

The British Geological Survey's Geochemical Baseline Survey of the Environment (G-BASE) project is responsible for providing National Capability in baseline geochemical mapping in the United Kingdom. G-BASE is a long-established systematic geochemical mapping project that is indirectly funded by the British Government through the UK Natural Environment Research Council (NERC). When sampling commenced in the late 1960s, the work was stimulated by mineral exploration and the need to assist geological mapping. The current high-resolution survey is very relevant to contemporary environmental science, and much of the current demand for baseline geochemical information relating to the surface environment is legislatively driven (Johnson et al., 2005). The early years of the G-BASE project were based entirely on rural drainage sampling, utilizing methodologies described in the regional geochemical atlas publications (e.g. BGS, 1993). Results were presented in map form in a series of hard-copy regional geochemical atlases, and little consideration was given to the urban environment. G-BASE methodologies have evolved considerably, since the mid 1970s, to meet the need for improved environmental information. The key aspects of progression include: use of a wider range of sample media, especially soils and stream waters; inclusion of, and focus on, baseline geochemistry in urban areas; continuous improvement in the range and quality of analytes reported; utilization of digital data processing and mapping methodologies and adoption of diverse publication media. Currently, approximately 88% of the British land area has been sampled by G-BASE. Sampling is carried out in the summer months (June–September) by Earth and Environmental Sciences students during their vacation. Continuous progress has been made, sampling between 2000 and 5000 sites each summer, but resources for the project have varied according to the BGS's commitments to other projects. To date, over 105 000 stream sediments, 50 000 soils and 90 000 stream waters have been collected. A programme of baseline geochemistry in urban centres was adopted by G-BASE in 1992, when Wolverhampton became the first UK urban centre to be sampled (Bridge et al., 1997). At this time, it was acknowledged that, as the regional geochemical sampling campaign passed through \* the country, urban centres should be routinely included. By 2010, a baseline geochemical survey had been completed in 26 urban centres (Figure 13.1), including Belfast and Londonderry in Northern Ireland (Nice, 2008), using standardized GBASE methodologies. The largest urban geochemical mapping exercise to be undertaken so far has been that in Greater London, known as the 'London Earth' project, where sampling was completed in 2010 (Knights and Scheib, 2010) and geochemical maps due for publication in 2011.