FIELD PORTABLE X-RAY FLUORESCENCE (XRF): FIELD SCREENING TOOLS FOR RECLAMATION

ABSTRACT by CINDY COLLINS, INNOV-X TECHNOLOGIES CANADA

Focus : ***The use of x-ray tube based field portable x-ray fluorescence (XRF) for identification and quantification of contaminants***

Topic : ***Portable geochemical screening for contaminants. XRF limitations, benefits, resources and sampling considerations.***

Abstract:

After the discovery of x-rays in 1895 and their quantification in 1913, development of early wave dispersive XRF spectrometers measuring a single element had produced a standard for elemental analysis lasting decades. With the modern day need for multi-element analysis, isotope environmental concerns, safety issues and restrictions, the need for faster results and the requirement for use by less technical staff, development began in the 60's of portable XRF. The emergence of portable x-ray tube based energy dispersive XRF is providing more options for many applications requiring elemental analysis. We can now analyze more than 30 elements simultaneously and in many cases obtain quantification close or identical to laboratory data.

XRF is a non-destructive technique used to detect concentration of elements in a substance at a ppm level. Unlike traditional testing methods, field portable XRF can run analyses insitu and many more test point can be taken than those budgeted for lab analysis. For reclamation, analyses can be used to make decisions governed by baseline requirements using real-time datasets over large areas providing time and cost savings. Limitations and benefits of portable XRF will be examined.

The talk will discuss a couple of case studies to show how some of the concepts can be applied. EPA 6200 Method, Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentration in Soil and Sediment will be outlined for application in reclamation.

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