

## **Arsenic distribution and toxicity in the groundwater of Sindh, southern Pakistan**

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Arsenic contamination of groundwater is well-documented in other parts of the world, for example, India, Bangladesh, Chile, Argentina, Mexico, China and Hungary. However, for some reason Arsenic contamination in the ground waters of Pakistan remains under-reported. In this study the concentration of Arsenic and its spatial distribution were determined in the groundwater of Sindh province. The Arsenic concentration ranged from 0  $\mu\text{g/l}$  to alarming 500  $\mu\text{g/l}$ . The spatial distribution of Arsenic in the ground water was mapped using various geostatistical methods, including kriging and nearest neighbor. It was observed that the Arsenic concentration in the groundwaters near the River Indus is higher and gradually decreases as a function of distance from the river. The results of this study were also compared with global and regional concentrations of Arsenic in groundwater. Groundwater samples collected from various sources like hand pumps, bore wells, etc., were also tested for residual chlorine, bacterial contamination and other basic water quality parameters. About 50 percent of the water samples showed bacterial contamination. Residual chlorine was missing in almost all the samples. A water quality index was used to classify the water as good, moderate, bad and very bad for human health and consumption.