

On-site Screening of Environmental Contaminants

Site Characterization, On-Site Clearance Screening, Soil Stabilization and Remediation Quality Control with Thermo Scientific NITON® XL3t and XL3p Portable XRF Analyzers – Simply Superior XRF



Introduction

Clean air to breathe, water to drink and an environmentally safe place to call home are fundamental human rights that should be available to all inhabitants of our planet. As environmental consciousness grows, requirements for identification and remediation of environmental contamination in residential, commercial and industrial settings are increasing globally. Common toxic metals – including lead, arsenic, cadmium, chromium and mercury – are found frequently in the environment. Whether because of the unintended consequences of industrial processes or because of willful disregard for environmental regulations, heavy metal contamination cannot be ignored. Testing must be performed for risk assessment prior to remediation.

Regulators, consultants and other environmental professionals may be faced with the daunting task of collecting and analyzing hundreds or thousands of samples to identify the scope and boundaries of contaminated sites. Many different kinds of samples must be analyzed, including soils, sediments, painted surfaces and dust inside structures; ambient air and personal air monitoring may also be necessary. Laboratory sample analysis costs can be as high as hundreds of dollars per sample and can take days or even weeks to get results.

On-site sample analysis with handheld x-ray fluorescence (XRF) analyzers enables users to obtain real-time, quantitative sample analysis for a fraction of the cost. Real-time, on-site results help users dynamically modify inspection and remediation plans based on hard data, creating efficiencies and saving time and money. Environmental testing applications range from elevated blood lead (EBL) investigations to site assessment; to emergency response site-remediation; to brownfield

remediation; to occupational safety and health (OSHA) compliance – all directly benefit from the use of a handheld Thermo Scientific NITON x-ray fluorescence (XRF) analyzer.

Whether the need is for a public health official responding to a child's elevated blood lead report, an environmental specialist assessing an industrial site for metals contamination, or a remediation contractor working to make the cleanup process more efficient and economical, the use of handheld analytical equipment to drive inspection, remediation plans and actual site clean-up is now well-established. Whether the task is analyzing dust samples to determine the spread of contamination, protecting workers from airborne exposure to high levels of pollutants, or surgically delineating the boundaries of site contamination, Thermo Scientific



Real-time, lab-quality results in the field are more easily obtained with our Extend-a-Pole™ and GPS options.

NITON XL3 600 Series analyzers provide users with definitive, defensible and dependable results every day.

The Thermo Scientific NITON Solution

As the longtime industry leader in handheld XRF analysis, Thermo Fisher Scientific is uniquely capable of providing handheld solutions for environmental monitoring, site assessment and remediation with the Thermo Scientific NITON XL3 600 Series. Our new NITON XL3t 600 Series analyzers are equipped with a 50 kV miniature x-ray tube and multiple primary filters – the most powerful and flexible sources ever offered in handheld XRF instruments. The patented second generation Infiniton™ source in the NITON XL3p 600 Series offers unparalleled isotope performance and the lowest lifetime cost of ownership of any XRF analyzer available. Both have been designed to maximize productivity, often with little to no sample preparation required.

Weighing less than 3 lbs (~1.3 kg) and made of rugged GE Lexan plastics, NITON XL3 600 Series analyzers are ideal tools for obtaining real-time data in the field. Thermo Scientific NITON XL3 Series instruments provide users with real-time elemental sample analysis in-situ or from prepared samples. They represent the state-of-the-art in elemental analysis for environmental applications, allowing users to perform rapid, on-the-spot screening for elements of interest with the simple pull of a trigger. Obtaining chemical data in the field significantly reduces the cost, time and labor involved in survey, characterization and remediation activities.

Rugged, lightweight, high-performance NITON XL3 analyzers measure all 8 RCRA metals, 12 Priority Pollutants and 19 US EPA Target Analytes. Advanced algorithms eliminate site-specific calibrations, but users still have the ability to add additional user-defined calibrations.

For fast on-site results, NITON XL3 600 Series analyzers can be placed directly on the soil surface, for in-situ soil analysis with screening-level results – the ideal way to perform trend analysis or quickly delineate the boundaries of contamination. Placing samples in plastic bags roughly homogenizes the sample for semi-quantitative results, while drying, grinding and sifting the sample provides a more uniform composition, making quantitative analysis possible; these two methods are also known as ex-situ analysis. These techniques comply with US EPA Method 6200 and are the industry standard for site characterization, on-site clearance screening, soil stabilization and remediation quality control.



Test stand converts instrument to provide screening of prepared samples, dramatically increasing throughput.

A Range of Accessories for Easy Use

Complete with a full suite of sample preparation and analysis accessories, Thermo Scientific NITON XL3 600 Series analyzers can be wirelessly connected to a Bluetooth™-equipped GPS receiver to store coordinate data along with each individual reading for rapid site contamination mapping. The shielded, folding test stand instantly converts the instrument into a benchtop analyzer for measuring bagged or cupped samples, while an optional telescoping extension handle improves ergonomics during in-situ screening, increasing throughput to more than 600 samples per day.

Conclusion

Thermo Scientific NITON XL3 600 Series analyzers provide a portable, handheld solution for site screening, emergency response, work-site clearance testing and a host of other applications. They offer many operational and cost benefits including:

- Immediate sample results on-site
- Rapid delineation of contamination boundaries
- Legally defensible data
- Overall improvement in jobsite productivity

The Thermo Scientific NITON XL3t and XL3p 600 Series Environmental Analyzers – Simply Superior XRF.

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