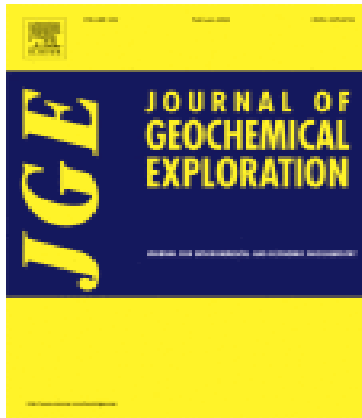


# Health risk implications of lead, cadmium, zinc, and nickel for consumers of food items in Migori Gold mines, Kenya



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## **Abstract**

This paper reports on the concentration levels of lead (Pb), cadmium (Cd), zinc (Zn) and nickel (Ni) in soil and water in the Migori gold mining area of Kenya. To determine the possible entry into the food chain, samples of fish, maize, cabbages, mangoes, potatoes and human scalp hair were collected and analysed from three (3) sites within and one (1) site outside, the study area. The aim was to establish potential health risks posed to miners and communities who consume food crops and fish harvested in the vicinity of the gold mining areas. Samples were prepared by standard methods and analysed by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES). The concentration of Pb, Cd, Zn and Ni in soils exceeded the maximum allowable concentrations (MAC) for agricultural soil. Concentration levels in fish were above MAC levels. Concentration levels in food items were highest in maize, cabbages and potatoes, in that order. Human hair showed elevated levels of Ni above MAC values in some of the samples analysed while all hair samples had elevated Zn contents above MAC. These results indicate that the local food items commonly available in Migori gold mining villages may contribute to increased body burden of potentially harmful elements (PHEs), with *R. argentea*, maize and cabbages contributing the highest levels.

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