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The urban geochemistry of soils from selected cities in the UK.

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The British Geological Survey (BGS) is responsible for the strategic geochemical mapping of the UK – the Geochemical Baseline Survey of the Environment (G-BASE) programme. This programme is based upon the systematic collection of stream sediment, stream water and soil samples at a density of 1 per 1.5 – 2 km² across the UK that are analysed for total concentrations of approximately 40 inorganic chemical determinants. These data are presented in map format as a series of atlases showing element distributions in the UK surface environment. Historically urban areas were avoided during the survey so that ‘natural’ geochemical baselines could be established. However, in response to the growing demand for inner-city regeneration and re-development of brown field sites and attendant need for information on soil quality, a sister survey for the urban environment was established in 1993. The Geochemical Survey of Urban Environments (GSUE) programme is based upon the systematic collection of top (0.15m) and profile (0.45m) soils at a sample density of 4 per km² across the built environment that are analysed for approximately 30 total inorganic chemical determinants. To date, 21 centres in Britain have been surveyed including Cardiff, Swansea, Stoke-on-Trent, Telford, Hull, Sheffield, York and Scunthorpe. The concentrations of many potentially harmful substances are enhanced in the urban environment as a result of contamination and the nature of urban ground, which is often disturbed and in-filled and bears little relation to the bedrock/surficial cover of the surrounding rural hinterland. Even in completely undisturbed urban areas, many potential harmful substance signatures are enhanced relative to the rural background due to atmospheric contamination, littering and urban surface run-off. The GSUE data provide important urban baseline information on these and other issues and implications of the data in terms of UK urban soil quality and contaminated land management will be presented.