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Analysis of Hazardous and Toxic Waste Management in the Animal Feed Industry in Padang Pariaman Regency

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ABSTRACT

Hazardous and toxic materials are commonly used in the production and non-production processes of the animal feed industry. Hazardous waste is the end product of hazardous use. Generators of hazardous waste must handle it by applicable regulations. Efficient handling of hazardous waste not only improves the company's image but also benefits the surrounding community and employees. PT X's animal feed industry is one of the producers of hazardous waste. The generation of B3 waste is the result of non-production activities such as machine maintenance and office work. Analysis of PT X's hazardous waste management is the objective of this study. The findings show that PT X's hazardous waste management consists of identifying the source and type of hazardous waste, packaging and labeling, storing hazardous waste in temporary shelters, and transporting hazardous waste by licensed third parties. Related to hazardous waste management activities, PT X has fulfilled all licensing requirements and complied with all applicable regulations.

KeyWords: Animal Feed Industry, Hazardous Waste, Hazardous Waste Management.

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INTRODUCTION

The development of the animal feed industry using corn as the raw material began in the early 1980s along with the development of broiler and egg-laying chicken farming in Indonesia (Natsir et al, 2017). The animal feed industry has developed advanced because all production processes, production supervision, and others are carried out computerized. Apart from that, the animal feed industry currently uses a management system for marketing and production (Wolayan, et al., 2023). This development has both positive and negative impacts on society.

Hazardous and toxic materials (B3) are usually used in the production and non-production processes of the animal feed industry. According to Law No. 6/2023, a substance, energy, and/or other components which, due to their composition, concentration, and/or amount, either directly or indirectly, can endanger human health, the environment, human survival, and other living creatures, referred to as B3. B3 waste will result from the use of B3. B3 waste is defined as the remainder of a business and/or activity that uses B3 based on Government Regulation No. 22/2021. By Government Regulation No. 22/2021, all B3 waste producers are required to handle the B3 waste they produce. Managing B3 waste involves several tasks, such as reducing, stockpiling, processing, storing, collecting, and/or transporting B3 waste. B3 waste management is very

important because improper handling can have detrimental impacts on the environment, including pollution (Purwanti, 2018). In addition, if B3 waste is not managed properly and correctly, the production process and the environment can be negatively impacted (Utami & Syafrudin, 2018).

PT. X is a company in Padang Pariaman Regency which operates in the animal feed industry. The animal feed industry is concentrated in areas that produce the majority of feed raw materials (Wolayan, et al., 2023). B3 waste management has been carried out by PT X. Transporting B3 waste as well as identification, packaging, and labeling are all included in the management process. B3 waste is also stored in temporary storage areas. The company's reputation, employees, and local communities all benefit from efficient B3 waste management (Fajriah & Warhani, 2019). To further protect society and the environment, B3 waste must be handled carefully and carefully before being released back into the environment (Nursabrina et al., 2021). The purpose of the study included the identification of the type of B3 waste produced and the analysis of PT X B3 waste will be compared with the applicable regulations, namely PermenLHK No. 6/2021 concerning "Procedures and requirements for waste management of hazardous and toxic materials".

METHODS

This study uses a descriptive approach to explain waste management procedures B3 PT X. The primary Data used in the analysis of this study was collected from field observations in the area of PT X. After that, the primary data is compared with the applicable provisions.

RESULTS

3.1 Sources and types of B3 waste

In the production process, PT. X does not use B3 so it does not produce B3 waste. Waste B3 PT. X comes from non-production activities such as office activities and machine maintenance activities. From the table above it can be seen that PT. X produces 7 types of B3 waste. Industrial activities and other waste producers will play a role in the diversity of B3 waste produced (Syafrudin, 2010). Based on Nurhidayanti & Arinih (2019) research, the automobile manufacturing industry produces 12 types of B3 waste including used drums, aluminum powder, contaminated wood powder, and others. Meanwhile, from the research results of Prametie & Wilujeng (2023), it is known that the animal feed industry is a producer of animal protein in the production process and supporting activities produce 12 types of B3 waste including expired chemicals, resins, refractories, and others. Table 1 presents a list of sources and categories of B3 waste produced by PT X below.

Table 1. Sources and types of waste B3 PT. X

No	Name Waste Name	Waste Code	Source Waste B3	Characteristics	Description
1	Aki/ used batteries	(A102d)	Supporting activities (non-production)	Toxic	Produced every 2 years
2	Used packaging B3	(B104d)	Supporting activities (non-production)	Toxic	Not produced every day
3	Used lubricating oil	(B105d)	Supporting activities (non-production)	Flammable liquids	Produced routinely
4	Contaminated waste: oli used oil filters, filter , used diesel filters and residu fumigant residues	(A108d)	Supporting activities (non-production)	Toxic	Not generated every day
5	Electronic waste bridge, TL lamp etc	(B107d)	Supporting activities(non production)	Toxic	Not generated every day
6	Sludge WWTP	(B108d)	Operational Support Activities WWTP (non production)	Toxic	Not generated every day
7	Used cloth majun	(B110d)	Supporting activities(non-production)	Toxic and flammable flammable	Generated routinely produced

3.2 B3 Waste Packaging

Packaging of B3 waste is defined by PermenLHK No. 6/2021 as a way of arranging or packaging B3 waste in such a way that it can preserve the environment and public health and make it easier to store, collect, and/or transport. By the category and characteristics of B3 waste, PT. X has done B3 waste packaging. In addition, it also follows the SOP of packaging and storage of B3 waste in the environment of PT. X namely 1) B3 waste is packaged according to its characteristics and shape; 2) Mutually compatible B3 waste is in one package; 3) B3 waste is put in resistant packaging; 4) It has a tight lid to avoid spills when transported, stored, or moved; 5) Packaging for B3 waste is labeled with a symbol corresponding to the type and nature of the waste being stored; the label contains at least the name of the waste, the identity of the producer, the date of production and the date of packaging; 6) B3 waste is placed according to the type and nature of waste; and 7) The B3 is in good condition. B3 waste symbols and labels must be present to comply with B3 waste storage regulations (PermenLHK No. 6/2021). A B3 waste Label is any written information about B3 waste that contains information about the producer, producer address, packaging time, quantity, and characteristics of B3 waste (PermenLH No. 14/2013). The B3 waste symbol is an image that represents the characteristics of B3 waste. From the results of field observations, it is known that PT X has included labels and symbols of B3 waste on each package used. Table 2 describes the types of packaging used at PT. X B3 waste TPS to store the resulting B3 waste.

Table 2. Waste packaging B3 PT. X

No	Waste Name	Waste Code	Waste Type Packaging
1	Aki/ Used Battery/ Battery	(A102d)	HDPE small Drum measuring 50 kg
2	Used Packaging B3	(B104d)	Cardboard
3	Used lubricating oil	(B105d)	Large drum measuring 200 liters
4	Contaminated waste b3: used oil filter, used diesel filter and fumigant residue	(A108d)	Large drum measuring 180 kg
5	Electronic waste Bridge, TL lamp etc	(B107d)	HDPE small drum measuring 50 kg
6	Sludge WWTP	(B108d)	HDPE small Drum measuring 50 kg
7	Used cloth Majun	(B110d)	HDPE small Drum measuring 50 kg

3.3 B3 Waste Storage

Management must be carried out by everyone who produces, collects, utilizes, processes, or stores B3 waste, according to the regulations stated in PermenLHK No. 6/2021. PT. X produces B3 waste, and the company has 1 (one) unit of B3 waste TPS facility for B3 waste storage. To meet the criteria for the appropriate B3 waste TPS building, PT. X built the B3 waste TPS in a location that is not prone to flooding or other natural disasters. In addition, the PT X B3 waste site building is equipped with a lighting system and protection against rainwater intrusion. The floor is also firm, flat, waterproof and crack-free. At the location of waste B3 PT X, there are additional facilities such as p3k boxes and fire extinguishers.

3.4 Transportation of B3 Waste

PT. X cooperates with B3 waste transportation companies that have permits or are also referred to as transporters to move B3 waste from B3 waste tps to B3 waste treatment sites owned by third parties. To carry out transportation, third parties use authorized transport trucks. At each B3 waste transport activity, a manifest is provided containing all relevant information about the transported B3 waste, handling instructions, date and location of transport, information about the B3 waste carrier, and information about the B3 Waste processing/collection/receiving company. This manifest must be filled in completely at the time of delivery of the goods from the point of origin to the point of destination.

CONCLUSIONS

The following are conclusions that can be drawn from research on the animal feed industry (PT. X) in Padang Pariaman Regency: 1) Used batteries, used B3 packaging, used lubricating oil, B3 contaminated waste, electronic waste cartridges, TL lamps, WWTP sludge, and used fabrics are some types of B3 waste produced by PT X from supporting activities (non-production); 2) B3 waste management carried out by PT X includes the identification of sources and types of B3 waste, packaging and labeling, storage of B3 waste at polling stations, and transportation of B3 waste by licensed third parties; and 3) PT. X has a license and complies with all applicable laws and regulations in carrying out B3 waste management activities.

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