Understanding Surface Water Incursion in a Shallow, Arsenic-Affected Aquifer in Cambodia: An Application of Geochemical Tracers

L. A. RICHARDS[1*], D. MAGNONE[1], C. SOVANN[2], J. SÜLTENFUß[3], A. BOYCE[4], C. BRYANT[5], B.E. VAN DONGEN[1], C. J. BALLENTINE[6], D. A. POLYA[1]

[1]School of Earth and Environmental Sciences, University of Manchester, Manchester, UK (*correspondence: laura.richards@manchester.ac.uk)
[2]Department of Environmental Science, Royal University of Phnom Penh, Phnom Penh, Cambodia
[3]Institute of Environmental Physics, University of Bremen, Bremen, Germany
[4]Scottish Universities Environmental Research Centre, East Kilbride, UK
[5]NERC Radiocarbon Facility, Scottish Enterprise Technology Park, East Kilbride, UK
[6]Department of Earth Sciences, University of Oxford, Oxford UK

Millions of people are exposed to dangerous arsenic concentrations in drinking water globally, which is widely thought to be mobilized in circum-Himalayan groundwater via the reductive dissolution of iron minerals containing arsenic [1, 2]. In a high resolution study site in Kandal Province, Cambodia, sediment and water samples were collected to better understand the evolution of groundwater geochemistry along dominant groundwater flowpaths in an arsenic-contaminated aquifer [3]. This talk will provide an overview of the applications of various geochemical tracers (*e.g.* As, Fe, SO_4, $\delta^{18}O$, $\delta^{2}H$, $^{3}H/^{3}He$, ^{14}C) to understand the processes which may contribute to arsenic mobilization in this aquifer. In two contrasting transects, the evolution of groundwater geochemistry suggests the occurrence of natural surface-groundwater interactions in certain locations, such as in sandy areas and/or near ponds which may influence arsenic mobilization and/or transport within the aquifer. The suite of tracers is used to better understand the dominant controls on groundwater arsenic concentrations in this aquifer and may be more broadly applicable to other similar aquifers.

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