Heavy metals accumulation in vegetables grown along the Msimbazi River in Dar es Salaam, Tanzania

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Abstract

Concentrations of cadmium, copper, chromium and lead was determined in four different edible vegetables namely Amaranthus blitum, A. gangeticus, Ipomea batata and Cucurbita maxima grown at four different sites along the contaminated Msimbazi River, Dar es Salaam, Tanzania. Analyses of these heavy metals were conducted using Atomic Absorption Spectrophotometry. Results obtained indicate that the concentrations of heavy metals range from below detection limit to 0.53, 0.14 to 29.08, 0.76 to 17.69, and below detection limit to 39.69 mg/100 g for cadmium, chromium, copper and lead, respectively. With exception to Ipomea batata, other vegetables contained at least two types of heavy metals with high concentrations beyond the permissible values recommended by FAO and WHO for human consumption. Concentrations of cadmium were within the acceptable limits for human consumption in all the vegetables investigated. This work, thus, seeks to provide information on levels of toxic heavy metals in leaves of edible vegetables irrigated with water contaminated by industrial and other anthropogenic effluents, and grown in contaminated soils along the Msimbazi River. The information can be used for monitoring processes to prevent excessive build-up in the food chain.

Keywords; heavy metals, industries, Msimbazi river, farming, vegetables

Full text ; **10.4314/ijbcs.v4i6.64947**