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Assessments of heavy metals in soils and perceived health risks at artificial city in Saudi Arabia by using XRF technique

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By using X-ray fluorescence (XRF) technique, we were evaluating the soil pollution with heavy metals like (As, Cr, Cu, Ni, Pb, V and Zn) in the artificial city at Alkharj, south west of Riyadh, Saudi Arabia. The soil samples were collected in an open area at different depths, at different distances from the metallurgical plant. XRF analyses were carried out by using a low-energy mini-X-ray generator and a Si-PIN detector. The experimental results indicate that the concentrations of heavy elements decrease with the distance from the metallurgical works and they are greater than the levels detected in a control soil collected from a zone situated far from traffic and industrial activity. For the majority of metals, pronounced maximum concentrations for all depths were detected in the sites located in influence zones of industrial objective with ferrous processing activities. Anthropogenic releases give rise to higher concentrations of the metals relative to the normal background values and in some locations their levels exceed the alert level admitted by the Saudi guideline.

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