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Determination of Heavy Metals in Vegetables Grown in Sewage Irrigated Fields of Shakargarh, Pakistan

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Abstract:
The farmers use the waste and tube well water for the irrigation of crops and vegetables in the fields of Shakargarh district Narowal. The samples of water (10 each for wastewater and tube well water), soil (30), and vegetables (10 each for onion, garlic, and lettuce) were collected during the winter season from different locations of Shakargarh, where both tube well and wastewater is used for irrigation purposes. After digestion of samples, the concentration of heavy metals was determined by atomic absorption spectrophotometer. The results showed that the soil, water and vegetable samples contain zinc, cadmium, lead, chromium and nickel, was determined in different concentrations. The concentration of heavy metals in soil was found within the safe limit of the EU. All vegetable samples have heavy metals concentration below the permissible limit of FAO except lettuce in which concentration of cadmium was found above the safe limit. Since sewage water has higher heavy metals concentration than tube well water, so it is proposed that farmers should avoid using sewage water for irrigation.

Keywords: Irrigation of crops, vegetables, atomic absorption spectrophotometer, heavy metals.