

## **The Advantages and Limitations of Handheld X-Ray Fluorescence for Environmental Soil Screening**

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Exposure to heavy metals (e.g. Pb, Cd, As) and other pollutants can be detrimental to human health, even at low levels, which means their use is now widely restricted, and many countries around the world have stringent rules and regulations in place to limit exposure. For example, the soil in sites to be used for residential and recreational developments (e.g. playgrounds) must be tested for contents of toxic metals. If the levels found are above the regulated limits, a soil remediation plan must be put in place before any development work can be undertaken. Agricultural land assessment for food crop growing is also carried out widely to ensure food safety.

Handheld (also known as field-portable) X-ray fluorescence analysers are commonly used for environmental soil and sediment testing, as they offer rapid, on-site screening for heavy metals. The advantages and limitations of such analyzers will be considered in general and in practical examples.