

# Evaluation of Urinary Arsenic as an Indicator of Exposure to Residents of Tarkwa, Ghana

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## Abstract

In Ghana, mining plays a significant role in the economic recovery programme. However, the gains are achieved at the cost of environmental and human health. For many years, the extraction of gold involved roasting which released airborne particles and large quantities of arsenic (As). Sampling for this study was conducted in March 2004 to assess the contamination status of trace elements, especially As, in water and mine workers in Tarkwa, which has nearly a century of gold mining history. Water and human urine samples were collected from Tarkwa, in addition to control samples taken from Accra, the capital of Ghana. Arsenic excretion was assessed in the first morning void urine. Concentrations of As and Mn in some water samples from Tarkwa were above the WHO drinking water guidelines. A potential health risk of As and Mn is a concern for the people consuming the contaminated water in this area. Levels of trace elements in water from control site were low compared to levels from Tarkwa. The mean urinary As concentration of 260  $\mu\text{g l}^{-1}$  from the study area was comparable to those in As-endemic areas of the world. This indicates relatively high degree of human exposure to As in Tarkwa, Ghana. Relatively low levels of As in water and no significant difference of As concentrations in urine between Tarkwa and Accra may suggest the presence of other sources of As contamination in Ghana, possibly food. This is the first study reporting 23 trace elements in human urine samples from a mining town in Ghana.