UNIVERSITI TEKNOLOGI MARA

HEAVY METAL CONTAMINATION FROM MINING SITES

NURFATIN AMIRAH BINTI IZHAB

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1 ABSTRACT

Heavy metals are natural elements found in the Earth's crust. Unfortunately, human activities such as mining had eventually altered the biochemical balance and geochemical cycles of these metals. As a result, the metals started to accumulate in soils and plant parts thus giving adverse effects towards environment when the metals react with the plants having secondary metabolites. Extensively exposure to heavy metals such as arsenic, zinc, nickel, lead and copper are able to lead to dangerous human's health effects.

This research is done in order to briefly describe and explain about the mining process, to identify the types of heavy metals produced due to mining and to understand the route of heavy metal transportation from the tailings to soils and ecosystems and its effects to others. A few places have been studied on the heavy metal contamination. The places chosen are the worst occurring heavy metal contamination areas. The case study of each place is briefly explained about the area involved, way that the contamination occurs, mining methods and its effect to the environment. The places chosen mine different types of worthwhile minerals example coal mining, gold mining, bauxite mining, tin mining and copper mining.

The results for every case study and literature review done show that mining had been giving serious impacts to the humans, plants, animals and environment thus serious action needs to be taken in order to reduce the impacts in the future

2 CHAPTER TWO

2.1 Heavy Metal

Heavy metals are chemical elements that are naturally found in Earth. By definition, heavy metals are metals that expressed metallic properties with high reflectivity and conductivity. According to the periodic table of elements, transition metals together with lanthanides and actinides are part of heavy metals. In short, elements with atomic number of 21 and above are said to be classified in this group. In this research, the "heavy" metal term is applicable for a metal that have toxicity potential which could affects the living organisms when discharged to the environment even in low concentration. Some examples of toxic heavy metals are lead, copper, zinc, mercury, cadmium, silver, manganese, nickel and chromium (Hogan, 2011).

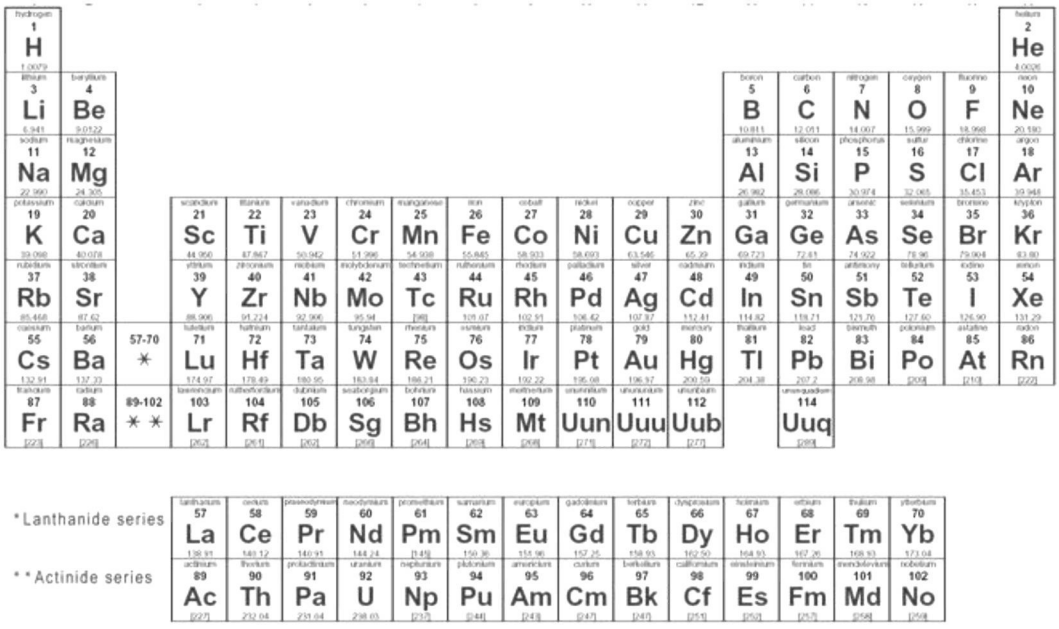

Figure 2-1 Periodic Table of Chemical Elements (Lewinski, 2009)