عنوان مقاله:

Mapping and risk assessment of heavy metals in agricultural soils of the Siakh Darengoun Region, Shiraz, Iran

محل انتشار:

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خلاصه مقاله:

Four heavy metals were measured in forty-nine topsoil samples collected fromagricultural areas in Siakh-Darengoun, Iran. The goals were to investigate soil spatialdistribution patterns of metals; their potential ecological risk; and sources. The Hakansonpotential ecological risk index and index of geo-accumulation (Igeo) were used forevaluating the condition of soil heavy metal enrichment and the extent of potentialecological risk. Results demonstrated that the mean concentrations in the agricultural soilswere ۲.۲۳ mg/kg for Cd, ۵.۳ mg/kg for Cu, ۳۸.۰۰۲ mg/kg for Pb, and ۱۳.۸۴ mg/kg for Zn.The average concentrations of Cd and Pb in the agricultural soils were higher than averageworldwide soils and for Cu and Zn, values were lower than average worldwide soils. Thespatial mapping of the distribution of heavy metals produced by kriging interpolationshowed similar patterns for all heavy metals, and higher concentrations of all heavy metalswere observed in the western and southern parts of the study area. Our findingsdemonstrated that in the Siakh-Darengoun plain, natural sources affect the levels of Cu andZn, however, anthropogenic sources such as chemical fertilizers, especially phosphatefertilizers could be the major sources of Cd and Pb. Hossain Abad agro industry in the westof the study area can be considered as one of the most important heavy metal sources. Thegeo-accumulation index classified Cu and Zn into no pollution levels, Cd and Pb intounpolluted to moderately polluted level. Cd produced serious ecological risk in agriculturalsoils and was the main pollutant, while the Cu, Pb and Zn had low ecological risk.Comprehensive potential ecological risk indexes of all metals showed that the soils in .SiakhDarengoun were suffering from high level of ecological risk

کلمات کلیدی: