S1 TITAN Apps Brief

Arsenic in Soil & CCA Treated Wood

A backyard herb garden taken over by weeds was being refurbished. The area was already sectioned off with landscape timbers; but, the soil needed to be broken up to aerate and fertilize for new plants. Prior to adding new herbs, a handheld XRF was used for a quick elemental analysis of the soil.

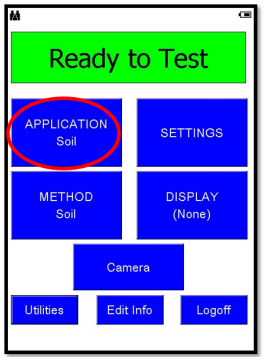
The soil seemed healthy enough with significant levels of iron (Fe), calcium (Ca), and potassium (K). However, results indicated arsenic (As) at 35 PPM. That is below most EPA actionable levels, but still concerned the owner. A quick analysis of the old landscape timber showed high levels of copper (Cu), chromium (Cr), and arsenic (As) indicative of "CCA" preservative treatment which can leach into the soil.

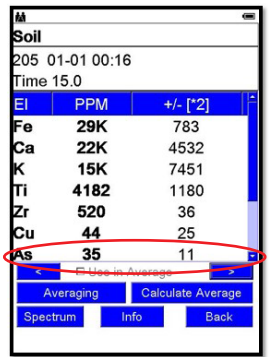
S1 TITAN

Bruker's S1 TITAN XRF

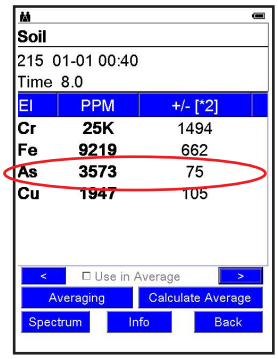
- Portable, handheld battery operated elemental analyzer
- Measures elements from magnesium to uranium simultaneously
- Non-destructive and fast measurements
- Ready-to-go factory standard or custom calibrations
- Full control OS and results on analyzer; PC SW available for live spectra, qualitative, semi-quant and quantitative data analysis.
- Wireless communication

Portable XRF for Soil Analysis





The S1 TITAN's "Soil" method results indicated the presence of arsenic (As) when the soil was screened to determine its health



A quick check of the old landscape timber showed significant levels of Cu, Cr, and As clearly indicating the presence of CCA wood treatment

Although arsenic did not leach into the soil at high levels; the owner decided to construct a decorative garden with a small pond instead of growing anything edible. Handheld XRF helped determine safe and optimal use of the old herb garden.

Portable XRF Environmental Solutions

Take the lab to the sample with Bruker's portable handheld and benchtop XRF analyzers for real-time decision making:

- Comply with US EPA Method 6200-05, EN15309-07, and ISO 13196:2013; NIOSH 7702, OSHA OSSS1/OSA1
- Measure any type of material on-site or in the lab - solids, powders, slurries, liquids, dust wipes, paint chips and flakes

Bruker Portable XRF Elemental Analyzers: *Simultaneously measure elements from sodium (Na) to uranium (U) at concentrations as low as parts-per-million to high percentage levels (depending on the element). Objects of any form – liquid, solid, cores, powder, shavings, chips – can be analyzed wherever they are located.*

Bruker's portable XRF analyzers are primarily used for quantitative analysis utilizing installed calibrations with like-sample standard reference materials. Results can be given as composition or Pass/Fail/Inconclusive for single or multi-elemental analysis of elements from Na to U, depending on the model. Spectra is always being collected with each measurement enabling live viewing or subsequent retrieval of stored data. Researchers primarily use this data to identify the presence of elements or to track estimates and/or ratios of elements of interest for qualitative or semi-quantitative work.

The convenient form factor of Bruker's CTX is ideal for samples presented in containers such as powders, soils and liquids; small samples; and those which require extended measurements of more than a few seconds.

Handheld XRFs enable in-situ measurements; in other words, they are "point-and-shoot" analyzers. An optional desk or bench top stand with a PC is typically used for samples presented in containers such as powders, soils and liquids; small samples; and those which require extended measurements of more than a few seconds.

CTX™ Portable XRF analyzer
Mg (12) to U (92)

Bruker's portable XRF features:

- Rh X-ray tube with high performance SDD detector
- 5 filter wheel (plus manual slot for TRACER 5)
- SharpBeam geometry for high performance, speed and sensitivity
- Touchscreen operation
- Internal camera (optional for CTX and TITAN)
- Wireless communication
- Battery or AC operation
- Lightweight and supplied with water tight transport case; Optional backpack for CTX
- Optional PC software available for qualitative analysis (Artax) or user generated calibrations (EasyCal)
- Optional factory installed calibrations available for various models including applications for:
  - Precious Metals
  - Alloys
  - Metals in Oil
  - Coatings
  - Hg Contamination
  - Mudrock, GeoExploration
  - Limestone
  - Heavy Metals & Nutrients in Soil
  - Restricted Materials (RoHS)
  - Food Quality
  - Plant Materials
  - Maritime Sulfur
  - Industrial Lead in Paint
  - Filter & Dust Wipes
  - Glass
  - Ancient Copper Alloys
  - Custom factory calibrations are also available

TRACER 5
Handheld XRF analyzer
Na (11) to U (92)

S1 TITAN
Handheld XRF analyzer
Mg (12) to U (92)

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