

ASSESSMENT OF THE METAL AND ANION SOURCES IN THE WATER OF THE ARIES RIVER, ROMANIA

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Abstract

The Apuseni Mountains area is important for Romania, both in economic terms by its largest resources of Au, Cu, Pb, Zn, and tourism potential of several natural reservations and caves. In the area underground or opencast mining started to develop in the nineteenth century and continued until a few years ago, generating a severe pollution and destruction of the Aries catchment ecosystem. The multivariate statistical analysis of water data revealed the sources of several metals and anions in the Aries River: dissolution of minerals from the river bed (Mn and SO₄²⁻), acid mine drainage (Cu, Mn, Fe, Zn and SO₄²⁻) and domestic activities (NO₃⁻ and Cl⁻). The cluster analysis highlighted the grouping of pollutants and samples according to locations of ore processing centers. Although mining and ores processing activities in the area have been closed, the Aries River continues to be subjected to pollution with metals coming from mines and waste dumps.

Keywords: Aries River, metal pollution, multivariate statistics