



POLICY BRIEF (JULY, 2020)

THE MANAGEMENT OF HAZARDOUS WASTE IN MINING

1. Background

The rapid development of the world economy and urbanization has resulted in the great improvement of the population as well as living conditions. These factors had led to a significant increase of production demands of various substances, which consequently has resulted also in the rapid increase of waste being released to the environment, especially hazardous waste. Wastes are considered as being hazardous when they display one or more radioactive or hazardous properties, including explosive, oxidizing, flammable, irritant, toxic and carcinogenic. Not only that hazardous waste has harmful effects to the environment, it could also harm the human health. This issue has started to become a global concern, since various countries have started to increase their industrial sectors. In fact, in 2018, the world generated 3.5 million tons of waste, including hazardous waste, each day.¹ Developed countries such as the US and some parts of the European region are known as the main producers of hazardous waste, and the world has then experienced a dramatic increase in the amount of hazardous waste generated. However, for developing countries, the management of hazardous waste are limited due to the lack of facilities and comprehensive legislation.

2. General Overview on Environmental Regulations revolving B3 Management

In Indonesia, the management of Hazardous Waste, or B3 in short, is regulated under the Government Regulation No. 101 of 2014 Regarding Hazardous Waste Management, which is the amendment of the previous law, Government Regulation No. 18 Year 1999. This is the implementing regulation enforced by Law No. 32 Year 2009 Regarding Environmental Protection and Management, which contains economic instruments for its benefits. This approach consists of categories such as the (1) development and economy activities planning, (2) environmental funding, (3) and incentives and disincentives.²

¹ Leahy, Stephen. "How People Make Only a Jar of Trash a Year." *How Zero-Waste People Make Only a Jar of Trash a Year*, 2018

² Article 42(2), Law No. 32 of 2009

Meanwhile, Government Regulation 101/2014 has significantly improved from its predecessor, in which it presses that the management of B3 waste must be integrated due to its risk on human, animal, and environmental health. Hazardous wastes that are listed under the Ministry of Environment and Forestry (MoEF) are generated by specific industries and processes, which facility must obtain a permit in treating, storing, and disposing hazardous waste. Furthermore, the generators and transporters of hazardous waste must meet specific requirements for handling, managing, and tracking waste. Meanwhile, wastes that are not listed may still be considered a hazardous waste if it exhibits characteristics such as ignitability, corrosivity, reactivity or toxicity. As the generators of B3 waste, companies are given the responsibility to manage their own waste from its first production up until its removal. This is conducted through internal management where the parties must be in accordance to the regulation. This system of management is done so that the companies generating the B3 waste will attempt at reducing their waste production to a minimum.

Meanwhile, in particular to mining sectors, especially mineral and coal, the production of B3 waste is inevitable and will come in great quantities. Therefore, mining sectors are required to conduct their management of B3 in accordance to Article 3(1) of Government Regulation no. 101/2014. The Article states that the management of B3 waste includes, among others, the reduction and utilization of B3 waste. The Director of Hazardous Waste from MoEF, Rosa Vivien Ratnawati, stated that the Good Mining Practice principle must be implemented for managing waste by mining sectors. The reduction of B3 waste can be fulfilled by utilizing such waste for other uses. For example, there are some innovations which are permitted in utilizing B3 waste, such as the use of tailing waste into products such like paving blocks; nickel slags into materials for road constructions; used oil into fuels of mine explosives.

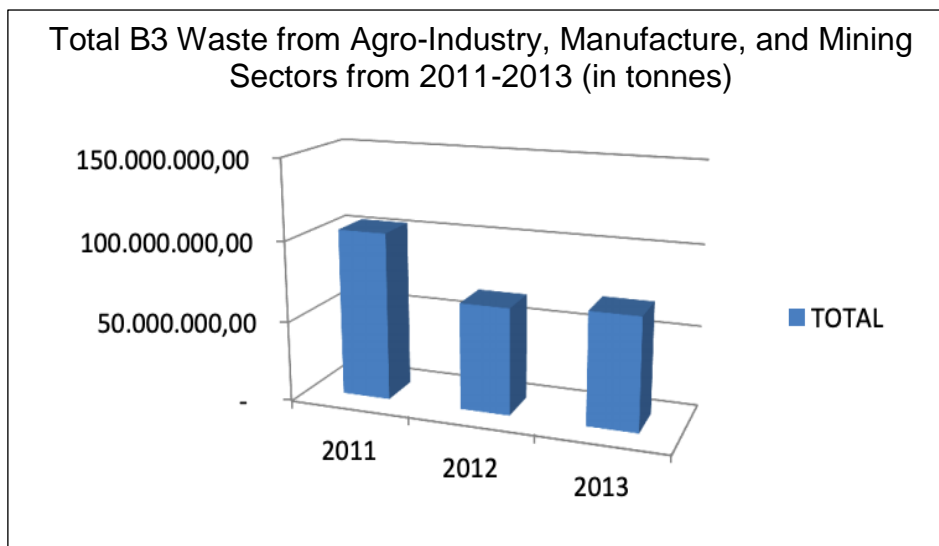


Figure 1. Graph on the Total B3 Waste Generated in Industrial Sectors. source: Ministry of Environment and Forestry

Moreover, utilizing hazardous wastes would in fact brought economic value to the country. According to the data from MoEF, B3 waste generated in 2014 was recorded to be 200 million tonnes. From that number 193 million tonnes were able to

be utilized and generate Rp 22 trillion. These wastes include used oil (generates Rp 21,4 trillion), fly ash (generates Rp 300 billion), used battery (generates Rp 39,4 billion), and used catalyst (generates Rp 20 billion).³

3. Policy Issues

3.1. Nickel Slags as a Non-Hazardous Waste

However, many have claimed that despite the encouragement, the attempt to re-use hazardous waste requires a set of procedures that needed to be fulfilled before being deemed as acceptable to utilize. This is stated under Article 191 of Government Regulation No. 101/2014, where hazardous wastes are only able to be exempted from the regulation if those wastes have undertaken a mandatory characterization test. For instance, according to Ratnawati, nickel slags did not meet the definition of B3 waste, as it is non-flammable, non-combustible, non-infectious and non-corrosive. However, nickel slags are considered as a hazardous waste due to its large production and the potential harmful side effects it has.⁴ As stated before, nickel slags can be utilized into materials for road constructions and other uses, yet it must be exempted before being able to conduct the processing into the needed materials.

Article 191 (3-4) of Government Regulation No. 101/2014 Regarding The Management of Hazardous Waste

Characterization tests must be conducted in order. The Characterization test includes:

- a. Tests on flammability, ignitability, reactivity, toxicity, corrosivity test in accordance to the test parameters attached in the Appendix of the regulation
- b. Leachate tests through LD50 Toxicology Test to determine B3 Waste from tested specific sources with a test value smaller or equal to 50mg/kg of the body weight of test animals
- c. Leachate test through TCLP to determine B3 Waste from tested specific sources with a test value higher than 50mg/kg of the body weight of test animals; and smaller or equal to 5000 mg/g of the body weight of test animals
- d. Leachate test through TCLP to determine B3 Waste from tested specific sources containing concentrations of contaminants smaller or equal to the contaminants stated under TCLP-B
- e. Leachate test through sub-chronic toxicology test in accordance to the test parameters attached in the Appendix of the regulation.

Figure 2. The Steps for Characterization Tests

³ Rochman, Fathur. "Limbah B3 Ternyata Punya Nilai Ekonomis Tinggi." *TIMES Indonesia*, TIMES Indonesia, 2016

⁴ Thomas, Vincent Fabian. "KLHK: Pengusaha Bisa Kelola Slag Nikel Tanpa Prosedur Penanganan B3." *Tirto.id*, 2019

The procedure that companies must undertake would be a challenge since it takes a lot of processing and time. The tests that are listed in Art. 191 must be conducted wholly and in order, which guideline is further described in MoEF Decree No. 55 Year 2015. Each tests are conducted on test animals to observe whether there are symptoms of effects on the use of the B3 waste, which could take weeks or even months. Following that, the results must then be attached to the request of exemption submitted to the Ministry, which will be further evaluated by a team of experts for a maximum of 90 days.⁵ Within 14 days after the evaluation results are made, the team will then issue a recommendation to the Minister of Environment for the final review, where the Minister must then issue the statement of exemption within a maximum of 30 days.⁶

In contrast to this, developed countries such as the United States Environmental Protection Agency (EPA), previously had a number of steelmaking slags being included under its definition of hazardous wastes. However, it now has already exempted steelmaking slags, including nickel, from the definition. This is based on the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal (Basel Convention), which states that granulated slag arising from most of slags from metal processing will not be considered as hazardous waste unless exhibiting the characteristics of hazardous waste.⁷ Many countries have used this convention as their basis for their hazardous waste regulation, while Indonesia still categorizes them as one for safety purposes.⁸

3.2. Lack of Facilities

Furthermore, the characterization tests are required to be conducted by accredited laboratories for each tests. In the event of the absence of such laboratory, the tests can be conducted in laboratories which implements procedures that are in accordance with the Indonesian National Standard on the good laboratory procedures.⁹ Despite this, the only acknowledged research centre by the MoEF which provides the tests procedures required under the regulation is the Research and Development Centre and Environmental Laboratory, or P3KLL (*Pusat Penelitian dan Pengembangan Kualitas dan Laboratorium Lingkungan*).¹⁰ This shows that there is a lack of research and testing facilities that could ease the time and process for companies to have their B3 waste tested.

4. Recommendation

In late 2019, the MoEF have spoken out on this matter, stating that the Ministry is planning on exempting steelmaking slags such as nickel slags from the list of

⁵ Article 193-194, Government Regulation No. 101 Year 2014

⁶ Article 195, Government Regulation No. 101 Year 2014

⁷ Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, 1989

⁸ Zulfiadi Zulhan, Iron and Steelmaking Slags: Are They Hazardous Waste? (2013)

⁹ Article 192, Government Regulation No. 101 Year 2014

¹⁰ Ministry of Environment and Forestry. "Laboratorium Toksikologi – P3KLL." 2020

Hazardous Waste.¹¹ If nickel slags are exempted, the evaluations and recommendations that are deemed unnecessary would not apply to them, which could help reduce the long processing period. However, provided that there are still possibilities that nickel slags may exhibit some hazardous characteristics, the government regulation should be revised where leachate testing are still an obligation to ensure safety. With this, the system for the permits are simplified, while also still providing safety measures for the sake of our environment.

Furthermore, the government, especially the MoEF, must be able to issue an additional implementing regulation which breaks down the procedures on leachate testing to be more effective. This of course requires the guidance and expertise from working scientists so that the procedure are implemented efficiently yet still ensuring safety. By implementing both of these proposals, not only the management of hazardous waste will be deemed more effective, but it would also guarantee the protection to human, animal, and environmental health in its utilization. In addition, having more hazardous waste being utilized, the more economic benefits Indonesia could potentially generate.

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¹¹The Jakarta Post. "Environment Ministry to Exempt Nickel Slag from 'Hazardous' Status." *The Jakarta Post*, The Jakarta Post, 2019

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Laws and Regulations

Law No. 32 Year 2009 Regarding Environmental Protection and Management
Government Regulation No. 101 of 2014 Regarding Hazardous Waste Management

International Agreements

Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal