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Tracing Anthropogenic Impact on Arsenic Mobility in the Groundwater of Bangladesh and Southeast Asia — A Review of Methods and Results

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Summary

The effect of anthropogenic impact on groundwater resources in Southeast Asian countries is subject to scientific debate, since it is increasingly considered a contributor to the observed contamination of groundwater with arsenic. It can be diverse, and range from direct pollution, through alteration of hydraulic conditions to indirect effects on geochemical conditions and reactions. While direct pollution can be observed easily, the hydraulic and indirect impact on groundwater quality are more difficult to determine. Nevertheless, considering a generally increasing anthropogenic impact, its complex effects on groundwater chemistry and quality need to be kept in mind, especially if the causes are less obvious. In order to detect this impact, different approaches have been applied over the past few decades. This paper reviews the multiple indicators and approaches used in various studies to trace anthropogenic influences on geochemical conditions leading to high arsenic groundwater content in Bangladesh and South/Southeast Asia. Future research has to address increasingly the spatial complexity and subsurface heterogeneity through clay layers and hydrogeological differences, as well as the temporal development of local contaminant plumes.

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