

LIQUID WASTE PROCESSING IN ENVIRONMENTAL LAW PERSPECTIVE

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Abstract

This research aims to examine the liquid waste process in a perspective law environment. The method research conducted is juridical normative with the use of approach statute approach. Research results showed the nonconformity with existing regulations for the liquid waste process, relating to liquid waste with dangerous components and without dangerous components. In the environment and forestry ministerial regulation is in place arranged how is the processing process waste correct liquid. Thus, it is safe to throw away into rivers or sea. Thus, every company is obedient to regulations about decisions for processing liquid waste to make sure that it cannot pollute the environment, especially rivers and seas.

Keywords: Environment, Law, Pollution, Processing, Waste liquid.

1. Introduction

Processing liquid waste is important, especially when facing a prospective law environment[1-3]. It makes sure that it is necessary to realize a safe, healthy, friendly environment. Indeed, it can be for children because the waste does not pollute the environment. However, issues come when the processing waste is not correct. Although it has been already arranged in Minister of Environment Regulation Life Number 5 of 2022 concerning Wastewater Treatment for Business And/ Or Activity Mining with Use Method Land Wet Artificial, it still needs law enforcement. Studies regarding the processing of water with liquid waste into clean water are shown in Table 1.

Table 1. Previous studies on creating clean water from sources with liquid waste.

No.	Title	Ref.
1	Performance and energy consumption evaluation of rotating biological contactor for domestic wastewater treatment	[4]
2	Physico-chemical investigation of wastewater from the Sebdou-Tlemcen textile complex North-West Algeria.	[5]
3	Assessment of iron contamination in groundwater of catchment area water	[6]
4	Step-by-step fabrication of PVDF-TiO ₂ hollow fiber membrane and its application desalination of wetland saline water via pervaporation	[7]
5	Real time water quality monitoring system for smart city in Malaysia	[8]
6	Assessment and optimization of coagulation process in water treatment plant: A review	[9]
7	Comparison to socio-demographic and economic profile for a teaching model	[10]
8	Improvement of the technology of industrial wastewater treatment in the mining industry	[11]
9	Conventional filter for the water treatment system in rural area	[12]
10	The comparison of electro dialysis and nanofiltration in nitrate removal from groundwater	[13]

Based on our previous studies [14-18]. Here, the objective of this study was to understand the way in processing liquid waste in a perspective law environment. The novelties of this study were to analyze the processing of liquid waste from the aspect law environment.

2. Literature Review

Figure 1 below explains how to process clean water. above explains how to process clean water. Many studies on the process obtaining clean water are explained elsewhere (see Table 1). First liquid waste is divided into two types, namely colored and uncolored wastewater colored. Colored waste water streamed to the coagulation tank namely the mixing process coagulant with stirring in a way fast uses destabilizing colloids and fine suspended solids, and the mass of particle nuclei, then form flakes micro (micro flock) [19-22]. After finishing inside tank coagulation The

stage further enters tank segmentation and continues to the tub area. Then stream it to tank segmentation and in the intermediate then sucked back to tank coagulation stage to two then streamed to the segmentation ladder Then streamed to emergency and final tub flow to fish pond. When the water yielded from waste processes earlier already enters fish ponds and fish can live in the water then the processing process wastewater already following existing regulations there is.

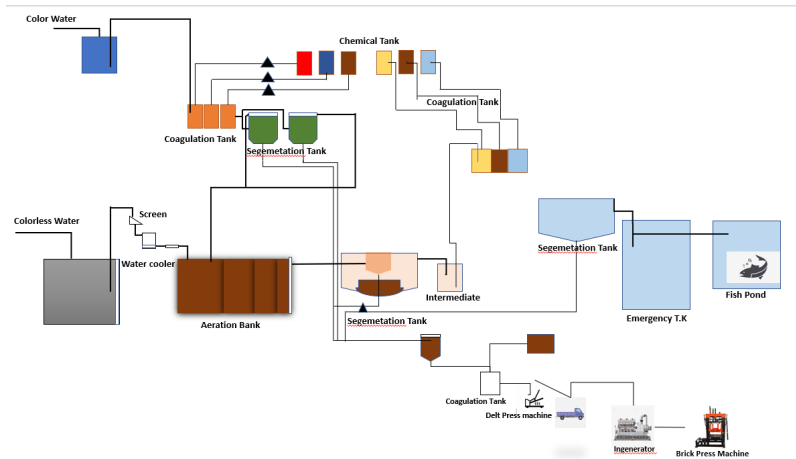


Fig. 1. Processing process waste liquid.

This data was adopted from <https://m.connectterus.com/bersama/post/princi-pengolahan-air-limbah-dengan-lumpur-active-hadap-reaksi/> taken on July 2024.

As for the wastewater no colored thus the stages are direct streamed to the tub later area is streamed to the tank segmentation and intermediate and sucked into the coagulation tank and drained to tank segmentation then to the emergency tub and finally flow to the fish pond.

3. Method

This research is juridical normative with the use approach *statute approach* with analysis use material primary law viz regulation legislation and tertiary data namely processing flowchart liquid waste already there is then studied and analyzed based on environment and forestry regulation No.5 of 2022.

4. Results and Discussion

The definition of wastewater is water that has been used by people in various activities. Wastewater can originate from activities such as houses, offices, shops, facilities, industrial, or from places other. Or, wastewater is used water that does not result from various activities in utilizing clean water[23].

The wastewater industry is the wastewater that comes from a series of production steps in the industry [24]. It becomes a series of production processes in an industry. Waste contain dangerous components produced in the industry. Thus, it must be processed moreover formerly before being thrown away in the environment. Besides shaped liquid, waste generated in industry can be shaped congested or in the form of gases and particles.

The wastewater industry is a contributor to significant global water pollution. The sector industry produces the amount of wastewater containing contaminants like metal weight, compound organic, and solid suspended. Metal heavy such as lead, mercury, copper, or cadmium, among others, come into our water source through the activity industry. Metals, if not processed or removed in a way adequate from wastewater before being thrown away return to the environment, yes harm the health of humans and ecosystems waters. Table criteria life EPA aquatics provides details more carry on about the problem (taken from <https://id.genesiswatertech.com/posting-blog/memahami-princi-pengolahan-air-limbah-industri/> in July 2024).

The presence of metal heavy solid suspended this can be dangerous If swallowed by humans or wildlife [25]. For example course," bioaccumulation, is several small substances that accumulate inside an organism along walking time [26-29]. Thus, cause-level poison is one danger posed by wastewater industries that don't process or are not processed.

Besides metal weight, organic compounds also play a role in making the waste industry dangerous [30,31]. Material chemistry originates from various industries including the production of medicines and pesticides. Toxicity levels vary based on type; a number can cause cancer while others can bother Hormonal balance in animals and humans (published). More again, compounds often refuse method processing standards used in factories urban, which means that when entered into an ecosystem, compounds tend to persist.

This is not only about risk health. Pollutants this can impact to ecosystem, causing the death of life aquatic and making water not safe for man. To protect society and preserve source power nature, important to take action now to manage the wastewater industry better. This matter includes repair method processing and enforcement of more regulations strict to responsible industry answer produce waste. The wastewater treatment industry it's not an easy thing. Three principles guide the waste water treatment industry subtraction source, optimization efficiency, and compliance with regulation.

In Indonesia settings, wastewater treatment is regulated by regulations Government Number 22 of 2021 concerning Maintenance Protection and Management Environment Life and Regulations of the Minister of the Environment Life and Forestry Number 5 of 2022 concerning Wastewater Treatment for Business And/ Or Activity Mining with Use Method Land Wet Artificial. In Article 10 paragraph (1) states "insurer responsible business and/ or activity can do wastewater disposal processed to surface water bodies, paragraph (2) in doing wastewater disposal as referred to in paragraph (1), the guarantor responsible business and/ or activity do: a. monitoring; b. evaluation; and c. reporting. In 11 Monitoring as intended in Article 10 paragraph (2) letter a is carried out against: a. fulfillment provisions on waste water quality standards; b. quality of surface water bodies; and c. operational facility land wet artificial. As for standard quality as intended in Article 11 letter A is listed in Appendix II which is part no separate from this Ministerial Regulation.

Tables 2, 3 and 4 below explain the details of the maximum standard levels of water quality that are acceptable and safe to be discharged into rivers or the sea. As seen in the flow diagram above, in the end, waste that may be discharged and

is said to be safe when it has reached the "fish pond" or fish pond stage. Fish can live in wastewater released by factories.

Table 2. Wastewater quality standards coal and lignite mining.

Parameter	Unit	Maximum level	
		Mining	Processing / Washing
Degrees acidity (pH)		6-9	6-9
Solids total auspended (TSS)	mg/L	400	200
Iron (Fe) total	mg/L	7	7
Manganese (Mn) total	mg/L	4	4
Need oxygen biochemical (BOD)	mg/L	30	30
Need oxygen chemical (COD)	mg/L	100	100

Table 3. Wastewater quality standards mining sand iron and ore iron.

Parameter	Unit	Maximum level	
		Mining	Processing / Washing
Degrees acidity (pH)		6-9	6-9
Solids total suspended (TSS)	mg/L	200	50
Iron (Fe) total	mg/L	5	4
Manganese (Mn) total	mg/L	1	1
Copper (Cu)	mg/L	1	1
Zinc (Zn)	mg/L	5	5
Lead (Pb)	mg/L	0.1	0.1
Nickel (Ni)	mg/L	0.5	0.5
Chromium VI (CR 6+)	mg/L	0.1	0.1
Need oxygen biochemical (BOD)	mg/L	30	30
Need oxygen chemical (COD)	mg/L	100	100

Table 4. Wastewater quality standards mining ore tin.

Parameter	Unit	Maximum level	
		Mining	Processing / Washing
Degrees acidity (pH)		6-9	6-9
Solids total suspended (TSS)	Mg/L	200	200
Iron (Fe) total	mg/L	5	5
Zinc (Zn)	mg/L	5	5
Copper (Cu)	mg/L	2	2
Chromium (Cr) total	mg/L	0.5	0.5
Lead (Pb)	mg/L	0.1	0.1
US	mg/L	0.2	0.1
S ⁺²	mg/L	0.05	0.05
M N	mg/L	2	2
Sn ⁺	mg/L	2	2

The importance of paying attention to and obeying the rules on water quality standards for liquid waste. Thus, environmental pollution does not occur which has a very detrimental impact on the surrounding environment. For example, the case

of pollution of the Avur Budug Kesambi River in Jombang regency which experienced pollution caused by waste containing chlorine, sulfur, and microplastics[32]. This pollution causes various quite severe problems, including causing damage to the river ecosystem, killing farmers' crops, making the river look blackish brown, and foamy, emitting an unpleasant odor, several fish in it to die, and causing residents around it to suffer from skin diseases.

The case example above would not have happened if every company had paid attention to the rules on liquid wastewater quality standards that had been set by the government through laws and regulations. Therefore, a firm stance from the law enforcement Center of the Ministry of Environment and Forestry is very important in imposing sanctions following environmental laws.

5. Conclusion

To create a clean, healthy, comfortable, and safe living environment, free from pollution by liquid waste produced by the company, the waste management process must be carried out strictly and following the rules. Thus, the liquid waste is safe to be disposed of and flowed into rivers or the sea in full compliance and obedience to the rules for liquid wastewater quality standards.

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