LEGAL RESPONSIBILITY OF B3 WASTE MANAGEMENT TOWARDS INDUSTRIAL ACTIVITIES FOR ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

The management of hazardous and toxic (B3) waste from industrial activities is a fundamental aspect in maintaining environmental sustainability. B3 waste has a high potential hazard to ecosystems and human health if not managed properly, it will result in environmental damage. This research aims to analyse the normative juridical aspects of B3 waste management as a form of protection for environmental sustainability. The research method used is a normative juridical approach by examining various laws, policies, and legal documents related to hazardous waste management. The results of the research on law enforcement on the management of B3 waste from industrial activities must be carried out in a consistent manner considering this is to sustainably preserve the environment..

Keywords: *Responsibility, Management; Hazardous Waste; Industry; Sustainability; Environment.*

1. INTRODUCTION

Development that takes into account environmental sustainability is a development approach that integrates the principles of environmental protection in the entire development process. Development with regard to environmental sustainability creates harmony between economic progress, social welfare, and environmental sustainability. Development is a deliberate effort to manage and utilise natural resources with the aim of increasing the prosperity of society. Development does not only aim to achieve material prosperity, but also to fulfil people's inner needs and satisfaction. In this context, development refers not only to economic growth, but also to the improvement of overall welfare and happiness. In sustainable development, natural resources are managed wisely to ensure that the needs of present generations are met without compromising the ability of future generations to fulfil their own needs. This means that development must be carried out with due regard to the balance between economic, social and environmental interests.

The development and utilisation of natural resources must be in harmony, accord and balance with environmental functions. This means that every step in the development process must consider its impact on the ecosystem and the overall balance of nature. Harmony with the environment means that development activities

should be geared towards respecting and maintaining the integrity of nature. This includes preserving natural habitats, maintaining biodiversity, and repairing damaged ecosystems. Compatibility with the environment also emphasises the importance of wise use of natural resources. This means that management should be based on the principles of conservation and sustainability, ensuring that natural resources used today do not compromise the ability of future generations to meet their needs. Balance with the environment includes the understanding that every development action has consequences for the environment. Therefore, it is necessary to conduct careful environmental impact evaluations and continuous monitoring of development projects to ensure that negative impacts on the environment are minimised as far as possible. In order to achieve harmony, compatibility and balance with the environment, collaboration between the government, the community and the private sector is essential. This involves the application of strict regulations, development of environmentally friendly technologies, community involvement in decision- making, and education about the importance of environmental conservation (Setiyono, 2001).

Increasing development in an effort to improve the welfare of life is often accompanied by the risk of environmental pollution and damage. The negative impacts of development activities, such as industry, intensive agriculture, and rapid urbanisation, can cause serious disruptions to the basic structure and function of life-sustaining ecosystems. The rapid emergence of industry creates an ever-increasing amount of industrial waste. Industrial waste consists of a wide variety of materials generated as by-products of the production process. Solid, liquid, gaseous and hazardous wastes from industry have the potential to pollute the environment if not managed properly. Solid waste can include materials such as metals, plastics, and toxic chemicals. Liquid waste often contains hazardous or toxic substances that can contaminate groundwater and rivers. Gaseous waste can include emissions of air pollutants that negatively impact human health and the environment as a whole.

Hazardous and Toxic Substances, or abbreviated as B3, are substances, energy, or other components that have certain properties, concentrations, or quantities that can cause pollution or damage to the environment (Elvania, 2022) . Hazardous waste can endanger the environment, human health, and the survival of other living things either directly or indirectly. When B3 industrial products are released into the environment directly, they have the potential to pollute or damage the environment. Hazardous waste can be in the form of toxic chemical compounds, hazardous solid waste, or even radiation that can harm living organisms. The impacts of hazardous waste can range from water and air pollution to damage to ecosystems and human health. Some examples of hazardous materials include toxic chemicals such as pesticides, hazardous industrial waste such as heavy metals, and radioactive materials such as nuclear waste (Kurniawan, 2019) .

Hazardous and toxic waste management is a step that must be strictly regulated by the Indonesian government, not only for large industries but also for medium and micro enterprises. Waste generated from various industrial activities, especially those containing hazardous and toxic materials (B3), must be managed by taking into account its pollutant content. These steps are important to create a balance between the smooth operation of the industry and the sustainability of a healthy and

sustainable environment. Effective hazardous waste management involves several aspects, such as waste segregation, treatment, and safe disposal. This requires clear regulations and strict law enforcement from the government. Establishment of hazardous waste management standards that include procedures to be followed by industries in managing their waste, as well as limitations in terms of the amount and type of waste that can be generated.

The Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. 6/2021 on the Procedures and Requirements for Hazardous and Toxic (B3) Waste Management (hereinafter Permen LH 6/2021) has established important provisions in the management of B3 waste from various sectors. It covers the procedures that companies must follow in managing their B3 waste, the standards that must be met, and other technical and administrative requirements. This regulation serves as a guide for industries to carry out their activities with due regard to the environmental impact of the waste generated. In addition, Law of the Republic of Indonesia Number 6 of 2023 on the Stipulation of Government Regulation in Lieu of Law Number 2 of 2022 on Job Creation further emphasises the regulation of waste management in the medium and micro enterprise sector (hereinafter referred to as Law 6/2023). Both regulations emphasise to ensure that hazardous and toxic waste management is conducted properly and responsibly, without compromising environmental sustainability.

The fact is that there are still companies that directly dispose of B3 waste without processing it first. This practice not only violates regulations set by the government, but also has the potential to pollute the environment and endanger human health and other living things (Fitria Yuninda, 2022) . The causes of this behaviour can vary, ranging from a lack of awareness of the importance of good waste management, to economic factors where companies choose to ignore the waste management process to save on production costs. In addition, lack of strict law enforcement and lack of supervision from the authorities can also be factors that exacerbate this situation. The above background is an interesting problem to be studied through a journal with the title "Juridical Aspects of Hazardous Waste Management towards Industrial Activities for Environmental Sustainability"..

2. RESEARCH METODOLOGY

The type of research used is normative juridical. Normative juridical research is a type of research conducted to analyse and understand legal regulations and applicable norms. This approach focuses on analysing legal sources, such as laws, regulations, court decisions, and other legal documents (Soekanto, 1996) . This research aims to understand, interpret, and apply the applicable legal regulations in a particular context. Normative juridical research involves collecting data from relevant legal sources, both primary and secondary (Soekanto, 1996) . Primary sources are directly applicable legal regulations, such as laws and government regulations. Meanwhile, secondary sources are papers, articles, books, and other studies that interpret and analyse legal regulations.

3. LITERATUR REVIEW

3.1.Literature Review on Hazardous Waste

According to the Regulation of the Minister of State for Environment No. 3 of 2008 concerning Licensing Procedures for Hazardous and Toxic Waste Management, B3 waste is the residue of a business and/or activity that contains hazardous and/or toxic materials which, due to their nature and/or concentration and/or amount, either directly or indirectly can pollute and/or damage the environment, and/or can

endanger the environment, health, human survival and other living things. B3 waste is the residue of a business and or activity that contains hazardous and or toxic materials due to its nature and or concentration and or amount, either directly or indirectly, can pollute and or damage the environment, health, human survival and other living things.

Hazardous waste management is a series of activities that include reduction, storage, collection, transportation, utilisation, management, and landfilling of hazardous waste. Hazardous waste reduction is an activity at the producer to reduce the amount and reduce the hazardous and toxic nature of hazardous waste before it is generated from an activity (PP No.101 of 2014). Hazardous waste management is an activity that generates, transports, circulates, stores, and or disposes of B3. The purpose of hazardous waste management is to prevent and overcome pollution and or environmental damage caused by hazardous waste and to restore the quality of the polluted environment so that it is in accordance with its function again.

3.2 Literature Review on the Polluter Pays Principle

The polluter pays principle is a principle that is often enunciated in international declarations that later entered into international conventions and became a principle of international environmental law. The first international instrument that refers to the polluter pays principle is the Organisation for Economic Co-operation and Development (OEDC) 1872, which is an international economic organisation established by 34 countries in 1961 that aims to stimulate economic development and world trade (Mangku & Itasari, 2015).

The body supports the polluter pays principle to allocate the costs of pollution prevention and control measures to promote rational management of environmental resources and avoid abuses in international trade and investment. The recommendation contains a definition of the polluter pays principle that obliges polluters to bear the necessary costs of measures taken by public authorities to maintain the environment in an acceptable condition or in other words that the costs of carrying out these measures should reflect the price of goods and services that have caused pollution during their production and consumption (Louka, n.d.). This principle establishes the requirement for the costs of pollution to be borne by those responsible for causing pollution. The concrete application of the polluter pays principle is the allocation of economic liabilities associated with environmentally damaging activities and specifically relates to liability, the use of economic instruments and the application of competition and subsidy regulations.

The application of the polluter pays principle in the national legal system is necessary based on the idea that the position of international law in the framework of the law as a whole is based on the assumption that a type or field of law, international law is part of the law in general. This assumption cannot be avoided if we want to see international law as a set of effective provisions and principles, which really live in reality and therefore have an effective relationship with the provisions of other fields of law, including legal provisions governing human life in each national environment known as national law.

4. RESULTS AND DISCUSSION

4.1 Regulation of Hazardous Waste Management in Positive Law in Indonesia

Every industrial process produces waste as a result of production activities. These wastes cannot be ignored because they can cause serious impacts on the environment if disposed of carelessly. The practice of indiscriminate waste disposal can result in environmental pollution that is harmful to ecosystems and human health (Nursabrina et al., 2021) . Direct disposal of waste into the environment without proper management can pollute air, water and soil. These wastes can contain hazardous and toxic materials that can poison the soil, pollute water sources, and pollute the air. In addition, industrial waste can also damage ecosystems and natural habitats for flora and fauna.

Every business, whether large or small, has the responsibility to manage hazardous waste and ensure that their industrial activities meet environmental quality standards. This is an integral part of efforts to maintain environmental sustainability in the context of responsible development. Article 49 letter f of Government Regulation of the Republic of Indonesia Number 22 of 2021 on the Implementation of Environmental Protection and Management mandates that every business activity, including industry, medium and micro enterprises, must fulfil a number of obligations related to technical approval, verification of fulfilment of environmental quality standards, hazardous waste management, and impact analysis on traffic. Article 49 letter f confirms that before a business activity can be carried out, the company must undergo a verification stage to ensure that its operations meet the quality standards that have been set to protect the environment. In addition, large, medium and micro industries must also obtain technical approval related to hazardous and toxic waste management, which shows that each large, medium and micro industry has proper procedures for managing hazardous and toxic waste. Not only that, traffic impact analyses are also an important part of this obligation. Companies must conduct a thorough assessment of how activities may affect traffic, both physically and socially. Necessary measures to mitigate negative impacts on traffic must also be considered and implemented.

Hazardous waste management is a very important step in industrial activities because this type of waste has a high potential to pollute the environment and endanger human health and ecosystems. Therefore, companies must develop an effective waste management system, including the collection, storage, transportation, and disposal of hazardous waste in accordance with applicable regulations. In addition, before starting operations, every industry must also conduct an evaluation of the potential environmental impacts that may arise from their activities. This evaluation is done to assess the risks and determine the mitigation measures needed to reduce the negative impacts. This process is known as environmental quality feasibility assessment, where industries must ensure that their activities will not significantly damage the environment.

Hazardous and toxic waste management, as stipulated in the provisions of Article 1 point 23 of Law 6/2023 on environmental approval, Paragraph 3, is a series of activities aimed at managing hazardous and toxic waste in a responsible and sustainable manner. This concept includes a number of measures directed at reducing the negative impact of waste on the environment and human health. Hazardous and toxic waste management includes reduction efforts, which refers to strategies to reduce the volume or intensity of waste generated. This can be achieved through various methods, such as improving the efficiency of production processes, implementing environmentally friendly technologies, and more prudent management practices.

In the context of storage, hazardous waste needs to be temporarily stored before being transported or further treated. This storage must meet strict safety and environmental standards to prevent leakage or contamination during the storage period. The process of collecting waste from its source is also an important part of hazardous waste management. Effective collection ensures that hazardous and toxic waste is collected in a regular and timely manner, reducing the risk of waste build-up and dispersal in the environment. Furthermore, the transport of waste to the destination site must be done carefully and in accordance with safety protocols. Hazardous waste transportation must comply with strict regulations and use specialised vehicles designed to safely transport hazardous materials. (Hamidah Pratiwi et al., 2022).

Waste utilisation is another important aspect of hazardous waste management. This process involves identifying potential reuse or recycling of waste to reduce the amount of waste generated and minimise environmental impacts. Hazardous waste treatment aims to change the nature or composition of the waste to make it safer for disposal or reuse. This could involve physical, chemical, or biological processes depending on the type of waste and its condition. When there are no other options, hazardous waste must be landfilled or processed in a safe and controlled manner. Hazardous and toxic waste landfilling requires special attention to site selection, design, and post-landfill management. Through this series of steps, hazardous waste management aims to create a cleaner, healthier, and more sustainable environment, while protecting human health and the sustainability of natural resources.

Every individual or business entity that carries out industrial activities, whether on a large, medium or small scale, has the responsibility to manage the waste produced (Anindya Dwita & Mohammad Zamroni, 2021) . This is a basic principle in an effort to protect the environment and prevent negative impacts due to industrial waste. This is regulated in the provisions of Article 59 paragraph (2) of Law Number 6 Year 2023 stipulating that the responsibility for managing Hazardous and Toxic Waste (B3) does not only lie with large companies, but also includes industries in the medium and small scale. Every individual or business entity that generates B3 waste has the obligation to conduct waste management according to its type and nature. This signifies that, regardless of the size or scale of the industry, every entity that generates hazardous waste must take the necessary steps to ensure that the waste is properly managed. Waste management should be in accordance with its characteristics, such as the type of waste, the degree of hazardousness, and its potential impact on the environment and human health. Article 59 paragraph (2) emphasises the importance of awareness and involvement of all parties in managing hazardous waste, not only by large companies with more resources, but also by small and medium industries.

The provision of Article 59 paragraph (3) confirms that the management of B3 waste must be accompanied by a business licence or approval from the Central Government or Regional Government. This provision indicates that any activity that has the potential to generate hazardous waste must be subject to a strict regulatory and supervisory process by the authorities. Business licensing or approval from the government is an important step in ensuring that hazardous waste management is

conducted responsibly and in accordance with applicable legal provisions. This process allows the government to assess and approve the waste management plan submitted by the entity in question, as well as ensure that the action will not harm the environment or the health of neighbouring communities. This licence requirement means that any activity involving hazardous waste will undergo a thorough evaluation process that considers its potential impact on the environment and human health. This is a proactive step in maintaining environmental sustainability and ensuring that the use of natural resources is in line with the principles of sustainable development.

B3 waste management licensing, as stipulated in Article 1 point 44 of PERMEN LH 6/2022, is a Technical Approval in the field of B3 Waste Management, known as PLB3 Technical Approval. This approval is a form of technical approval from the Central Government or Regional Government granted based on the standard of Hazardous Waste Management. The PLB3 Technical Approval has an important role in regulating and supervising the hazardous waste management process. Through this approval, the government can set standards and procedures that must be adhered to by interested parties in hazardous waste management activities. These standards cover various aspects, such as the reduction, storage, collection, transport, utilisation, treatment, and landfilling of hazardous waste. With the PLB3 Technical Approval, it is expected that hazardous waste management can be carried out in a safe, responsible manner, and in accordance with applicable legal provisions. The process of granting this approval also allows the government to evaluate the hazardous waste management plan submitted by related parties, so that it can be guaranteed that the activity will not endanger the environment or public health.

The above explanation provides an understanding that the Indonesian government has provided strict regulations related to hazardous waste management through the PLB3 Technical Approval. This regulation is the basis for the management of hazardous and toxic waste by various parties, including large, medium, and small-scale industries. With strict regulations, it is expected that hazardous waste management can be carried out responsibly and in accordance with established standards, so as to reduce the risk of environmental pollution and endanger public health. This shows the government's commitment in maintaining environmental sustainability as well as the safety and welfare of society as a whole.

4.2 Application of Pollution Prevention Principle and Polluter Pays Principle to Hazardous Waste Pollution by Industry

Hazardous waste management plays a crucial role in maintaining the stability of the environment to keep it safe, healthy, and sustainable. As part of social and environmental responsibility, every individual or business entity that runs industrial operations, be it on a large, medium, or small scale, has the obligation to manage the hazardous and toxic waste produced. This provision is stipulated in Article 61A letter a of Law Number 6 Year 2023. In this context, the person in charge of the business or activity involved in the production, transportation, distribution, storage, utilisation, and/or treatment of hazardous waste must take full responsibility for the environmental impacts generated by the waste. They must ensure that the hazardous waste management process is conducted in compliance with established management standards and pay attention to its impact on the environment and the health of the surrounding community.

The provision of Article 69 paragraph 1 letter a of Law 6/2023 is a very important part of the regulation of environmental issues, because it confirms the prohibition

against actions that can damage or pollute the environment. In this context, "everyone" refers to individuals, companies, organisations, or other entities that have the potential to affect the environment through their activities. This prohibition applies to any type of action that may result in pollution or destruction of the environment. (Fitriah et al., 2020) Environmental pollution can be in the form of hazardous waste carried out that results in air pollution, contamination of soil and water pollution, or destruction of natural habitats. Meanwhile, environmental destruction includes activities that result in physical or ecological damage to the environment, such as deforestation, soil degradation, or overfishing.

Enforcement of the prohibition against polluting the environment with hazardous waste is important because a healthy and sustainable environment is the right of every individual and a valuable asset for society as a whole. (Arvin Asta Nugraha et al.,2021) Compliance with this prohibition is expected to create a cleaner, healthier, and more sustainable environment for now and the future. In a legal context, violations of this prohibition may result in legal sanctions, such as fines or even criminal charges, depending on the level of violation and the applicable regulations in the region. Therefore, complying with this prohibition is not only a moral responsibility, but also a legal obligation for every individual and entity operating in the environment.

Law enforcement against environmental pollution caused by hazardous waste from large, medium, and small industries can be applied through the Pollution Prevention Principle. This principle emphasises the importance of preventing or reducing environmental pollution from the start, rather than relying solely on recovery or control efforts after pollution has occurred. In hazardous waste management, the Pollution Prevention principle puts the focus on preventive measures taken by industries to reduce or even eliminate hazardous waste before it pollutes the environment. It is a proactive approach that seeks to address the problem of pollution at its root, rather than only undertaking countermeasures after pollution has occurred. (Yoga & Sastri, 2020).

One way of implementing this principle is through the use of more environmentally friendly technologies in the production process. Industries can adopt more efficient technologies in processing raw materials into final products, resulting in less waste or even recycling. In addition, the use of advanced waste treatment technologies can also help in separating and treating hazardous waste so that its negative impact on the environment can be reduced. In addition to technology, the use of safer raw materials is also an important step in implementing the Pollution Prevention principle. Industries can choose raw materials that are more environmentally friendly and have a lower risk of pollution when processed. This can help reduce the amount of hazardous waste generated during the production process. In addition, developing production processes that produce less waste is also a relevant strategy in applying the Pollution Prevention principle. By optimising production processes and using more efficient methods, industries can reduce waste generated without compromising productivity or product quality.

The implementation of the Pollution Prevention principle not only relates to preventive measures taken by industries, but also involves strict monitoring and

supervision from the authorities. This monitoring and supervision is crucial to ensure that industries comply with established environmental standards and take responsibility for their hazardous waste management. Authorities, such as environmental agencies or environmental supervision bodies, have a crucial role in ensuring industry compliance with environmental regulations. They conduct monitoring of industrial activities, including production processes and waste management, to ensure that all activities are carried out in accordance with established standards. One of the key aspects of this monitoring is the supervision of hazardous waste management. Authorities conduct periodic inspections to check whether hazardous waste has been properly managed in accordance with established procedures. They check whether the waste has been stored, transported and treated safely and in accordance with applicable regulations.

In addition, accurate reporting of the type and amount of waste generated is also the focus of this monitoring. Industries are required to report periodically on the amount and type of hazardous waste generated during the production process. This information is important to identify potential environmental pollution risks and to plan appropriate management actions. In the event of a violation of environmental regulations, the authorities are responsible for implementing corrective actions. They may issue warnings, sanctions, or other legal actions against industries that violate hazardous waste management requirements. The aim is to ensure that industries take responsibility for the environmental impacts of their activities and to prevent environmental pollution that is detrimental to local communities and ecosystems.

The application of the "Polluter Pays Principle" to hazardous waste pollution by industry is an effort to assign financial responsibility to parties who create or cause environmental pollution (Kurnia et al., 2023) . This principle asserts that parties who pollute the environment should be held responsible for all costs associated with the pollution they produce, including clean-up costs, environmental restoration, and compensation for the damage caused (Kristiana & Mul, 2021) Here are some of the ways in which the "Polluter Pays Principle" is applied in handling hazardous waste pollution by industry: (Rangkuti, 2005)

1. Environmental Cleanup and Restoration Costs:
Industries that create hazardous waste and pollute the environment should be liable for the costs of cleaning up and restoring the resulting environment. This includes the cost of cleaning up scattered waste, restoring contaminated soil, and returning affected ecosystems to their original state.
2. Waste Management Costs:
Industries must bear the cost of managing hazardous waste generated during their production process. This includes the cost of collecting, transporting, and safely disposing of the waste in accordance with environmental regulations.
3. Compensation Costs:
Industries that cause damage to the environment or public health must pay compensation to the affected parties. This compensation can be used to repair or replace the damage caused by hazardous waste pollution.
4. Cost of Law Enforcement:
Industries that violate environmental regulations and cause hazardous waste pollution may also be subject to enforcement costs. This includes the costs of investigation, prosecution, and enforcement of environmental offences.

The implementation of the Polluter Pays Principle not only ensures financial responsibility for the negative impacts that industries have on the environment, but also incentivises industries to reduce or prevent environmental pollution altogether. Bearing all costs associated with the negative impacts they cause, industries will be

more inclined to adopt greener production practices, implement cleaner technologies, and improve waste management. The application of this principle can trigger innovation in the development of more efficient and sustainable technologies and production processes. Industries that are conscious of environmental responsibility are also likely to invest in research and development of better solutions to reduce waste and harmful emissions (Akib, 2012) . In addition, the "Polluter Pays Principle" also creates a fairer basis for dealing with environmental impacts. By shifting costs from the directly affected communities to the party responsible for the pollution, the principle removes the burden from innocent communities and encourages full accountability from industry players. Therefore, the Polluter Pays Principle is not only a tool to remedy environmental damage that has already been done, but also a means to encourage more responsible and sustainable production practices in the future.

5. CONCLUSION

The Indonesian government has established strict regulations regarding the management of hazardous and toxic waste (B3) based on Law Number 6 of 2023 and Government Regulation of the Republic of Indonesia Number 22 of 2021. These regulations include requirements such as technical approval, verification of fulfilment of environmental standards, and environmental impact analysis. This reflects a commitment to safeguarding the environment and public safety. With this regulation, it is expected that hazardous waste management can be carried out responsibly, according to standards, and reduce the risk of environmental pollution.

The application of the Pollution Prevention Principle and the Polluter Pays Principle in hazardous waste management by large, medium, and small industries is key to reducing negative impacts on the environment. Through the preventive approach of the Pollution Prevention Principle, industries can adopt environmentally-friendly technologies, select safer raw materials, and optimise production processes to produce less waste. In addition, the Polluter Pays Principle ensures that industries are responsible for the cost of clean-up, environmental restoration, and compensation for damage caused by hazardous waste. By applying these two principles, it is expected that industries can become more sustainable and responsible in hazardous waste management, thereby reducing the risk of environmental pollution and protecting public health and ecosystems.

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