

Reconnaissance Survey of Arsenic Concentration in Ground-water in South-eastern Ghana

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Abstract

Arsenic (As) analysis of 150 boreholes in the south-eastern part of Ghana (Accra, Eastern and Volta regions) revealed low to medium concentrations in the range of 2-39 $\mu\text{g l}^{-1}$, with only 2% of boreholes tested having arsenic concentration exceeding 10 $\mu\text{g l}^{-1}$ of the WHO (2004) maximum permissible level of arsenic in drinking water. The measurements were carried out in the field using the Wagtech Arsenator field test kit (Wag-We 100500) equipment, which gives direct readout of arsenic concentration in the critical range 2-100 $\mu\text{g l}^{-1}$. Arsenic concentrations were in the range < 2-39 $\mu\text{g l}^{-1}$ with mean (< 2 $\mu\text{g l}^{-1}$) and median (< 2 $\mu\text{g l}^{-1}$). Out of 150 samples analysed, 147 had As concentration below 10 $\mu\text{g l}^{-1}$. Three boreholes in the Recent Sand Formation in southern Volta Region at Atitekpo, Mafi Devime and Woe Aklorbordzi had arsenic concentrations of 28 $\mu\text{g l}^{-1}$, 19 $\mu\text{g l}^{-1}$ and 39 $\mu\text{g l}^{-1}$, respectively. Though the sample of boreholes tested was only approximately 10% of the total number of boreholes in the study, the distribution within the sample makes the generalization that the risk of arsenic contamination of rural water supply in southeastern Ghana is generally low plausible. In spite of this assertion, boreholes in the Recent Sandy Formation have to be critically assessed to determine the extent of arsenic contamination and, if possible, monitored.