



Effect of industrial and urban activities on total and available contents of nickel in some agricultural area around Mashhad

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Heavy metals are either beneficial or detrimental to high plants and animals. For essential micronutrients such as zinc, manganese, and nickel, insufficient uptake leads to deficiency-related health problems while excess uptake could cause toxicity. This research selected to evaluate the total and available concentration of nickel in some agricultural areas, around Mashhad. Soil samples were collected from 79 sites from (0-10 cm) topsoil and their location were determined using a GPS, Then total nickel concentration was determined with atomic absorption spectrophotometry following digestion of soil samples in aqua regia and available nickel, was estimated after extracting with DTPA. Statistical analyses were calculated using SPSS 11.5 for Windows and the distribution plot of nickel was drawn by Surfer 7. The results indicated that the mean and maximum concentration of total nickel were 38.6 and 81.9 mg kg⁻¹ respectively that exceeded the critical threshold in England and near the threshold of Australia and Canada and the mean and maximum concentration of available nickel were 0.4 and 1.1 mg kg⁻¹ respectively. Based on these results industrial and urban activities have affected the nickel contents of soil and in some parts, the concentration has exceeded the critical threshold, and has caused the contamination and toxicity of plant.

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