

Heavy metal in vegetables and health risk issue

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Heavy metal contamination of vegetables is becoming important as they contribute nutrients and fibers to human diet. Rapidly growing urbanization and industrialization have contributed heavy metals to agriculture soils and consequently in food chain. Dietary intake of heavy metals contaminated vegetables may pose serious threat to human health. Agricultural activities (pesticide and wastewater irrigation), transportation, and marketing practices, industrial and vehicular emissions have increased heavy metal levels in vegetables. The concentrations of Cu, Zn, Cd and Pb in locally grown vegetables (spinach, lady's figure, cauliflower, tomato, radish, cabbage, egg plant and amaranthus) and sold in urban markets varied from 0.55 to 111.20 mg.kg⁻¹, 16.85 to 469.45 mg.kg⁻¹, 0.10 to 11.20 mg.kg⁻¹ and 0.50 to 29.00 mg.kg⁻¹, respectively. The dietary intake of heavy metals by local population via spinach, lady's figure and cauliflower was found 0.39, 0.75, 0.028 and 0.018 mg.person⁻¹.d⁻¹ respectively. The estimated exposure of local population to Cu, Cd and Pb via above three vegetables was found above the reference dose set by USEPA. From the present study, it can be concluded that vegetables play a significant role in elevating the levels of heavy metal in diet and can pose serious threat to human health. The study suggests that necessary steps should be taken for efficient treatment of waste water and improvement of transportation and marketing systems of vegetable to reduce the extent of heavy metal contamination in irrigation water and vegetables, respectively.

Biography

R. K. Sharma has obtained doctorate degree in Botany from Banaras Hindu University, Varanasi, India at the age of 29 years. He is working in G. B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora, India (presently posted at Kullu) as a staff scientist since 2008. He has published more than 25 research papers in reputed scientific journals and participated in more than twenty conferences. Presently, his research works focus on heavy metal transfer in soil-plant system, health risk to heavy metals, bioremediation, biochemical diversity and micro-propagation.

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