

Mobile XRF and MCERTS analysis of soils.

*M N Ingham, L D Grimsley, S J Carter and H M Harrison.
British Geological Survey, Keyworth, Nottingham, NG12 5GG.*

A field method has been developed for the preparation and analysis of soil and contaminated land samples using a compact benchtop ED-XRF for the determination of a range of toxic heavy metals, including Ni, Cu, Zn, As and Pb.

The method uses either microwave or oven drying, sieving and/or grinding in the preparation of either loose powders or pressed pellets for analysis. Using this method, in excess of 40 samples can be analysed in a working day.

Good results have been obtained for regression, analytical precision and lower limits of detection, typically < 10 ppm. High detector resolution and a powerful deconvolution algorithm contribute to the results. The application was tested with over 200 reference materials, soil proficiency testing samples and in-house bulk materials presented either as pressed powder pellets or loose powders.

Furthermore, the compact size and low weight of the spectrometer makes it an ideal system for the analysis of soils and contaminated land on site. The method developed will be used in the BGS fully equipped Mobile Environmental Laboratory.

It is hoped to accredit the method under UKAS and for soils under the MCERTS scheme. Can bench top ED-XRF meet the exacting requirements of MCERTS?