



## **Assessment of bioavailability and mobility of potential toxic elements in agricultural soils**

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Agricultural soils and surrounding environmental soils are threatened by trace metal contamination. Soil can be contaminated by trace pollutants through either natural or anthropogenic sources. The human activities include expansion of urban and industrialization, wastewater, sewage sludge, application of metal containing fertilizers and pesticides, among others. Therefore, this study reports the application of single extraction procedures (CH<sub>3</sub>COOH, EDTA, CaCl<sub>2</sub>, NH<sub>4</sub>NO<sub>3</sub>, deionized water), and pseudo-total digestion (aqua regia) for the determination of bioavailable major and trace elements in agricultural soils. BCR-701 and NIST certified reference materials were used to validate the reliability of the methods. The results of the extractable fraction revealed that most of the target trace elements can be transferred to the human being through the food chain, thus leading to serious human health. Anthropogenic activities were considered the primary reason for this phenomenon. The environmental impacts of trace metals in soil samples was assessed using enrichment factor (EF), geo-accumulation index (I<sub>geo</sub>) and contamination factor (CF). With regard to environmental impacts of trace metals, Al, Mn and Fe were much more mobile in all soil samples and had moderately high environmental risks.