

ABSTRACT

The objective of this research was to (i) investigate the effect of untreated wastewater from Hue City on the contaminations of heavy metals in soils, vegetables and irrigation water of peri-urban agricultural areas; (ii) estimate the health risk potential to local residents via vegetable consumption harvested in the areas. Samples were taken monthly from May 2018 - January 2019. Samples were selected from three-site locations such as Huong Chu (A), Phu Mau (B), and Quang Thanh (C). Sampling was carried out on irrigation water, control and agricultural soils, and vegetables in Hue city, Vietnam. Extraction of heavy metals using the wet digestion method. The principle of wet digestion is to use strong acids such as nitric acid (HNO₃), hydrochloric acid (HCl), and sulphuric acid (H₂SO₄). Based on the results of this study, (a) Concentration of heavy metals in irrigation water and agricultural soils were not contaminated seriously. (b) The significant effect of untreated wastewater and agricultural activities in agricultural soil in downstream farms was found. (c) 14%, 76%, and 47% of vegetables were contaminated by Cr, Cd, and Pb. (d) The concentration of Cr in soils affected by manure. (e) The consumption of vegetables harvested there can pose a tolerable health risk.

Keywords: peri-urban, agricultural, Cr, Cd, Pb, irrigation water, soils, vegetables