

## Concentrations and diffusive fluxes of heavy metals in pore water of the Mianyuan River

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The phosphate mining can lead the migration of heavy metals into the aquatic system. Once metals are released into the aquatic environment, a portion of the metals will be transferred to sediment through being adsorbed onto suspended matter and the sedimentation of the suspended matter[1]. The characteristics of metals in pore water play important roles in the overall cycling of metals at the sediment–water interface[2]. The Mianyuan River is located in a phosphate mining region in China. Current studies have shown that the Mianyuan River was impacted by the phosphate mining and the enrichment of heavy metals in these sediments. However, few studies have examined heavy metal fluxes from sediments and the concentrations in pore water in this region.

In this study, pore water in river sediments collected from four sampling sites (P1–P4) was examined to determine the concentrations and fluxes of heavy metals in the Mianyuan River. Heavy metals concentrations in pore water, sediments and overlying water were determined through ICP-MS.

The results showed that the average concentrations of Mn, Mo, Cu, Zn, As and U in pore water were 643.33, 19.98, 2.89, 18.70, 9.67, and 2.14  $\mu\text{g L}^{-1}$ , respectively. Most heavy metals concentrations increased in the following sequence: overlying water < pore water < sediment. The diffusive fluxes at the sediment-water interface of Mn, Mo, Cu, Zn, As and U were positive, indicating all metals export from the sediment to the overlying water. Heavy metals in pore water and sediment profiles were mostly enriched in the upper.

[1] Zhu et al. (2016) Environ. Sci. Pollut. Res., **23**, 5516-5526. [2] Ni et al. (2017) Mar. Pollut. Bull., **124**, 547-554.