

Monitoring of mine waste from copper ore flotation

L Pulungan*, D N Usman, E A Kurniawan and R A Galiano

Faculty of Engineering, Bandung Islamic University, Jl. Taman Sari No. 24 Bandung

*linda.lindahas@unisba.ac.id

Abstract. The copper ore flotation conducted by PT XYZ produces copper, and other metal concentrates as tailings. The copper concentrate will then be processed as industrial raw material, while the tailing waste is dumping a waste dump. The copper ore flotation tailings must follow the tailings waste management rules. Monitoring tailings quality testing must be done, which includes physical and chemical parameters. The results of the analysis of copper ore flotation tailings are comparing with the provisions issued by the Ministry of Environment No. 92 of 2011. And 382 in 2016. Furthermore, to monitor the state of seawater around the mining site, water quality testing is divided into three zones, Zone A with into > 120 m, Zone B 0 - 120, and Zone C (tailings free). Seawater quality monitoring is carrying out in zone B. The quality test results tailing flotation Copper ores how physical and chemical parameters are below the threshold set by the Ministry of Environment. Whereas monitoring of seawater quality carried out in zone B, TDS exceeds the intensity at S15B, while dissolved metal concentrations are below the threshold at all stations.

1. Introduction

Mining, mineral processing and metallurgical extraction are the three principal activities of gold mining industries which produce wastes. Mineral processing also known as beneficiation aims to physically separate and concentrate the ore mineral(s) using physical, chemical and sometimes microbiological techniques. Metallurgical extraction breaks the crystallographic bonds in the ore mineral in order to recover the desired element or compound [1].

PT XYZ's business activities are in the copper ore mining and processing sector. Processing activities produce copper metal concentrates and other metal minerals, which referred to as the rest it flotation or tailings. Tailings will be placed in a waste dump, and then flowed into the deep sea. Monitoring activities on the quality of tailing need to be done so that tailing that will place in the deep sea does not change the quality of seawater [2].

Tailing disposal due to contamination of dangerous heavy metal pollution material contained in the tailings practice [3]. The results of monitoring the copper ore flotation tailings will be compared with the stipulated wastewater quality standard, namely Decree of the Minister of Environment No. 92 of 2011 concerning the Placement of Deep Sea Tailings.

Based on field conditions as explained, the purpose of this activity is to find out the physical and chemical quality of copper ore flotation tailings, then to determine the quality of seawater in the tailings disposal site.

