

Distribution and sources of Ag, Au, Bi, Cu and Mo in surface soils. Case study: Mitrovica region, Republic of Kosovo

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Abstract – The objective of this study was to investigate the spatial distribution and content of a specific anthropogenic group of trace metals (Ag, Au, Bi, Cu and Mo) in surface soils (0 - 5 cm) of the Mitrovica region, Republic of Kosovo. The content of metals was determined by inductively coupled plasma - mass spectrometry (ICP-MS). The average content of Cu (42 mg/kg), Bi (1.5 mg/kg), Ag (0.44 mg/kg) and Au (2.7 µg/kg) exceeded the average content of metals in European and world soils by 3.4 and 1.4 times, 3.0 and 7.5 times, 1.62 and 8.8 times and 2.7 and 1.8 times, respectively. The average Mo content of 0.68 mg/kg exceeded the mean Mo content in European soil by 1.09 times, while the mean content in world soils was not exceeded. Copper levels were also found to exceed the Dutch target value of 36 mg/kg in 152 km² and the Dutch action value of 190 mg/kg on 6.2 km² of the 301.5 km² of the study area. The values of the enrichment factor (EF) for the analyzed elements are all above 1.5, indicating that their higher content is of anthropogenic origin, mainly due to lead and zinc mining and metallurgical activities in the study area. The quality of the soils in the Mitrovica region varies from heavily contaminated with copper and bismuth, with extremely high enrichment of Cu, Bi and Ag in the soils of the central zone (Zone I) and the urban soils of the cities of Zvečan and Mitrovica.

Keywords – Trace Metals, Soil, Pollution, Spatial Distribution, Enrichment Factor, Geo-Accumulation Index, Mitrovica Region, Republic Of Kosovo