

## **The detailed soil geochemical mapping of Upper Silesia Region, Southern Poland**

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The systematic environmental soil survey was carried out to establish a geochemical baseline across the heavily industrialized and the most highly populated region of Poland – the Upper Silesia Region.

Distribution of selected elements in the topsoils (0.0–0.3 m) and the subsoils (0.8–1.0 m) was correlated with the bedrock lithology and anthropogenic sources.

The geochemical mapping programme based on sampling density of 16 every 1 km<sup>2</sup> and the analyses: ICP-AES (for Ag, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, P, Pb, S, Sn, Sr, Ti, V and Zn), CV-AAS (for Hg), and coulometric method (for TOC).

High values of Al, Ba, Ca, Co, Cr, Ni, P, Sr, Ti and V occur in soils developed from Carboniferous, Triassic and Jurassic rocks as well as from Quaternary tills and loesses, while their low values were observed for soils developed from Pleistocene glaciofluvial sandy deposits covering most of the surveyed area. Soils that developed on sandy deposits and carbonates contain the low amount of TOC (<3%). Soils developed on river muds contain commonly 3–6% TOC and peaty soils – up to 40%. The results revealed that the soils in eastern part the Upper Silesia Region are extremely contaminated with Cd, Pb, Zn, Hg, Ag and As in the vicinity of Zn-Pb ore mines and processing facilities as well as in areas where soils were developed on outcrops of Zn-Pb ore-bearing Middle Triassic dolomites. The detailed geochemical mapping project of the Upper Silesia Region is available at <http://www.mapgeochem.pgi.gov.pl>