Geophysical Research Abstracts
Vol. 12, EGU2010-14818, 2010
EGU General Assembly 2010

Risk Assessment of Heavy Metals in Abandoned Mine Lands as Signifcant Contamination Problem in Hungary

Balazs Csuhanics (1), G. Jordan (2), J. Foldessy (1), and S. Szakall (1)
(1) Miskolc University, Miskolc, Hungary, (2) Geological Institute of Hungary (MAFI), Budapest, Hungary

The accurate survey of the home mineral raw material resources in Hungary has been an emphasised research achievement since the early 1950's. In the early 1960's, the ore deposit explorations have begun in the Mátra Mountains which area had a long history of ore mining and the scientific attendance focused on this area such as the polimetallic veins of Parádsasvár. During the field works and in situ surveys , explorers used trenches and exploration adits to heading through the supposed ore veins. The problem is that the exploration areas' land reclamation has not befallen yet.
This plight can characterize as mining-related environmental contamination which is a global problem. The associated mining waste is known to be among the largest waste streams in, for example, the European Union, where it is estimated to be 400 Mt, which amounts to about 29% of total waste generated in the European Union (EU) (Jordan, 2004a). Mine site (including exploration areas, as well) remediation have become the major activities of the mining industry according to EU standards by improving environmental and waste legislation (Charbonnier, 2001; Jordan, 2004; Jordan and D'Alessandro, 2004), which gave actuality of this thesis.
The disarrayed metallic tailings were deposed onsite without proper pretreatment. These tailings mean not only the anthropogenic effect on natural environment to this day but also a particular environmental danger because they are characterized by a lack of control and a lack of data and information.
The objective of this thesis is to define the heavy metal anomalies of the exploration area (Tulk and Tucker, 1998), characterize the connection between the background geochemical values with the tailings' values, evaluate the correlations and give solution to mitigate the undesirable effects. By the recent explorations it can be noticeable that the tailings from the last century's surveys have direct toxic affects on the ecosystems adding to naturally high background values.