BASELINE GEOCHEMICAL CHARACTERISTICS OF URBAN AREAS - A RECORD OF ENVIRONMENTAL CHANGE IN THE ENGLISH MIDLANDS

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Systematic baseline sampling of soils in urban and rural areas has been undertaken by the British Geological Survey's (BGS) Geochemical Baseline Survey of the Environment (G-BASE). Using these urban and rural data in conjunction with each other provides a more powerful, and useful, interpretation of urban soil quality data to be made. In particular, this is because it allows the calculation of the unimpacted baseline concentration range, from which the effect and extent of urban activity on these baseline conditions can be assessed. Such an analysis provides a valuable tool for communicating to users the change which has occurred in the soil environment, generally within the last few hundred years of urbanisation and industrialisation.

These approaches have been undertaken using both urban and rural soil data from the English Midlands; an area in which the cities have differing histories of industrialisation and urbanisation, and are situated over contrasting soil parent materials. The interaction of these factors has led to varying enrichments of those contaminants which are widely reported in urban studies (e.g. Pb), some which were less expected (e.g. Br), and those which are elevated due to geogenic sources (e.g. As in Northampton). The possibility of a natural source for 'contamination' such as this is an important factor, and one which is sometimes overlooked in studies focusing only on the city area. The degree of anthropogenically driven environmental change has been examined by comparison of data from urban and non-urban areas overlying the same parent materials. Estimates have been made of the extent of this change in soil composition, using simple calculations based on exploratory data analysis,and probability plots.