

# Concentration of Trace Metals in Boreholes in the Ankobra Basin, Ghana

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## Abstract

*Analysis of trace metals in groundwater from the Ankobra basin revealed high levels of iron, manganese and aluminium. Approximately 40% of boreholes had total iron concentration exceeding 1000  $\mu\text{g l}^{-1}$  (maximum WHO permissible limit). Aluminium concentration varied from 0.1  $\mu\text{g l}^{-1}$  to 2510  $\mu\text{g l}^{-1}$  with a median value of 10.0  $\mu\text{g l}^{-1}$ . Approximately 20% of the boreholes had aluminium concentration exceeding the WHO maximum acceptable limit (200  $\mu\text{g l}^{-1}$ ) for drinking water. Manganese concentration was in the range 6–2510  $\mu\text{g l}^{-1}$  with a median of 356  $\mu\text{g l}^{-1}$ . Roughly 25% of the boreholes had manganese concentration higher than 500  $\mu\text{g l}^{-1}$ , which is the WHO maximum acceptable limit for drinking water. The concentration of mercury was higher than 1.0  $\mu\text{g l}^{-1}$  (WHO maximum acceptable limit) in 60% of the boreholes during the rainy season but below detection limit in the dry season, suggesting anthropogenic origin for mercury in the groundwater. Other trace metals that occurred, but in insignificant concentration in boreholes, include lead, arsenic, nickel and selenium. Most of the boreholes with high trace metal concentrations were located in and around the Bawdie-Bogoso-Prestea area.*