The Role of Geochemical Baselines in the Assessment of Land Quality.

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In the light of recent European and UK government legislation there is a need to identify and quantify the potential hazard of contaminated land. Previous attempts to define 'safe levels' of Potentially Harmful Elements and Species (PHES) have proved to be less than satisfactory. For example, when the Council of European Communities (CEC) guideline for nickel was applied to regional geochemical baseline data in Finland, extensive areas of the north-west of the country were designated as contaminated it spite of their being little evidence of harm to the indigenous population or environment. In the UK, many areas containing high concentrations (i.e. above the Inter-governmental Committee on Redevelopment of Contaminated Land trigger values) of PHES have been identified. There is a clear role for geochemical baselines in assessing and revising these guidelines, and in the assessment of their potential economic impact.

The British Geological Survey Geochemical Baseline Survey of the Environment (G-BASE) provides regional baseline data for PHES in stream sediment, stream water and soil. At present, data are available for Scotland, Wales and most of the north of England at a density of approximately 1 sample site per 2 km^2. These data provide a multi-element background geochemistry, which has enabled the identification of areas of contamination which have not been recognised previously. The collection of baseline data using this integrated, systematic geochemical approach to the assessment of land quality is currently being co-ordinated at the European through the Forum of European Geological Surveys (FOREGS) scale and at the Global scale through the International Union of Geological Sciences (IUGS). FOREGS are preparing a geochemical baseline for Europe to provide a normalised background which will enable contaminated land to be put into an international context. The FOREGS survey is based on the collection of stream sediments, stream waters, soils, floodplain deposits and humus samples, to provide an integrated understanding of the geochemistry of the surface environment.

In addition to the monitoring of rural land quality issues geochemical surveys have been extended to monitoring the urban environment. As part of this widening of emphasis the G-BASE programme is currently undertaking a baseline survey of urban areas using soil samples collected at a density of 4 per km^2. Initial results from these programmes will be presented.