

## **The fate of heavy metals in acidic rivers and sedimentation mechanism**

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Geochemical mobility of heavy metals in rivers acidified by spring waters in Montana, USA and waste waters accompanied by mining and metallurgical activities in Bor, Serbia were investigated. The river water samples filtered on site using a 0.2  $\mu\text{m}$  cellulose acetate membrane filter and non-filtered were collected. This filtration technique as well as discharge measurement allowed us to separate target heavy metals to dissolved, suspended and precipitated species.

The geochemical mobility of target metals in both research fields are mainly controlled by the pH-dependent sorption onto ferric and aluminium solid materials (HFO and HAO). However, target metals tend to be removed as precipitated species under lower pH condition than as suspended species. For example, the suspended Mn species was formed under pH greater than 7 in the Montana field, whereas the precipitated Mn was formed under pH greater than 6. Manganese sorption reaction starts to occur under pH greater than 7, suggesting that the pH value around the bedrock is higher than that of bulk river water, due to proton consumption while interaction between acid river water and bedrock. Thus, the interaction between river water and bedrock affects distribution of heavy metals in watersheds.