

Management of Hazardous and Toxic Waste:

A legal study of environmental health of fish and shrimp feed Industry in PT Suri Tani Pemuka Cirebon West Java Indonesia

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Abstract—Toxic and hazardous waste is leftovers as a result of industrial activities, which contain substances, energy, and / or other components which due to their nature, concentration and / or amounts can threaten, pollute, damage and / or endanger health and the environment. The threat actualization contradicts the ecologically sustainable development principle that requires the preservation of functions, and controls pollution and environmental damage. In Cirebon, PT Suri Tani Pemuka (PT STP) Fish and shrimp feed industry, management of Hazardous and Toxic Waste is carried out during the sorting process of management process. The management of the Hazardous and Toxic Waste should have been carried out since it was produced until the final stockpiling, then it became important to be studied. This research is a normative legal research, emphasizes and puts the law as a norm system, and as a supporter of in action empirical research is carried out using the socio-legal approach. Law as applied law research is legal research concerning implementation by reviewing various regulations and regulation of EIA related to the management of Hazardous and Toxic Waste. Management of Hazardous and Toxic Material Waste from PT STP, has not fully supported the achievement of the goal of increasing high public health status. There are obstacles that have the potential to hinder efforts to improve management activities in accordance with the regulations and regulations of the EIA, which are not fully understood by the community, and the cost of procuring a facility for managing hazardous and toxic waste is considered to be burdensome to the community.

Keywords—*management; Harzadous and Toxic Waste; environmental health*

I. INTRODUCTION

Industrial development that is increasingly rapid now will have a negative influence on the environment. Every industry has the potential to generate waste produced from production processes including manufacturing industries, as industries that process raw materials into finished materials. The implementation of production from raw materials, processing processes and the final result in the form of production and waste products, among others, are more materials that can pollute the environment such as metals, corrosive materials, organic materials, gas materials, etc. dangerous, both for workers and communities around the location of the industry.

On the other hand industrial activities are one of the important elements in supporting development to increase economic growth and are expected to be able to improve people's lives. The positive impact of industrial activities in addition to producing goods and services, creating jobs, will ultimately improve the quality of human life. While the negative impacts of industrial activities have the potential to produce waste and environmental pollution, cause damage to natural resources and reduce the quality of life and the degree of public health because the environment becomes dirty and polluted [1]. For this reason, the negative impacts that may arise must be calculated and must be sought to minimize the negative impacts of these activities must be taken into account in carrying out industrial development. Positive impacts can be improved by implementing sustainable development policies, and striving to reduce the negative impacts of industrial activities such as by advocating clean technology, installing pollution prevention devices, conducting recycling processes and stipulating the obligation to carry out waste management for industries. Unfortunately, these efforts have not been able to run optimally for reasons of lack of costs, especially for the lower middle class industries (small capital) or because of ignorance of industrial owners [1]. Waste from Toxic and Hazardous Substances is the leftovers as a result of industrial activities containing elements of substances, energy, and / or other components, if they are not managed proportionally they can threaten, pollute, damage and / or endanger the environment, health, and the survival of humans and creatures another life. This is contrary to the ecologically sustainable development principle which requires that everyone is obliged to maintain the preservation of environmental functions and prevent and overcome pollution and damage to the environment. Also national policy in the field of environment concerning environmental preservation which is currently a concern of the government in national development activities for the sake of community welfare and justice with a balance of economic growth, social dynamism and preservation of environmental functions. Nothing else as an effort to realize the environment is protected from the risk of pollution or damage due to the breakdown or negligence of the parties related to the activities carried out. Along with the increase in development that has the potential to cause pollution and environmental

destruction, so that the basic structure and function of ecosystems that support life can be damaged, the use of natural resources must be harmonious, harmonious and balanced with environmental functions [2]. Preventive instruments in the form of a set of rules on Environmental Management, as a fundamental aspect that underlies efforts to preserve environmental functions against pollution and environmental damage, namely; Act Number: 23 of 1997 Jo Act Number: 32 of 2009 (Act No.23 / 1999 Jo Act No. 32/2009) concerning Environmental Management (UUPLH), regulation regarding Environmental Impact Analysis (EIA) which currently it has been packaged in a licensing mechanism based on Government Regulation Number: 27 of 2012 (PP No 27/2012) concerning Environmental Permits, and Government Regulation Number: 66 of 2014 (PP No. 66/2014) concerning Environmental Health. With preventive instruments about managing hazardous and toxic materials, waste is very important and must be done by every industry that produces it. Management is carried out specifically based on management principles "from cradle to grave "(prevention of pollution is carried out from the generation of Toxic and Hazardous Waste to be buried / buried - produced, packaged, stored / stored, transported, recycled, processed, and buried / buried) [3]. Managing Hazardous and Toxic Waste is very important, so that every industrial activity that produces waste is required to carry out management in accordance with applicable regulations. The obligation to carry out waste management in each of these industrial activities requires research in its management with a focus on studies at PT Suri Tani Pemuka (PT STP), a large company in the city of Cirebon engaged in the fish and shrimp feed industry.

II. RESEARCH METHODS

This research is basically normative legal research, using the Socio-Legal approach. In this study it means that the law as an Applied Law Research, namely legal research concerning the application of normative legal provisions that are used and used as the most basic study material, the legal rule concerns written legal provisions relating to the management of hazardous and toxic waste, especially in PT STP including namely Act No.23 / 1999 Jo Act No. 32/2009 concerning Environmental Management, regulation regarding EIA, PP No. 27/2012 concerning Environmental Permits, and PP No 66/2014 concerning Environmental Health. The Socio-Legal Approach for analyzing law is not only a set of normative legislation, but law is seen as a behavior that is symptomatic and patterned in people's lives which always leads to interactions in relationships that are social, economic, political and cultural. In Action for each particular legal event that occurs in the community, as a study material to be studied so that the legal basis is used to regulate the problem of managing hazardous and toxic waste materials. The focus of research on normative juridical - empirical research is the application of In Concerto's normative legal provisions to certain events and the results achieved according to facts in the field. Non-Judicial Case Study is used empirical normative legal research, where legal case study approaches without conflict, without court intervention. Another empirical normative legal research approach is that the Judicial Case Study is a case study approach because of conflicts resolved

through court decisions (jurisprudence), and the third is that the situation has not yet taken place or has not ended [4]. The Non Judicial Case Study relates to the regulations used in the management of PT STP's fish and shrimp feed industry waste in the Lemah Wungkuk Sub district, Pegambiran District, Cirebon.

III. RESULTS AND DISCUSSION

A. Management Concept and Hazardous and Toxic Waste

Management is the process of coordinating and integrating all resources, both human and technical, to achieve various specific objectives set in an organization [5]. Management is the same as management, namely mobilizing, organizing and directing human efforts to effectively utilize material and facilities to achieve a goal [6]. In the aspect of management environment, it is an effort to reduce the possibility of environmental risks in the form of pollution or destruction, considering that hazardous and toxic materials have considerable potential to cause negative effects [7]. It can be concluded that management is basically the control and utilization of all resources which according to a plan are needed for or completion of a particular work purpose.

According to Article 1 number 21 of Act No. 32/2009: Hazardous and Toxic Materials are substances, energy, and / or other components which due to their nature, concentration and / or amount, both directly and indirectly, can pollute and / or damage environment, and / or endanger the environment, health, and the survival of humans and other living things.

In other parts, referring to Government Regulation 85 of 1999 concerning the management of Hazardous and Toxic Waste, it is said that the definition of Hazardous and Toxic Waste is the leftovers of a business and / or activity containing hazardous and / or toxic material due to its nature and / or concentration and / or the amount, both can directly pollute and / or damage the environment, and / or endanger the environment, health, survival of humans and other living creatures. Hazardous and Toxic Materials are identified as chemicals with one or more characteristics. According to the nature and character, Hazardous and Toxic Material waste is divided into: (1) explosive; (2) flammable; (3) is reactive; (4) toxic; (5) causes of infection; and (6) are corrosive. Whereas in terms of the source, the Hazardous and Toxic Material Waste is categorized into 3 (three), namely Hazardous and Toxic Waste specific sources, non-specific sources, and expired chemicals; spill; remaining packaging; product waste that does not meet specifications [8]. The above meanings lead to the conclusion that all wastes that are in accordance with these definitions can be said to be hazardous and toxic substances unless they can comply with regulations regarding water control and / or air pollution.

B. Hazardous and Toxic Waste Management

The existence of Hazardous and Toxic Materials that have a negative impact on the environment is the background of the need for a legal umbrella in terms of the management of Hazardous and Toxic Materials, this is compounded by the fact that Indonesia has become one of the countries where

hazardous and Toxic Waste is disposed from other countries. Management of Hazardous and Toxic Material waste is important and must be done by every industry that produces it. In the management of Hazardous and Toxic Materials, the management principle is specifically carried out, namely from cradle to grave. The definition of cradle to grave itself is the prevention of pollution from the production of hazardous and toxic materials to be buried / buried (produced, packaged, stored / stored, transported, recycled, processed, and buried / buried) [3].

The management of this Hazardous and Toxic Waste must be carried out by every industry that produces Hazardous and Toxic Waste in every activity / business. The purpose of this management and processing of Hazardous and Toxic Waste in general can be said to separate the dangerous properties contained in the waste. This must be done so that the Hazardous and Toxic Material Waste does not pollute or damage the environment where the living things are. With this management and processing of Hazardous and Toxic Waste, then the waste can be utilized for further purposes. The use of this waste can be either reuse, recycle, or recovery. This utilization must be guided by the principle that it is safe for human health and the environment, has a reliable production process and has good quality product standards. For Hazardous and Toxic Materials which cannot be utilized or reprocessed, they must be landfilled. This landfill must be carried out by a business entity that has obtained permission from the Ministry of Environment and by reporting on the stockpiling activity.

C. Legal Aspect of Harzadous and Toxic Waste Management

The legal provisions relating to health are gathered together in Act No. 36 of 2009 concerning Health, so that it is not spread in several laws as before. Article 162 states that: "Environmental health efforts are aimed at realizing the quality of a healthy, physical, chemical, biological and social environment that enables everyone to achieve the highest degree of health". In explaining the provisions above, it was stated that to achieve optimal health, environmental management needs to be improved, both in its environment and in the form or substantive form in the form of physical, chemical or biological, including behavior changes. Whereas in Act No. 32/2009 concerning Environmental Protection and Management Article 58 paragraph 1 states:

"Every person who enters into the territory of the Unitary State of the Republic of Indonesia, produces, transports, distributes, stores, utilizes, dispenses, processes and / or hoard hazardous and toxic materials must carry out the management of hazardous and toxic materials."

In other words, a business entity or activity that results in pollution of Hazardous and Toxic Waste that disturb the community and the surrounding environment will be subjected to administrative sanctions imposed by the government, namely:

- Temporary suspension of production activities;
- Transfer of production facilities;
- Closure of sewerage or emissions;

- Demolition;
- Confiscation of goods or tools that have the potential to cause violations;
- Temporary suspension of all activities; or
- Other actions aimed at stopping violations and restoring environmental functions.

While criminal sanctions for companies / industries that produce Hazardous and Toxic Waste and do not carry out management as referred to in Article 59 shall be punished with a minimum prison sentence of 1 (one) year and a maximum of 3 (three) years and a fine of at least Rp. 1,000,000,000.00 (one billion rupiah) and at most Rp. 3,000,000,000.00 (three billion rupiah).

Industrial waste clearly meets the category as Hazardous and Toxic Waste. Government Regulation No. 85 of 1999 affirms that every person in charge of a business and / or activity that uses Hazardous and Toxic Waste or produces Hazardous and Toxic Material Waste is obliged to reduce both its material and waste, and to process and / or stockpile its waste can be utilized then Hazardous Waste Material and Toxic can be utilized, either done alone or using the services of other parties. Technically operational, the management of Hazardous and Toxic Waste according to Government Regulation No. 85 of 1999 constitutes an activity from the formation of waste by the producer, then attempts to reduce waste (before it is formed) as described above.

D. Finding

1) Production processs and production support: Land use for factory operations generally uses watertight land, where the road body is made of concrete pavement, due to heavy transport activities. To overcome the limitations of water catchment land, the Biopore Infiltration Hole (BIH) has been created at the park location and the surrounding environment. The factory environment has been restricted by a safety fence against the surrounding environment and is equipped with drainage channels. Environmental management activities, including management activities of the factory environment and the employee environment. These activities include the implementation of the 5S system (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) and K3 (Occupational Health and Safety). In general, production machines are run automatically using a computer operated by the operator in a soundproof Control room. The description of the production process and handling of the waste / contamination produced is as follows [9]:

a) Intake process: Raw materials that have passed QC are entered into the raw material Bin (raw material shelter) through conveyor and elevator belts. The waste produced from the intake process is scattered raw materials and dust particles of raw materials, as well as used raw material used. The raw material is collected and put back into the intake, the dust particles from the raw material are sucked with a dust collector, then the sucked dust is put back into the intake. Meanwhile, the former packaging of raw materials is collected

at a temporary garbage collection site (TPS), then transported by the Sanitation and Landscaping Office of Cirebon Regency to be disposed of to the Waste Disposal Site (TPA).

b) Dosing process: Each raw material from the Bin is then weighed according to the desired recipe and controlled by a computer with a high degree of accuracy. Then the raw material is accommodated in the Holding Bin.

c) Grinding process: The raw material from the Holding bin, then grinding (destruction process) using the Hammer Mill, so as to obtain even smoothness. The waste from the Hammer Mill is in the form of dust contamination and noise from the engine. The Hammer Mill is operated by the operator from the control room. Pollution of dust is sucked with a dust collector, then the collected dust is processed back into the Mixer.

d) Mixing process: The destruction of the Hammer Mill is put into the Mixer machine for the mixing process. Liquid and premix were added to this mixture to obtain a uniform composition for sinking fish feed and shrimp feed, while premix was only added to floating fish feed.

e) Pelleting process: The process of pellet formation is carried out through the steam process. The formation of pellets for sinking fish feed and animal feed (chicken) is processed in a Pellet mill (Press) machine, then a crusher (pellet breaking process becomes crumble). While the formation of pellets for floating fish feed is processed on the extruder machine, then dried in the dryer, then spraying the liquid raw material (coating). The waste produced from the pelleting process is the presence of reject material from the crusher, liquid waste from the washing Extruder machine, and odor from Dryer. The reject material is collected and then returned to the dosing for reprocessing. The liquid waste from washing the Extruder machine is flowed to the Water Treatment Plant (WWTP), while odor from Dryer is captured by Deoderizer.

f) Cooling process: The formed pellet is then passed to the Cooler machine for the cooling process. Waste or contamination from the Cooler when cooling pellets, is air / heat in the production room. Handling is done by operating the blower to suck the heat, then the heat is flowed into the open air through the chimney.

g) Filtering process (sieveter): After going through cooling, pellet filtration is carried out in Sieveter. The waste produced from the sieveter is in the form of pellet powder. Pellet powder for livestock feed and sinking fish feed, returned to Silo Press for reprocessing in Pellet Mill. Whereas waste from floating fish feed pellets is returned to dosing to be processed in Mill Hammer.

h) Packing process (bagging off): The final stage of this production process series is the placement of finished goods in the bin, then packing (bagging off). The process of installing sacks in Bagging is done manually, while filling the sacks is operated by a computer operator. The waste produced from the packing process is in the form of dust particles. The dust was swept away, then a dirty wash of dust was collected in a sack, collected at the TPS and then dumped into the landfill.

Whereas a clean wash of dust is collected and then reprocessed on Dosing.

2) Hazardous and toxic waste produced and its characteristics: The Hazardous and Toxic Materials produced by PT STP are divided into 2 types based on their environment, namely:

a) Production support environment:

- Office Waste (toner, used cartridges, used printer ribbons, correction pens, contents of used pens, used markers, etc.);
- Electronic Waste (TL lights, used batteries, used CPUs, etc.)

b) Production environment:

- Oil contaminated material (used oil filters, milling, gloves);
- Used oil (clean used oil and dirty used oil);
- Used battery;
- Contaminated packaging (drums, paint cans, jerry cans and chemical bottles);
- Sludge WWTP; and
- Fumigation residue.

Characteristics of Hazardous and Toxic Materials produced by PT STP are divided into several types, namely:

c) Flammable: Including Used oil; Used Oil Filters; Used toner; Electronic and electrical components; and laboratory waste

d) Corrosive: Including used drums; Chemical containers; and paint cans.

e) Toxic: Including Sludge; Used battery; Used accu.

3) Implementation of UKL-UPL in B3 waste management: In the UKL-UPL owned by PT STP, it is stated that Hazardous and Toxic Waste must be managed and monitored only used oil. Used oil management activities are carried out in collaboration with third parties, namely PT Wiraswasta Gemilang Indonesia, which is conducted every 2 months. Based on research in the field, the management of used oil as one of the Hazardous and Toxic Waste of Hazardous and Toxic Waste at PT Suri Tani Pemuka has been carried out in accordance with what is stated in UKL-UPL. This is evidenced by the manifest stored by the vehicle / workshop section. It is undeniable that the industrial sector does give a little enlightenment to the Indonesian economy, but the high industrial development can also threaten the environment and society if it is not accompanied by efforts to prevent environmental destruction. That is why the government applies sustainable development as stated in Law No. 32/2009 concerning Environmental Protection and Management. One preventive effort is carried out by requiring every industry player to fulfill environmental permit arrangements by including an Environmental Impact Analysis (AMDAL),

Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL), and a Declaration of Environmental Management and Monitoring Capability. (SPPL) as a condition for obtaining permits in accordance with Government Regulation Number 27 of 2012.

IV. CONCLUSION

Management of Hazardous and Toxic Material Waste at PT STP has not fully addressed the achievement of health development goals, namely to realize the highest degree of public health, including environmental health, due to the existence of constraints that have the potential to hinder efforts to increase the management of hazardous and toxic materials. It appears that the management of Hazardous and Toxic Waste in PT STP is still not in accordance with Government Regulation No. 85 of 1999 concerning Management of Hazardous and Toxic Material Waste and Government Regulation No. 66 of 2014 concerning Environmental Health, such as the following: Industrial locations are close to densely populated settlements, namely in Pegambiran Village, Lemah Wungkuk Sub-District, Cirebon; The principle of managing Hazardous and Toxic Waste in PT STP is done not in accordance with the management principles of cradle to grave: Also in the production process there is a deviation from the procedure, namely: During the sorting phase mixing of Hazardous and Toxic Waste and Non-Hazardous and Toxic Waste . At the storage stage, PT STP does not yet have a permit for Temporary Storage (TPS) of Hazardous and Toxic Waste, so

that the collection of Hazardous and Toxic Waste in PT STP becomes ineffective according to the scheme. During the transportation phase, used oil has been transported by a third party that has an official transport permit, and is routinely carried out every 2 months. Whereas the waste at other PT STPs is still inside the TPS. At the stage of new processing / utilization, used oil which has been processed and utilized by the 3rd party.

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