

EFFECTS OF SEWAGE SLUDGE APPLICATION ON THE AVAILABLE CADMIUM, LEAD AND IRON IN A SOIL USED FOR VEGETABLE GROWING IN NAJWAN AREA, ISFAHANZeinab Bandegani¹, Mahmood kalbasi²,^{1,2}, *Khorasgan Branch, Soil Science Department, Islamic Azad University, Isfahan, Iran*

Corresponding Author: Z_Bandegani19@yahoo.com

Introduction: Sewage sludge is a rich source of micro and macro nutrients. It is commonly applied to soils used for vegetable production. It, however, contains high concentrations of heavy metals that could accumulate in soil and enter the food chain (Majid Afuni et al. 1998). Repeated application of sewage sludge may also cause toxicity for plants and soil micro organisms. Sewage sludge also contains organic matter and salts that could affect physical and chemical properties of soil. This experiment was conducted to investigate the effect of the increasing rates of sewage sludge applications on cadmium, lead and Iron content of Najwan soil.

Material and Methods: This experiment was conducted, in the Greenhouse of Azad University, Khorasgan campus. Five rates of sewage sludge (0, 2, 4, 8, and 16%) was mixed with 1 Kg of soil in pots replicated 3 times and were incubated for 2 month with wetting and drying cycles. Soil samples from each pot were extracted with DTPA and the concentration of Fe, Cd and Pb were measured by AAS.

Results and Conclusion: Results showed that available Pb of soil increased significantly with sewage sludge application and the magnitude of the increase was proportion to the rate of application. The increase in available Fe and Cd was not significant for low rates (up to 4%), however higher rates caused significant increase in available Cd and Fe.

Application of high rates or repeated rates of sewage sludge could result in accumulation of lead and cadmium in the soil and increase of available forms of these metals in soil to a level that could result in transfer of the metals to plant tissues.

Key words: Sewage sludge, cadmium, Lead, Iron

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