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Push/pull Experiments to Determine Arsenic Reaction Rates

Groundwater became the main source of drinking water in Bangladesh after international organizations recommended a switch from surface water, because of the risk of disease from microorganisms. After millions of tube wells were installed, arsenic contamination was discovered (Smith et al. 2000). Currently approximately 33% of wells are contaminated with arsenic, and millions of people are exposed to elevated levels (BGS/DPHE 2001). Exposure to arsenic for long periods of time is associated with serious health problems, including skin lesions and cancer.

Previous experiments have examined the mobilization of arsenic in the aquifers through both push/pull experiments and incubations of sediment and groundwater. For this study five push/pull experiments were conducted in Araihasar, Bangladesh. In four of these experiments groundwater low in arsenic was moved from a deep well into a well high in arsenic. In the final experiment water was moved from a well high in arsenic into a well with medium arsenic concentrations. These experiments will provide valuable information about the mobilization of arsenic and about the rate of arsenic sorption and desorption.