

## **Three-Dimension Geoelectrical Investigation of Mine Dump Sites, with Special Reference to Water Infiltration**

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### **ABSTRACT**

Many mining dump sites are a major threat to the environment and need remediation. Reducing the acid mine drainage caused by infiltration of rain water is one of the most important goals. However, depending on their mineralogical composition, some mining heaps can be a resource of valuable residual metals still to be exploited by advanced metallurgical technologies. Both situations, remediation scenarios as well as economic recycling strategies, require the knowledge of the three-dimensional geometry of the heap, including the often unknown bedrock morphology and the spatial distribution of the various types of minerals and residual rock materials deposited at different places during the mining history. Multi-electrode resistivity tomography is a non-destructive means that is capable of providing this spatial information. Examples from Germany and Spain show its use. Multi-electrode arrays can also be used to monitor by time lapse resistivity measurements the infiltration of water through the vadose zone of mine heaps during artificial precipitation experiments. Two examples show this.

**KEYWORDS:** Geoelectrics, three-dimensional-modelling, mining residue, water infiltration

