

Characteristics of flow rate and chemical concentrations of mine drainage water

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Abstract

Flow rate and chemical compositions of mine drainage water from galleries and a dump of waste of an abandoned mine were examined on the basis of data obtained by a field survey and chemical analyses using ion chromatography and PIXE analyses. It was founded that the flow rate of mine drainage water from galleries and the dump of waste increases in snow melting season and rainy season and that iron and zinc contents of mine drainage water increase with increase in flow rate. Dilution of mine drainage water caused by melting snow and by increase in the amount of precipitation during rainy season was not observed. Amounts of iron and zinc discharged with mine drainage water are controlled by the rate of discharge of mine drainage water. The fact that dilution of mine drainage water was not observed suggests that the reservoir of the mine drainage is large. Thus, the dump of waste should be isolated from percolating water of precipitation and snow melting to prevent environmental problems. The same care is needed for dumps of waste containing heavy metals from civil engineering works such as tunnel construction and for dumps of industrial waste at a storage sites.