

Blanket testing of wells for arsenic and fluoride and a response survey conducted SW of Lahore, Pakistan

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A total of 649 wells were tested for toxic levels of As and F and the redox-sensitive indicators NO₃, Fe, and SO₄ using field kits in 5 villages of Punjab Province, Pakistan. The villages are distributed along a 25 km transect southwest of Lahore that runs parallel to the Ravi River. Concentrations of As in 72 % of wells exceeded 10 µg/L and concentration of F in 4% of wells exceeded 1.5 mg/L, both of which are to corresponding World Health Organization guidelines for drinking water. Overall, groundwater from only 4 wells contained levels of NO₃-N >10 mg/L detectable with the kit. Among the 178 wells meeting the WHO guideline for As, 31% contained dissolved Fe ≥1 mg/L detectable with the kit and 87% contained SO₄ levels ≥20 mg/L detectable with the kit. Among the 471 wells that did not meet the WHO guideline for As, 55% contained dissolved Fe ≥1 mg/L and 91% contained SO₄ levels ≥20 mg/L. Unlike the previous study by Farooqi et al. (2007) further to the southwest, there appears to be no association between elevated As concentrations and pH or electrical conductivity. The new data suggest that the release of As in the 5 surveyed villages is associated with mildly reducing conditions leading to the reductive dissolution of Fe oxides, but without the extensive reduction of SO₄ documented in groundwater of the Bengal basin. One year after testing, 42% of the households with a high As well had switched to a different well.