**Assessing soil and stream water geochemistry in the Clyde Basin, Scotland, UK.**

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Abstract

The Clyde Basin comprises the River Clyde catchment, west coast of Scotland, UK including the Glasgow conurbation, a major industrial centre in the past. Over recent years, the British Geological Survey has carried out regional-scale topsoil (5 – 20 cm) and surface water geochemical surveys across the Clyde Basin. The samples were analysed for total concentrations of approximately 50 parameters. The results show the influence of geology, land use, current and former mining activity, industry and urbanisation on the chemical quality of soil and surface water in the region. Concentrations of elements such as Cr, Cu, Mo, Ni, Sb and Zn are elevated up to 2.1 times (median values) in urban compared to rural topsoil. High urban topsoil (maximum 5334 mg/kg) and surface water (maximum 971 µg/L) Cr concentrations reflect the presence from historic industry, of highly alkaline and soluble chromite ore processing waste in Glasgow. By contrast, although, Pb levels in urban topsoil (maximum 9937 mg/kg) and surface water (maximum 6 µg/L) are elevated, urban surface waters are of neutral to alkaline pH; hence Pb is less mobile than in the rural acid peaty upland streams of the Basin. Highest Pb concentrations (maximum 10 000 mg/kg in topsoil and 19.4 µg/L in surface water) are associated with the former Leadhills mining area in the south of the catchment. The data provide a valuable insight into topsoil and surface water quality in the region to aid environmental risk assessment and catchment management.