




Implementation of Environmental Law in Handling Hazardous and Toxic Industrial Waste

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Article Info	Abstract
<p>Keywords: Environment, Indonesia, Preservation, Advancement, Environmental Management, Informed Development</p>	<p><i>The environment in Indonesia is regarded as a precious and divine bestowal entrusted to its people. Its preservation and advancement are imperative, as it serves as a foundation and lifeline for the populace. Upholding the principles of maintaining harmonious, purposeful, and equilibrium-driven environmental functions is pivotal in the nation's environmental management. This approach fosters informed development and aspires to enhance future generations' well-being and quality of life. The environment holds paramount significance in sustaining healthy living conditions and the continuity of life on our planet. Hosting diverse species and furnishing vital resources like sustenance, air, water, and more, demands the collective responsibility of each individual to conserve and safeguard them. The implementation of environmental law, particularly concerning hazardous and toxic industrial waste, is crucial for safeguarding human welfare and the environment. Such waste, classified as dangerous and harmful due to its potential to pollute and adversely affect ecosystems, necessitates stringent regulation. In Indonesia, the management of hazardous and toxic waste is guided by a comprehensive framework that encompasses clear regulations, ecological permits, vigilant oversight, robust legal penalties, efficient enforcement, and community involvement. The primary legal foundation is Law Number 32 of 2009, focused on Environmental Protection and Management, supplemented by Government Regulation Number 101 of 2014, which specifically addresses hazardous and toxic waste management. These legal measures are designed to ensure compliance by industrial entities, prompting responsible waste disposal to safeguard public health and the environment.</i></p> 

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INTRODUCTION

The environment is a precious gift from God Almighty to the people and nation of Indonesia. Preserving and developing the background is essential to serve as a source and life support for the community. The principle of preserving harmonious, directional, and balanced environmental functions is crucial in managing the environment in Indonesia. This approach supports insightful development and aims to improve future generations' welfare and quality of life.

The environment is vital in maintaining healthy living conditions and sustaining life on Earth. It is home to numerous species and provides essential

resources such as food, air, water, and more. Therefore, every individual is responsible for saving and protecting the environment.

Environmental protection is safeguarding the natural environment by individuals, groups, and governments. Its objectives include conserving natural resources, repairing damage, and reversing negative trends. While there may be disagreements on the extent of the environmental impact of human activity, protection measures are necessary. Environmental protection can involve voluntary agreements, government legislation, and law enforcement. However, it is ultimately the responsibility of all people, not just the government, to protect the environment. Decision-making processes that impact the environment should involve a broad range of stakeholders, including industry, indigenous groups, environmental organizations, and community representatives.

Developing large-scale businesses or industries that produce toxic waste can lead to environmental pollution and destruction, including Hazardous Toxic Substances (B3) waste. B3 waste is the residue of a business or activity containing hazardous and/or toxic materials that can pollute soil and water. B3 waste can also come from households. The management of B3 waste needs to be carried out carefully, as it can threaten the health and safety of humans and other creatures. The waste generated includes used sandblast, used accumulator, slop oil, sludge oil, asbestos water oil, used paint can, expired paint, and contaminated waste. The contribution of the electronics industry in generating hazardous & toxic material (B3) waste is around 40% of the total.

Industrial development is a field of activity that improves the standard of living and welfare of society. Industrialization is inseparable from efforts to improve the standard of human resources and the use of natural resources. With the increasing number of industries in an area, environmental problems are critical and must receive much attention. Increased industrialization has implications for ecological pollution due to the disposal of waste (liquid, solid, and gas) with increasing quantity and quality. Among the debris generated from industrial activities are hazardous and toxic wastes called B3.

Improper handling of hazardous waste generated by industries can destroy the environment and pose risks to human health. Industries' hazardous waste includes heavy metals, cyanide, pesticides, paints and dyes, oils, solvents, and other dangerous chemicals. The poor history of hazardous waste management in developed countries is an important lesson, highlighting the need for proper waste management to accompany rapid economic growth.

Improper management of hazardous waste can lead to soil and water pollution, causing environmental degradation and health risks. Dumped toxic waste is a significant concern for land and water quality, and areas with waste pollution problems often experience lower land and house prices (Exposto & Sujaya, 2021). Waste pollution can also significantly impact tourism potential, affecting landscapes, beaches, waterways, and industries such as shipping, fishing, aquaculture, and recreation.

The economic impacts of waste pollution are substantial and include lower land values, reduced tourism, wasted resources, clean-up costs, and the cost borne by the government, industries, not-for-profit groups, and communities. In addition to the environmental and economic impacts, improper waste management practices can result in air and water pollution, land degradation, methane and hazardous leachate emissions, and health impacts on workers and residents.

Industries and businesses must prioritize environmental sustainability and consider properly managing hazardous waste. Implementing measures such as capturing and using landfill gases for power generation, recovering and recycling materials, and promoting public education and awareness campaigns can help mitigate the environmental and health risks of waste pollution (Viruega Sevilla et al., 2022). A third study examined the impact of hazardous waste management on firm value of oil & gas companies in Nigeria and found that there is a financial reward in engaging in disclosure practices in the long-run (Olaniyi & Chukwu, 2022).

The urgency of handling and managing industrial B3 waste encourages the government to issue regulations on managing hazardous and toxic waste in a comprehensive, integrated, and sustainable manner. Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management regulates that every person who generates hazardous and toxic waste must carry out dangerous and harmful waste treatment activities, including reduction, storage, collection, transportation, utilization, processing, and/or landfill. If the producer of B3 waste cannot handle the waste independently, the producer can hand it over to a third party; in this case, a company providing B3 waste treatment services that handle it must meet regulations and competencies. Efforts to control impacts on the environment are primarily determined by supervision of the adherence to the provisions of laws and regulations governing environmental aspects as a preventive legal device through the licensing process for conducting businesses and or activities. Therefore, in every license issued, the

conditions and obligations that must be obeyed and implemented by the person in charge of the business and/or activity must be explicitly stated.

Based on the background, the problem formulations found are as follows: How is the implementation of environmental law in handling hazardous and toxic industrial waste? How does ecological law regulation in Indonesia regulate handling arduous and toxic industrial waste?

LITERATURE REVIEW

Definition of Environmental Law

Environmental Law is a translation of the term Environmental Law (in English), Millieu Recht (Dutch), which has the same meaning: the law regulating the environmental order around humans. Environmental Law, according to Soedjono, is a law that governs environmental order, where the environment includes all objects and conditions, including humans, and affects the survival and welfare of humans and other living bodies (Fujikura et al., 2016). Environmental law is a complex and evolving field that encompasses a wide range of legal issues related to the environment, including pollution control, natural resource management, and climate change. Several studies have explored different aspects of environmental law, such as the formulation process of diet law and cabinet law in Japan, legal risks in European environmental law and policy, and intractable problems in transnational environmental law (Etty et al., 2023).

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Two terms are known in environmental law: modern ecological law and classical environmental law. The difference between the two is that current environmental law is more environment-oriented, while classical environmental

law is more use-oriented. Modern ecological law contains norms regulating human actions to protect the environment from environmental pollution and destruction.

Another goal is for its sustainability to be guaranteed and can be used for future generations. Classical environmental law contains norms that aim to ensure the exploitation and use of existing resources as much as possible in the shortest possible time. As a subsystem or part (component) of the Indonesian national legal subsystem, Indonesian environmental law forms a system. Therefore, as a system, Indonesian environmental law has subsystems consisting of:

1. Environmental structuring law;
2. Environmental procedural law;
3. Environmental civil law;
4. Environmental criminal law;
5. International environmental law.

The five subsystems of the Indonesian environmental law system are incorporated into Law No. 4 of 1982 concerning Basic Provisions for Environmental Management (before Law No. 23 of 1997 and Law No. 32 of 2009 concerning Environmental Management).

Hazardous and Toxic Industrial Waste

Waste is waste material produced by a production process from both household (domestic) and industrial scales whose presence in a certain place is not desired by the environment because it has no economic value. Hazardous and toxic materials (B3) are defined as hazardous and/or toxic materials that due to their nature or concentration either directly or indirectly can pollute the environment or damage the environment, human health and other creatures.

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

Toxic waste is called B3 waste Based on its characteristics, industrial B3 waste can be divided into four parts, namely:

1. Liquid hazardous waste;
2. Solid hazardous waste;
3. Gaseous hazardous waste;
4. Undefined particle B3 waste.

Hazardous and Toxic Waste (B3) is waste generated by production activities which, in terms of type, concentration, and amount, contains dangerous and toxic

materials that can pollute the environment and pose a health risk. Hazardous and toxic waste has properties and characteristics that are very different from conventional waste, especially in its nature, that do not change frequently.

RESEARCH METHODS

This paper uses a literature review research method or literature study, which contains theories relevant to the paper's problems. The problem in this paper is to find out the implementation of environmental law in handling hazardous and toxic industrial waste. In this paper, an assessment is made of the concepts and theories used based on the available literature, especially from articles published in various scientific journals. The data source in this paper uses supporting data (secondary), namely data arranged and made in the form of documents.

The data sources here are scientific journals on the internet related to implementing Environmental Laws in handling hazardous and toxic industrial waste. With data collection techniques and procedures in this study using qualitative research methods. The documentation method is data collection through written documents. In this study, the data is obtained through the records collected and processed to be relevant to the research object.

RESULT

Implementation of environmental law in handling hazardous and toxic industrial waste

Several statutes and regulations in Indonesia regulate the implementation of environmental law in handling hazardous and toxic industrial waste. One is Government Regulation Number 18 of 1999 concerning Hazardous and Toxic Waste Management as amended by Government Regulation 85 of 1999. This regulation regulates the management of hazardous and toxic waste generated by industrial activities and other activities that produce dangerous and toxic waste. In addition, there is also the Minister of Environment and Forestry Regulation Number 6 of 2021 concerning Procedures and Requirements for Hazardous and Toxic Waste Management. This regulation regulates the procedures and requirements for hazardous and toxic waste management.

Implementing environmental law in handling hazardous and toxic industrial waste (B3) is very important to protect the environment and human health from the negative impacts of such waste. Here are some of the things that

must be done in the implementation of environmental law related to the handling of B3 waste:

1. Formulation of clear regulations: The government must make clear regulations regarding hazardous waste management, including rules on the treatment, storage, and disposal of hazardous waste. This needs to be done so that companies that produce dangerous waste can comply with the applicable rules.
2. Implementation of environmental permits: Companies that generate hazardous waste must obtain an environmental permit from the government. This permit will ensure the company complies with the applicable environmental rules in hazardous waste management.
3. Supervision and monitoring: The government should continuously monitor companies that generate hazardous waste to ensure they comply with the applicable rules. The government can also use advanced technology, such as drones, to monitor companies' activities more effectively.
4. Strict legal sanctions: Companies that violate environmental regulations should be subject to strict legal sanctions, such as fines or criminal charges. This will be effective in encouraging companies to comply with applicable ecological rules.
5. Effective law enforcement: The government should effectively enforce laws to ensure that companies violating environmental rules are penalized appropriately. Effective law enforcement can also deter other companies from committing similar violations.
6. Community empowerment: Communities need to be empowered to monitor the activities of companies that generate hazardous waste. This can be done by providing sufficient information on the impact of B3 waste on the environment and human health and giving training to recognize the signs of B3 waste that are not managed correctly.

In handling B3 waste, industry players must consider environmental and social aspects. By complying with existing regulations and rules and conducting regular ecological monitoring, industries can ensure that the waste produced does not pollute the environment and surrounding communities. Legal sanctions must be given if there is a violation to ensure that industry players comply with existing regulations and are responsible for the environment. The implementation of environmental law must be carried out continuously and consistently. This will be

very effective in protecting the environment and human health from the negative impacts of hazardous waste.

Environmental law regulations in Indonesia governing the handling of hazardous and toxic industrial waste

Environmental law regulations in Indonesia regulate handling hazardous and toxic (B3) industrial waste. Law No. 32/2009 on Environmental Protection and Management is the leading legal umbrella. In addition, there is also Government Regulation No. 101/2014 on Hazardous and Toxic Waste Management as a more specific regulation on handling hazardous and toxic waste.

Both regulations stipulate the obligation of business actors to meet the hazardous waste management standards set by the government, including in terms of transportation, storage, and destruction of hazardous waste. In addition, business actors must also have a business license and hazardous waste management permit from the government and report regularly on their dangerous waste management activities.

These provisions aim to prevent the negative impacts of B3 waste on the environment and public health. The government also must monitor and supervise the implementation of B3 waste management by business actors. Suppose there is a violation of environmental law regulations related to handling B3 waste. In that case, business actors may be subject to administrative or criminal sanctions, such as fines, suspension of business licenses, or even imprisonment. This aims to increase business actors' awareness and compliance with environmental law regulations so that hazardous waste handling can be carried out safely and sustainably.

Several environmental law regulations in Indonesia govern handling of hazardous and toxic industrial waste (B3). Some of the relevant laws and regulations include:

1. Law No. 32/2009 on Environmental Protection and Management regulates the protection, management, and sustainable utilization of the environment. One of the contents is the management of hazardous and toxic waste, which includes transportation, storage, treatment, and disposal of hazardous and toxic waste.
2. Government Regulation No. 101/2014 on Hazardous Waste Management This Government Regulation regulates the management of hazardous waste, which consists of waste reduction, separation and sorting, transportation, storage, processing, and destruction, as well as monitoring and reporting dangerous waste.

3. Regulation of the Minister of Environment and Forestry Number P.68/MENLHK/SETJEN/KUM.1/9/2018 on Hazardous Waste Reporting Guidelines This regulation stipulates the guidelines for hazardous waste reporting that must be carried out by companies, including regarding the type of hazardous waste generated, volume, storage location, and hazardous waste treatment.
4. Decree of the Minister of Environment and Forestry Number SK.11/MenLHK/SETJEN/KUM.1/2/2018 on Technical Requirements and Procedures for the Transportation of Hazardous Waste This decree regulates the technical requirements and procedures for the transportation of hazardous waste, including equipment, transportation procedures, and documents that must be included.
5. Law No. 23/1997 on Environmental Management Although this law has been revoked, it is still the legal basis for handling hazardous waste because it contains environmental protection and management provisions, including hazardous waste management.

With this regulation, industry players are expected to comply with rules and handle B3 waste adequately to protect the environment and public health. The government also must conduct supervision and law enforcement against violations that occur. In addition to laws and regulations, there are several policies and programs related to hazardous waste handling, such as the National Program for Hazardous Waste Management and the National Program for Clean Air Quality Improvement.

CONCLUSION

The environment includes all objects and conditions, including humans, and affects the survival and welfare of humans and other living bodies. One of the implementations of environmental law is to regulate the handling of hazardous and toxic industrial waste. Hazardous and toxic materials (B3) are dangerous and/or toxic materials that, due to their nature or concentration, can directly or indirectly, can pollute the environment or damage the environment, human health, and other creatures.

Environmental Law in handling hazardous and toxic industrial waste in Indonesia must be implemented by preparing clear regulations, ecological permits, supervision and monitoring, strict legal sanctions, effective law enforcement, and community empowerment. Environmental law regulations in Indonesia regulate

the handling of hazardous and toxic industrial waste (B3) Law Number 32 of 2009 concerning Environmental Protection and Management is the leading legal umbrella. In addition, there is also Government Regulation Number 101 of 2014 concerning Hazardous and Toxic Waste Management as a more specific regulation regarding handling hazardous and toxic waste.

Suggestion

Regarding the Implementation of Environmental Law in handling hazardous and toxic industrial waste (B3) is to implement regulations that have obvious procedures and mechanisms regarding the handling of dangerous and toxic industrial waste, which include the application of environmental permits, supervision and monitoring from authorized institutions, strict legal sanctions, effective law enforcement and community empowerment.

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