



Long term monitoring of water basin of an abandoned copper open pit mine

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Nonoperating open pit mines, very often as a matter of fact abandoned, create serious ecological risk for the region of their location especially for the quality of the water since the rainfall fills the bottom of the pit forming water body having different depth. This water as a rule has very high concentration of the metals in it and is highly toxic. One example for such opencast, idle copper mine is Medet located in the central part of Bulgaria who was started for exploitation in 1964 and at that moment being the largest in Europe for production of copper concentrate. In the vicinity of it after autumn and spring rains there are many cases reported for water contamination by heavy metals such as arsenic, copper, cadmium in the rivers running close to this open pit mine. This justifies the need for long term and sustainable monitoring of the area of the water basin of this idle mine in order to estimate its acid drainage and imaging spectroscopy combined with is-situ investigations is proved to provide reliable results about the area of the water table. In the course of this study we have investigated historical data gathered by remote sensing which allowed us to make conclusions about the year behavior of this area. Our expectations are that the results of this research will help in the rehabilitation process of this idle mine and will provide the local authorities engaged in water quality monitoring with a tool to estimate the possible damage caused to the local rivers and springs. With this research we also would like to contribute to the fulfillment of the following EU Directives: Directive 2006/21/C on the Management of Waste from the Extractive Industries and Directive 2004/35/ C on Environmental Liability with regard to the Prevention and Remedying of Environmental Damage.