of the



community. For this reason, the government is delegated the responsibility to carry out the public mission.

Government authority is closely related to the principle of legality, the principle of legality determines that all provisions binding on citizens must be based on law. This principle of legality is the principle of the rule of law that presses on government based on law. In other words, every administration of state and government must have legitimacy, that is, the authority possessed by this government must come from laws and regulations. Thus the substance of the principle of legality is authority[2]

The guarantee of obtaining a healthy environment is a basic right that must be given to every individual, because a healthy environment is a prerequisite for well-being, a good quality of life, and the survival of future generations. By maintaining and improving the quality of the environment, we are able to create a healthier, more productive, and more sustainable society. Article 17 paragraph (3) of the Constitution of the Republic of Indonesia Year 1945 mandates that everyone has the right to live a prosperous life physically and mentally, to reside, and to get a good and healthy living environment and the right to health services.

The importance of the government's role in advancing the general welfare reflects the State's commitment to creating a just and prosperous society, as well as to ensuring that all citizens can enjoy their fundamental rights. In this context, the government has a great responsibility in carrying out the public mission to improve the quality of life of the community as a whole.

According to Andi Hamzah, it is stated that responsibility is a must for a person or state to carry out properly what has been required of him[3]. State responsibility or state responsibility is contained in two terms that must receive attention, namely responsibility and liability. These two terms are often used ambiguously or treated to refer to the same intent. According to Goldie, the difference between the two terms is that the term responsibility is used for duty, or indicates the standard of fulfillment of a social role set by a certain legal system, while liability is used to refer to the consequences of a mistake or failure to carry out an obligation or to meet a certain standard that has been set[4].

In general, the definition of Government Responsibility is the obligation of legal arrangement (compulsory compliance) from the state or government or government officials or other officials who carry out government functions as a result of an objection,



lawsuit, judicial review, filed by a person, community, civil law entity either through court settlement or outside the court for fulfillment in the form of: (a) payment of a sum of money (subsidies, compensation, alimony, etc.); (b) issue or cancel/revoke a decree or regulation, and (c) other measures that constitute the fulfillment of its obligations, for example to carry out more effective and efficient supervision, prevent harm to humans and the environment, protect citizens' property, manage and maintain public facilities and infrastructure, impose sanctions for a violation and so on. [5]

The existence of this principle of government responsibility actually provides sufficient space for the emergence of community participation which is needed by a democratic government. By implementing the principle of government responsibility consistently and consequently, it will actually increase the authority and dignity of the government in the eyes of its people, because if the government is willing to uphold the principle of responsibility of this government, at least several important things will be achieved, namely: (a) upholding the principles of the rule of law, rule of law, rule of law and equality before the law in the administration of government, because the government also turns out to respect and obey the law; (b) considering that in general Indonesian society still adheres to a paternalistic culture, the existence of this principle of government responsibility encourages the emergence of voluntary public legal awareness (voluntary compliance); (c) strengthening reform commitments to realize good governance in line with strengthening civil society; (d) to strengthen the principle of government responsibility in order to ensure legal certainty, justice and legal protection, it is necessary to consider forming a law on State Responsibility or Government Responsibility and a law on National Compensation.

The principle of "responsible government" is distinguished in its meaning from the principle of "responsible government." The responsibility of this government is measured from the level of validity of government actions (*bestuurhandeling*), both from the validity of the law (*rechtmatigheids*), the validity of the law (*wetmatigheids*), as well as in terms of the validity of the purpose or intent (*doelmatigheids*) and how the legal responsibility is

2.3 ENVIRONMENTAL HEALTH

According to the World Health Organization (WHO), environmental health is an ecological balance that must exist between humans and the environment in order to ensure



the healthy state of humans. The Association of Environmental Health Experts (HAKLI) defines environmental health as an environmental condition that is able to support a dynamic ecological balance between humans and their environment to support the achievement of a healthy and happy quality of human life[6]. Environmental health is an important factor in social life, even one of the determinants or determinants in the welfare of the population. Where a healthy environment is needed not only to improve the degree of public health, but also for the comfort of life and increase work and learning efficiency.

The role of the Environment in causing disease: a. Environment as a predisposing factor (predisposing factor) b. Environment as a cause of disease (Direct cause of disease) c. Environment as a medium of disease transmission (As an intermediary of disease transmission) d. Environment as a factor influencing the course of a disease (Supporting factors) Environmental health can be seen from various aspects, depending on the cardinal points that want to start. Environmental health from "frame-work" through the concept of an ecological approach is known as "the nature of man environment relationship", but for this approach environmental health is seen as a collection of health programs and activities in the framework of human efforts through technology to create a health condition. With the advancement of science in the field of the environment, we emphasize the system more on the meaning of interaction between elements in it.

Environmental health goals are divided into specific goals and general goals. General health goals are as follows[6] : a. make corrections or improvements to all hazards and threats to the health and well-being of human life. b. carry out prevention efforts by regulating environmental resources in an effort to improve the degree of health and welfare of human life. c. cooperate and implement integrated programs among the community and government institutions and non-government institutions in dealing with natural disasters or infectious disease outbreaks.

Environmental health objectives specifically include efforts to improve or control the human environment, which include the following[6]: a. provision of sufficient clean water and meet health requirements. b. food and beverages produced on a large scale and widely consumed by the community. c. air pollution due to the residual combustion of fuel, coal, hurtan fires, and toxic gases that are harmful to health and other living things and cause changes in the ecosystem. d. liquid and solid waste originating from households, agriculture, animal husbandry, industry, hospitals, etc.\ e. control of arthropada and rodents that are vectors of disease and how to break the chain of disease



transmission. f. housing and buildings livable and meet health requirements. g. noise, radiation and occupational health. h. sanitation survey for planning, monitoring, and evaluation of environmental health programs.

3 METHOD

This study uses empirical juridical research type. Empirical juridical research which in other words is a type of sociological research and can be mentioned by field research, which examines the applicable legal provisions and those that have occurred in people's lives.[7] Empirical legal research is research or observation in the field or field research that focuses on collecting empirical data in the field[8].

Analysis carried out in the field on a / every problem found has a qualitative nature that from a search or research that produces descriptive data that is written or oral from individuals and behavior. With a juridical-empirical research approach, it is legal research on the application or implementation of normative legal provisions directly on any particular legal event that occurs in society.[9]

4 DISCUSSION

4.1 LEGAL REGULATION OF LOCAL GOVERNMENT RESPONSIBILITY FOR ENVIRONMENTAL HEALTH

Local governments have a very important role in carrying out their responsibilities towards environmental health. A strong legal basis guides their steps in maintaining and improving the quality of the environment. These responsibilities include the protection and prevention of pollution, sustainable management of natural resources, and improving community welfare. Law of the Republic of Indonesia Number 18 of 2008 concerning Waste Management Article 3 mandates that waste management is carried out based on the principle of responsibility, the principle of sustainability, the principle of benefit, the principle of justice, the principle of awareness, the principle of togetherness, the principle of safety, the principle of security, and the principle of economic value. Article 4 Waste management aims to improve public health and environmental quality and make waste a resource.

The responsibility of local governments in waste management to maintain environmental health is regulated in Article 5 of Law of the Republic of Indonesia Number 18 of 2008 concerning Waste Management, the Government and local



governments are tasked with ensuring the implementation of good and environmentally sound waste management in accordance with the objectives as referred to in this Law. Responsibility in the sense of responsibility can also be interpreted as the obligation to correct mistakes that have occurred. According to the Big Dictionary Indonesian responsibility in the sense of responsibility can be interpreted as being obliged to bear everything, if anything happens it can be blamed, prosecuted, and threatened with punishment by law enforcement in front of the court, receiving the burden due to one's own actions or others. According to the Big Dictionary Indonesian responsibility in the sense of liability can also mean bearing all losses that occur due to his actions or the actions of others who act for and on his behalf. Liability can be interpreted as the obligation to pay compensation suffered[10].

Article 8 of Law Number 18 of 2008 concerning Waste Management, Local Governments are authorized to regulate environmental protection and management as well as waste management. Local governments have legal authority to regulate aspects of environmental protection and management, including waste management and handling. Within the framework of their authority, they are responsible for formulating appropriate policies and regulations to maintain environmental quality and ensure that waste management is carried out efficiently, safely, and environmentally friendly.

According to the PPLH Law, Article 1 number 21 states that hazardous and toxic substances hereinafter abbreviated as B3 are substances, energy, and/or other components which, due to the nature of the concentration, and/or amount, either directly or indirectly, can pollute and/or damage the environment, and/or endanger the environment, health, and survival of humans and other living things. In Article 1 number 22 it is stated that hazardous and toxic waste, hereinafter referred to as B3 waste, is the remainder of a business and / or activity containing B3. B3 waste is very harmful to the environment, so proper management must be done so that environmental sustainability can be achieved. Regarding B3 waste management, Article 1 number 23 of the PPLH Law states in essence that B3 waste management is an activity that includes reducing, storing, collecting, transporting, utilizing, processing and/or landfilling.

4.2 MEDICAL WASTE MANAGEMENT POLICY BY THE CENTRAL JAVA REGIONAL GOVERNMENT TO MAINTAIN ENVIRONMENTAL HEALTH

One sector that produces hazardous and toxic waste is the health sector, which



includes hospitals. Hospitals serve as health facilities, healing sites, educational institutions for health workers, and research centers. Health service activities carried out in hospitals include treatment of patients and recovery from poor health conditions, both physically and mentally. The number of health facilities in Central Java based on their classification consists of 288 hospitals, 13 Maternity Hospitals/Maternity Homes, 1198 Polyclinics/Medical Centers, 879 Puskesmas, 879 auxiliary health centers, 2358 pharmacies.[11]

Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management Article 63 (2) mandates that in the nature of environmental protection and management, the provincial government has the duty and authority: a. establish provincial-level policies; b. establish and implement provincial KLHS; c. establish and implement policies regarding provincial RPPLH. Waste management efforts of hospitals and other health facilities have been prepared by providing software in the form of regulations, guidelines and policies that regulate the management and improvement of health in hospitals and other health facilities. In Central Java management and control. The Government of Central Java issued a policy as a follow-up to the provisions of Article 63 paragraph (3) of Law Number 32 of 2009 concerning Environmental Protection and Management as amended by Law Number 6 of 2023 concerning the Stipulation of Government Regulations in Lieu of Law Number 2 of 2022 concerning Job Creation into Law and Article 8 of Law Number 18 of 2008 concerning Waste Management, The Regional Government is authorized to regulate environmental protection and management as well as waste management, the Regional Government issued Regional Regulation of Central Java Province Number 4 of 20 23concerning Environmental Protection and Management.

Article 2 of the Regional Regulation of Central Java Province Number 4 of 20 23 concerning Environmental Protection and Management Environmental Protection and Management aims to:

1. protect the Regional area from pollution and/or environmental damage;
2. ensuring the survival of living things and the preservation of ecosystems;
3. maintain the preservation of environmental functions;
4. achieve environmental harmony, harmony and balance;
5. ensure the fulfillment of justice for present and future generations;



6. ensure the fulfillment and protection of the right to the environment as part of human rights;
7. control the wise use of natural resources;
8. realizing sustainable development; and
9. anticipating global environmental issues.

Hazardous and Toxic (B3) waste management is an integral part of efforts to protect and protect the environment, as stipulated in Law Number 32 of 2009 concerning Environmental Protection and Management (PPLH). Policies related to B3 waste management are outlined in more detail in Government Regulation Number 101 of 2014 concerning Management of Hazardous and Toxic Waste.

According to the provisions contained in Government Regulation Number 14 of 2014, B3 waste is a material in the form of substances, energy, and/or other components which, due to their nature, concentration, and/or amount, either directly or indirectly, have the potential to pollute or damage the environment, and can endanger human health and the survival of other living things. The variety of B3 waste produced by the parties who produce the waste then undergoes a series of stages in waste management. B3 waste management activities include various aspects, such as waste reduction, safe storage, collection, appropriate transportation, utilization where possible, treatment processes, and safe landfill.

The importance of B3 waste management is to minimize the risk of environmental pollution, protect human health, and maintain ecosystem sustainability. With the provisions and guidelines stipulated in applicable legal regulations, B3 waste management must be carried out carefully and controlled to prevent the negative impacts it can cause on the environment and humans. Activities that occur in hospitals and other health facilities produce various types of waste, including liquid waste, solid waste, and gaseous waste. In addition, hospital operational processes can also affect social, cultural, and technological aspects used in health efforts. Some types of waste generated by hospitals, such as viruses and germs that come from virology and microbiology laboratories, have potential hazards and are difficult to detect with existing equipment.

There are various types of hospital waste, namely non-medical solid waste, medical solid waste, liquid waste, and gas waste. These wastes consist of non-infectious waste, infectious waste, toxic and hazardous chemicals, and some are radioactive so they require treatment before being discharged into the environment. Article 9 of the



Indonesian Reublik Law Number 44 of 2009 states that waste management in hospitals is carried out including the management of solid, liquid, infectious gaseous materials, toxic chemicals and some radioactive, which are treated separately.

According to Asmadi, the classification of hazardous waste originating from health services includes, among others:[12]:

1. Inspheixius waste is waste that is suspected to contain pathogenic materials (bacteria, viruses, parasites or fungi) in concentrations or quantities sufficient to cause disease in susceptible hosts.
2. Pathological waste consists of tissues, organs, body parts, human fetuses and animal carcasses, blood and body fluids (anatomical waste) or subcategories of infection waste.
3. Sharps Waste Sharp objects are materials that can cause injuries (either iris or puncture wounds), including needles, syringes, scalpels and other types of daggers, knives, infuse equipment, saws, broken glass and nails. Whether contaminated or not, such objects are usually viewed as highly hazardous healthcare waste.
4. Pharmaceutical waste Pharmaceutical waste includes pharmaceutical products, medicines, vaccines and serums that have expired, not used, spilled and disposed of appropriately. This category also includes items that will be disposed of after being used to handle pharmaceutical products, such as bottles or boxes containing residue, gloves, masks, connecting hoses and drug ampoules.
5. Genotoxic waste Genotoxic waste is highly hazardous and is mutagenic, tetragonic or carcinogenic. This waste causes complicated problems, both within the health installation area itself and after disposal so that it requires special attention.
6. Waste Containing Heavy Metals Waste containing heavy loam in high concentrations belongs to the subcategory of hazardous chemical waste and is usually very toxic. An example is mercury waste that comes from leaking faulty medical equipment (e.g., thermometers, and blood pressure gauges).
7. Pressurized Packaging Waste Various types of gases are used in activities in health installations and are often packaged in tubes, cartridges, and aerosol cans. Many of them are so empty and unused they can be reused but there are some types that must be disposed of, such as aerosol cans.



8. Radioactive waste Radioactive waste includes solid, liquid and gaseous objects contaminated with radionuclides. This waste is formed as a result of the implementation of procedures such as in-vitro analysis of tissues and body fluids, organ imaging and in-vivo localization of tumors, and various other types of investigative and therapeutic methods.

Waste is waste whose presence at a certain time and place is not desired by the environment because it has no economic value. Waste containing pollutants that have toxic and hazardous properties is known as B-3 waste, which is expressed as a relatively small amount of material but has the potential to damage the environment and resources[13]. Efforts to reduce B3 waste at the source by replacing mercury thermometers with digital thermometers used in the lab. This is done by the sick and other health facilities to avoid the use of B3 waste. This is in accordance with Minister of Environment and Forestry Regulation No. 56 of 2015. Errors in the container of B3 and Non B3 waste and mixing drug/pharmaceutical waste with Non B3 waste are not in accordance with Minister of Environment and Forestry Regulation No. 56 of 2015. The obstacle that exists is the lack of awareness of officers in disposing of waste according to its category. Therefore, it is important to manage the waste generated by hospitals very carefully and comply with existing guidelines and regulations, in order to reduce the risk of negative impacts on human health and the environment.

Some hospitals and health facilities currently do not comply with regulations set by the Government related to the medical waste management process. Regulations regarding medical waste management have been explained in Government Regulation Number 101 of 2014 concerning Management of Hazardous and Toxic Waste. In order to carry out the medical waste management process in accordance with the provisions of the regulation, the Government, Provincial Regional Governments, and District/City Governments supervise various parties, both those who have legal entities and those who do not have legal entities. These parties include those who produce hazardous and toxic (B3) waste, waste collectors, transporters, utilizers, processors, and/or landfillers of B3 waste, as well as individuals who dump B3 waste.

Hospitals and other health installations have an "obligation to maintain" the environment and public health, and have specific responsibilities relating to the waste generated by such plants. The obligations carried by these installations include the obligation to ensure that the handling, processing and disposal of waste they carry out



will not cause adverse impacts on health and the environment. By implementing policies on healthcare waste management, medical facilities and research institutions are getting closer to meeting the goal of creating a healthy and safe environment for their employees and surrounding communities. [14]

Sewage treatment of hospitals and other health installations can be done in various ways. The priority is sterilization, which is in the form of reduction (reduce) in volume, reuse (reuse) with sterilization first, recycling (recycle) and processing (treatment)[15]. As a producer of medical waste classified as B3 waste, houses and other health installations are also responsible for guaranteeing the protection of hazardous and toxic waste management personnel, as mentioned in annex VII of the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.56 / Memlhk-Setjen / 2015 concerning Procedures and Technical Requirements for Management of Toxic and Hazardous Waste from Facilities Service.

Director of Environmental Health of the Directorate General of Public Health of the Ministry of Health Imran Agus Nurali said the management of medical waste from health facilities still has many problems. Especially in its management. Because there are still few places for medical waste management and the capacity is also limited[16] According to him, the limited waste management services are the cause of the large amount of unmanaged medical waste. Therefore, his party together with the Ministry of Environment and Forestry encourages the provincial government and local government to carry out area-based medical waste management in collaboration with private parties.[16] Sukoharjo Regency is the only area in Central Java (Central Java) that has a medical waste dump. Management is fully handled by the private sector with a disposal site in Kayuapak Village, Polokarto District.

Public health experts generally agree that the quality of environmental health is one of the four factors that affect human health according to H.L. Blum which is the factor that contributes the most to the achievement of health degrees. Indeed, not always the environment is a causative factor, but also as a support, transmission medium and aggravate existing diseases[17]. According to Blum in Notoatmodjo, the degree of health of a person or community is influenced by four factors, namely behavior, environment, health services and heredity[18]. The results of research in developed countries, among these factors, that have the largest contribution to health status is the environment[19].

Roscoe Pound said law *as a tool of social engineering* means that law is a tool to



implement social change in society[20]. Thus, steps are needed to ensure that the laws and regulations that have been prepared and determined can run in the community. Regional Regulation of Central Java Province Number 4 of 2023 concerning Environmental Protection and Management in an effort to protect the environment also applies the Criminal Provisions contained in Article 166 (1) Any person who violates the provisions of Article 23 paragraph (1), Article 24 paragraph (1), Article 121 paragraph (1), Article 127 shall be punished with a maximum imprisonment of 6 (six) months and a maximum fine of Rp. 50,000,000, 00 (fifty million rupiah). (2) A criminal offence as referred to in sub-article (1) shall constitute an offence. Article 167 (1) Every Business and/or Activity that pollutes and/or damages the environment as stipulated in the PPLH Law shall be threatened with criminal provisions as stipulated in the PPLH Law. (2) A criminal offence as referred to in sub-article (1) shall be a crime.

These provisions certainly do not sabnding with the health threats that will be posed by medical waste that is not managed properly so that strict law enforcement is needed to prevent violations. Therefore, local regulations related to medical waste management need to be included regarding sanctions for all forms of violations that are not in accordance with the regulations that have been outlined. It is necessary to establish sanctions against parties who do not comply with the provisions of medical waste management. The determination of sanctions aims to make the community comply with regulations so that they can ensure environmental preservation.

5 CONCLUSION

Legal arrangements governing local governments' responsibility for environmental health are key elements in maintaining environmental sustainability and community welfare. These legal principles form the basis for local governments to manage and protect the natural environment as well as public health. Local governments have the responsibility to formulate, implement, and enforce regulations that ensure that economic, social, and environmental activities go hand in hand. Through appropriate regulation, local governments can mitigate negative impacts on the environment, promote sustainable practices, and protect public health.

Medical waste management policies implemented by the Central Java regional government have an important role in maintaining environmental health. Through this policy, local governments have taken significant steps to ensure that medical waste is



managed safely and sustainably. This includes the issuance of rules, guidelines, and regulations governing the collection, treatment, and disposal of medical waste. Challenges related to infrastructure, awareness, and compliance levels remain. Medical waste management infrastructure needs to be improved. Awareness of the importance of medical waste management needs to be increased, and education and training programs need to be expanded. In addition, supervision of compliance needs to be tightened. With further action and strong collaboration between local governments, health facilities, and communities, it is hoped that environmental health-based medical waste management in Central Java will become more effective. It will support public health and make a significant contribution to the goals of maintaining environmental health, community welfare, and sustainable development in Central Java.



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