

The National Hydrochemical Survey of Bangladesh sampled the water from 3,534 tube wells for arsenic throughout most of Bangladesh. It showed that 27% of the shallow tube wells (less than 150 m deep) and 1% of the deep tube wells (more than 150 m deep) exceeded the Bangladesh standard for arsenic in drinking water (50 $\mu\text{g L}^{-1}$). Statistical analyses revealed the main characteristics of the arsenic distribution. Concentrations ranged from less than the detection limit ($<0.5 \mu\text{g L}^{-1}$), to as much as 1,600 $\mu\text{g L}^{-1}$, though with a very skewed distribution, and with spatial dependence extending to some 180 km. Disjunctive kriging was used to estimate concentrations of arsenic in the shallow ground water and to map the probability that the national limit for arsenic in drinking water was exceeded for most of the country (the Chittagong Hill Tracts and the southern coastal region were excluded). A clear regional pattern was identified, with large probabilities in the south of the country and small probabilities in much of the north including the Pleistocene Tracts. Using these probabilities, it was estimated that approximately 35 million people are exposed to arsenic concentrations in groundwater exceeding 50 $\mu\text{g L}^{-1}$ and 57 million people are exposed to concentrations exceeding 10 $\mu\text{g L}^{-1}$ (the WHO guideline value).