



Analysis of sorptive capabilities of post-flotation dolomites used in insulation barriers construction of dumping sites

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ABSTRACT

The paper presents a new concept of a barrier insulating the hazardous wastes from the environment. Ions of heavy metals migrating through are captured in the processes of chemical and/or physical sorption. It is proposed that such a barrier could be made of dolomite wastes from Zn–Pb ore flotation. The sorptive properties of the wastes were verified in conditions of a static sorption batch. Depending on the assumed initial concentration of metal and the conditions of the experiment, the maximum percentage of removing zinc was 80.4%, lead 99.1% and cadmium 92.2%. In order to confirm the lab observations also *in situ*, investigations were performed on the tank for flotation wastes. They consisted in taking samples of the waste from various depths, and determining the concentration of zinc ions. It was found that the layer of the depth of 5 m lowers the concentration about six times. The additional positive attribute of the waste is their fine granularity, which is significant for building the desired barrier. The granulometric analysis showed that 77% of waste grains have dimensions below 63 μm , thus increasing contact area solution—sorbent.

Keywords: Sorption; Flotation waste; Waste dumping; Insulating barriers; Heavy metals

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