Metals and arsenic in cassava in the Zambian Copperbelt mining district: Potential hazard linked with their intake by human being

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The concentrations of metals and arsenic in washed leaves and washed and peeled tubers of cassava (*Manihot esculenta* Crantz) growing on uncontaminated and contaminated soils of the Zambian Copperbelt have been analyzed. The concentrations of Cu in cassava leaves growing on contaminated soils reach as much as 612 mg kg^{-1} (total dry weight [dw]). Contents of Cu in leaves of cassava growing on uncontaminated soils are much lower (up to 252 mg kg^{-1}, dw). The contents of As, Co and Zn in leaves of cassava growing on contaminated soils are higher compared with uncontaminated areas, while the contents of Pb do not differ significantly. The contents of Cu, Zn and Pb in the peeled tubers of cassava are much lower than in its leaves. Arsenic is an exception. Even in highly contaminated areas, the contents of copper in the leaves and tubers of cassava do not exceed the daily maximum tolerance limit of 0.5 mg kg^{-1}/human body weight (HBW) established by the Joint FAO/WHO Expert Committee on Food Additives (JECFA). The highest tolerable weekly intake of 0.025 mg kg^{-1}/ HBW for lead and the highest tolerable weekly intake of 0.015mg kg^{-1}/HBW for arsenic are exceeded predominantly in the vicinity of smelters. Therefore, dietary exposure to metals and arsenic through the consumption of cassava leaves and tubers has been identified as a moderate hazard to human health. Nevertheless, as the surfaces of leaves are strongly contaminated by metalliferous dust in the polluted areas, there is still a hazard of ingesting high concentrations of Cu, As and Pb if dishes are prepared with poorly-washed foliage.

This study was carried out within the framework of the IGCP/SIDA Project No. 594, Mining and the Environment in Africa.The work was supported by the Czech Science Foundation (project GA ČR P210/12/1413).