

Preliminary study potential of heavy metals in geothermal sludge

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Abstract. One of the New Potential Renewable Energy in Indonesia is geothermal potential which its activity in Indonesia is developed into Geothermal Power Plant XY in West Java and as the utilization of geothermal to reduce the dependency of fossil energy progresses, its utilization will create negative impacts on the environment such as landscapes, noises, subsidence, seismic induction, and heavy metal potential. With this background, it is necessary to conduct the identification of those potentials and the possibility of metals' utilization. The researcher conducted this research by doing identification on dissolved metals types and its potential to harm the environment. The process was conducted by using Atomic Absorption Spectrophotometry (AAS) method. The sampling process performed on solid waste which was the result of geothermal drilling process or Geothermal Sludge and water sample which came off from the PLTP that headed to public waters around citizens residences. The test result of geothermal sludge showed that it contained heavy metals. The water sample collected around citizens residences also showed there were heavy metals.

1. Introduction

Indonesia has the largest geothermal resource in the world (+ 27,000 MW); where around 21.7% are in West Java and are the provinces that have the greatest geothermal potential, spread across 44 locations in 11 districts. Geothermal is the mainstay of energy for West Java. Overall, the geothermal potential in the Bandung Regency area can reach 2,000 megawatts, but now only 700 megawatts have been explored [1].

Along with the use of geothermal energy to reduce dependence on fossil energy, it is undeniable that the use of geothermal energy also has a negative impact. Negative impacts on the physical environment include landscape, noise, subsidence, seismic induction, the influence of heavy metals and rare earth metals in the community [2]. To identify the potential of heavy metals that affect the environment, it is necessary to do a gradual study starting with identifying the potential of these metals, the potential impact on the environment and the possible utilization of the metal [3].

Geothermal sludge originates from deposits in the process of treating wastewater. The resulting liquid waste is injected back into the earth's layer, while solid waste requires special handling so as not to have a negative impact on the surrounding environment and as much as possible a useful material. This solid waste contains metal elements, some of which are heavy metals such as Cu, Pb, Zn, Mn, Fe, Cd, As, Sb, Au, Ag, Hg, and Se.

