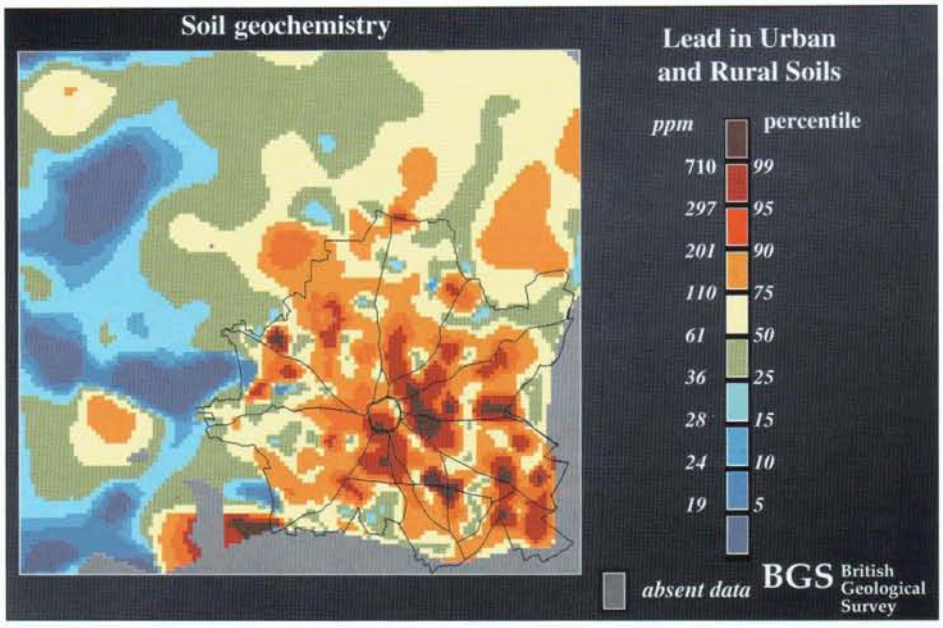
British Geological Survey

Geoscience data for urban development

Contaminated land



Map showing the levels of lead in surface soil, in Wolverhampton and the surrounding rural area. The urban area is characterised by elevated values related to vehicle emissions and past and present industry. The overall background levels within the built environment are enhanced when compared to the rural background.

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There is at present a strong government commitment to the redevelopment of land within cities and towns for residential, commercial and recreational use rather than expansion into areas of greenbelt. Inevitably this requires new development on 'brownfield' sites possibly with a legacy of contamination related to past industrial practices, mining and indiscriminate disposal of a variety of waste material.

The presence of contaminants within the ground may pose potential health risks or may affect structural foundations and it is essential that the history of the site is established prior to any investigation. Some sites may be more heavily contaminated than others and the strategy of 'fit for purpose' is now adopted, with a risk based approach being applied to assess potential impacts to health.

The BGS is actively involved in providing information to assist the process of identifying, assessing and remediating contaminated land. Through its regional Geochemical Baseline Survey of the Environment (G-BASE) the BGS is providing high resolution geochemical data, based on the analysis of stream sediments, soils and surface waters, collected to agreed international standards. These data are invaluable in establishing the natural background, which is highly variable depending on the underlying geology.

The application of Geographical Information Systems (GIS) is particularly useful in displaying and interrogating a variety of spatial data. The BGS has been involved with the development of a fully integrated geoscience GIS for the built environment based on a pilot study undertaken in the Metropolitan Borough of Wolverhampton. A series of 'layers' of information including past and present land use, geology, geochemistry, hydrogeology and geohazard information can be combined and analysed to assess specific areas. Such a system can provide the basis of a strategy for the identification and assessment of contaminated land, a key requirement of recent Department of the Environment (DoE) draft guidance.

Basic geoscience information is essential to the understanding of the behaviour of toxic pollutants in the shallow surface environment. The broad range of expertise within the BGS can assist planners, developers and those concerned with environmental health in developing strategies for contaminated land and help towards a more sustainable urban environment.

Consultation on Draft Guidance on Contaminated Land

Recent draft guidance published by the DoE, as part of the Environmental Protection Act 1990 (Part IIA: Contaminated Land, September, 1996), puts the responsibility of formulating a strategy for the identification of contaminated land onto local authorities. In certain circumstances, and depending on the type of contamination, it may be necessary for more detailed inspection by other agencies including the Environment Agency.

Contaminated land is defined as land where:

- significant harm is being caused or there is a significant possibility of such harm being caused, or;
- pollution of controlled waters is being, or is likely to be caused.