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EFFECT OF INFORMAL URBANIZATION ON SOME SOIL QUALITY INDICATORS AND HUMAN HEALTH RISK IN SOME IRRIGATED ARID LANDS

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ABSTRACT

Soil and water quality in irrigated arid lands is crucial for human health and sustainability. Heavy metal contamination of environment is a worldwide phenomenon that has attracted a great deal of attention. The current study aimed to study the levels of heavy metals in water, soil and sediment of Mostorod and El-Gabal El-Asfar irrigated soils. In addition, a health risk assessment for humans in contact with these soils was also conducted. Results revealed that heavy metals contents of irrigation water were at levels within allowed limits. The contamination status of the sediment with heavy metals was confirmed on the basis of enrichment factor (EF). The EF results supported the fact that the sediments were highly enriched with Pb and Cd due to human activities. Contamination factor (CF) of the soil of Mostorod was more than 3 in case of Pb and Cd indicated that this area are considerably contaminated with Pb and highly contaminated with Cd. Modified degree of contamination index proved that Mostorod area was within the level of high degree contaminated, while results of El-Gabal El-Asfar area showed low degree of contamination. To evaluate the effect of exposure of these metals on human health in these areas, hazard index (HI) was calculated using ingestion, dermal and inhalation of soil. The results revealed that the highest values of hazard index were recorded in case of Cr for children at Mostorod and El-Gabal El-Asfar soil.

Key words: Contamination factor, Enrichment factor, hazard Index, Heavy metals, Modified degree of contamination.