



Heavy metal concentration and speciation in Sarcheshmeh soil, Kerman, Iran

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Copper smelting in Sarcheshmeh copper complex poses a serious threat to soil contamination by toxic heavy metals (As, Cu, Mo, Cd, Pb, Zn). In this study assessment of induced pollution to soil is carried out and heavy metal speciation is investigated. Calculated geoaccumulation index (I_{geo}) using baseline values in control site indicate that the most polluted stations are those close to the smelter and also in the prevailing wind directions. Also the level of contamination is rapidly decreased with increasing distance from the smelter. This is in agreement with statistical results and soil pollution index (SPI) which also confirm decreasing elemental concentration with increasing distance from the smelter.

Sequential extraction analyses indicate that metal mobility is not significant and the exchangeable fraction is negligible in most cases. The results of mobility factor calculation reflect decreasing heavy metal mobility with depth and also distance from the smelter. Furthermore, residual fraction constitutes a major fraction especially in the case of Pb, Mo and Zn. This may reflect contribution of native elements in topsoil enrichment, especially in areas distant from the smelter.