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Characterization of extractable metals from the aquifers with arsenic contamination in the Tsengwen Creek, Taiwan

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Arsenic contamination in groundwater is a common groundwater problem worldwide. To manage groundwater resources effectively, it is crucial to determine the arsenic source. Taiwan's Tsengwen Creek watershed is one of the known areas for groundwater arsenic contamination. Water-rock interactions are evaluated on a regional scale. A conceptual hydrogeological framework is first established based on groundwater hydrochemistry. The local aquifer system can be categorized into high-arsenic deep aquifer and low-arsenic shallow aquifer. The average geochemistry of sediments indicates that arsenic and heavy metals are not significantly enriched in the deeper aquifer on the scale of the whole watershed. Therefore, arsenic contamination in the deeper groundwater of the Tsengwen Creek watershed is not simply source-controlled. However, the Fe-Mn oxides in sediments contain slightly more arsenic in the deep aquifer. The long residence time of groundwater could magnify the enrichment and cause natural arsenic contamination in the deep aquifer.

Keywords:

BCR sequential extraction procedure; groundwater hydrochemistry; sediment geochemistry

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