ACCELERATE RESULTS
IN EVERY ENVIRONMENT

Proven Testing Solutions

PerkinElmer®
For the Better

FASTER RESULTS MEANS MORE PRODUCTIVITY – AND PROFIT

Change is not new to the environmental analysis market – but the speed of that change is. Emerging contaminants, new methods, lower detection limits – all these factors and more make it challenging to keep pace. At the same time, scientists performing environmental testing are facing an increasing number of samples – and the expectation that they must deliver ever-higher productivity with fewer resources.

So, we're committed to accelerating your environmental testing results, whatever your workflow looks like. You can expect:

- High-throughput, cost-efficient solutions, so you can run as many samples as possible
- Flexible technology to meet new analytical testing challenges and regulations
- Easy-to-use workflows that enable everyone in your lab to contribute to delivering high-quality, reliable analytical results

Turnkey solutions complete with analytical instrumentation, preset methods, workflows, and local-language capabilities, together with a robust consumables and accessories portfolio, informatics, service, and technical support – all coming together to help your lab meet new and evolving regulatory requirements.

Our established workflows save you time in method development and sample preparation and ensure your results are accurate and reliable. Large sample volumes and staff turnover are adding to your challenges, and these easy-to-use, cost-effective solutions suit any workload – large numbers of everyday samples, quick turnarounds and emergencies, even testing in the field and on the fly. Solutions for testing labs that do whatever it takes to ensure their customers and stakeholders receive reliable and accurate analytical testing for water, air, soil, and solid matrices.

LEADERSHIP IN WATER TESTING

STATE-OF-THE-ART AIR ANALYSIS

RELIABLE SOIL AND SOLIDS ANALYSIS

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Air toxics, ozone precursors, semivolatile organics, trace metals, and particulate matter – these are the targeted analytes and pollutants our air monitoring, sampling, and detection options address. You benefit from a comprehensive portfolio of solutions. Including headspace, automated thermal desorption and gas chromatography, infrared, and atomic spectroscopy technologies that deliver the building blocks environmental analysts need to help achieve reliable and accurate results – as efficiently and effectively as possible.

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From everyday nutrient testing to complex contamination determination and monitoring at remediation sites, we have the soil analysis solutions for your areas of focus. Your lab can gain the ability to detect the smallest concentrations of regulated contaminants and pollutants of emerging concern. From trace metals testing to VOCs and SVOCs to in-field soils analysis, we help you get the job done, reliably, efficiently, and in compliance.

LEADERSHIP IN WATER TESTING

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ELEMENTAL ANALYSIS: WATER

Analysis of Drinking and Natural Waters: ICP-MS

Analysis of Drinking Water Using Universal Collision-Reaction Gas Technology: ICP-MS

Analysis of Wastewaters Following U.S. EPA 200.7: ICP-OES

Whether through industrial or waste disposal operations, the breaking down of soils, lead pipes, or acid rain, environmental analysis involves detecting arsenic, copper, chromium, nickel, silver, selenium, mercury, and other elements in various matrices, even at ultralow concentrations. It's critical for environmental scientists to have reliable methods and instruments that can achieve results in compliance with established regulatory methods and detection limits.

Analysis of Drinking and Natural Waters: ICP-MS

The regulations that cover ground, surface, waste, and drinking waters are as diverse as the geographies and countries from which they derive. There's the ISO 17294-2 Water Quality by Inductively Coupled Plasma Mass Spectrometry (ICP-MS), foundational to many drinking water standards, the European Commission Water Framework Directive (Council Directive 98/83/EC), China's Standards for Drinking Water and in the US, the EPA's Clean Water Act (CWA), Safe Drinking Water Act (SDWA), and Resource Conservation and Recovery Act (RCRA) govern water quality standards. Specifically for drinking water analyte testing and method criteria, EPA 's methodology for the analysis of 21 elements by ICP-MS is specified in EPA Method 200.8.

One important aspect of Method 200.8 is the way it deals with interferences. Mathematical correction equations must be used because collision/reaction modes are not permitted. That's why our NexION® 1000 and NexION 2000 ICP-MS systems are an ideal solution for testing natural and drinking water samples. They can analyze them in standard (non-cell) mode, in accordance with EPA standards. It's simply the most comprehensive solution for EPA 200.8, as well as for stringent requirements for water analysis worldwide.

- For more information on analysis of drinking and natural waters with ICP-MS, click here.
- For more information on the NexION 2000 ICP-MS, click here.

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Analysis of Drinking Water Using Universal Collision-Reaction Gas Technology: ICP-MS

For a variety of reasons – increased urbanization, industrialization, mining, farming, and more – concentrations of elements in our surface and groundwaters is requiring more monitoring and testing of analytes of concern. Many countries have implemented stringent criteria that must be met before water can be deemed potable, and the analytical instrumentation used to detect trace elements needs to be capable of reaching sub-parts-per-billion detection limits.

ICP-MS is today's go-to method for trace-metal analysis, but plasma and matrix-based polyatomic interferences need to be accounted for. Reaction gases are useful in many cases where polyatomic interferences-to-analyte-signal ratios are significant, while inert gases are appropriate in situations where interferences are less intense. But collisions and reactions can be performed using a single gas mixture on the NexION 1000 ICP-MS, enabling labs to reach peak productivity while exceeding low detection limits specified by regulations.

- For more information on analysis of drinking water using universal collision-reaction gas technology, click here.
- For more information on the NexION 1000 ICP-MS, click here.

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Analysis of Wastewaters Following U.S. EPA 200.7: ICP-OES

Given the critical need to minimize and control water pollution, it's important that water be monitored everywhere – from the discharge of wastes into our surface and groundwaters to its environmental fate and effect on sources used for drinking water. So depending on the type of pollutant, matrix, or water source to be analyzed, a variety of testing techniques and methods can be utilized throughout the world, including ISO 11885:2007 with ICP-OES, utilized within the EU, China standard GB 8978, and EPA Method 200.7 for the determination of metals and trace elements in waters and wastes.

ICP-OES is a reliable and affordable method for determination of those elements in wastewaters. Our Avio® 500 ICP-OES system delivers the accuracy, reliability, stability, and more that are needed for wastewater analysis. And because the system uses half the argon of other instruments, labs can realize lower costs and a faster ROI over similar offerings.

- For more information on analysis of wastewaters following U.S. EPA 200.7, click here.
- For more information on the Avio 500 ICP-OES, click here.

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ELEMENTAL ANALYSIS: SOIL AND WATER

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- The Analysis of Soils and Waters in Accordance with EPA Method 6020B: ICP-MS
- Simple and Reliable Determination of Heavy Metals in Soil with the PinAAcle 900H AA Spectrometer
- Speciation Analysis in Surface Water and Groundwater: HPLC-ICP-MS

The Analysis of Soils and Waters in Accordance with EPA Method 6020B: ICP-MS

Worldwide population growth, along with increased industrial activity, has generated an enormous amount of liquid and solid waste, which makes its way into our environment. Even with the uptick in recycling and zero waste initiatives, green energy sources, and advancements in waste treatment plants, waste is a continuing challenge. EPA Method 6020B determines metals in water, soil and waste by ICP-MS.

Our NexION 2000 ICP-MS can be used as a simple collision cell instrument for the analysis of waters and soils in accordance with Method 6020B, while offering the future proofing capability of three gas channels for the use in controlled reaction mode should the limits or the list of elements change.

- For more information on analysis of liquid and solid waste in water and soil following U.S. EPA Method 6020B, click here.
- For more information on the NexION 2000 ICP-MS, click here.

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Simple and Reliable Determination of Heavy Metals in Soil with the PinAAcle 900H AA Spectrometer

Speciation Analysis in Surface Water and Groundwater: HPLC-ICP-MS

Simple and Reliable Determination of Heavy Metals in Soil with the PinAAcle 900H AA Spectrometer

A critical environmental challenge is the contamination of soil with heavy metals which decreases crop production and affects the health of people consuming the resulting food. These highly toxic elements bioaccumulate in the human body, leading to various serious diseases, including cancer. Cadmium (Cd), lead (Pb) and chromium (Cr) are commonly regarded as extremely toxic elements since they are harmful to humans, even at low concentrations. Zinc (Zn), nickel (Ni) and copper (Cu) are essential metals for plants at trace concentrations but are toxic if present at higher concentrations. Therefore, routine monitoring of these six metals in soil is vitally important to protect the quality and safety of food.

This work describes the analysis Cd, Cr, Cu, Pb, Ni, and Zn in soil using the PinAAcle® 900H AA spectrometer, leveraging a rapid digestion procedure which uses less acid than conventional digestion methods.

- For more information on heavy metals in soil, click here.
- For more information on the PinAAcle 900H AA spectrometer, click here.

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Speciation Analysis in Surface Water and Groundwater: HPLC-ICP-MS

Speciation Analysis in Surface Water and Groundwater: HPLC-ICP-MS

Elements can enter the environment through a variety of sources, both natural and anthropogenic. The leaching and release of toxic metals into the environment can have devastating effects on surrounding ecosystems. Since ecological fate and toxicity are linked to the chemical form of the element, studies discerning between chemical species in environmental matrices are increasingly important, especially in challenging matrices and at ultratrace levels.

Speciation studies like these benefit from a powerful, hyphenated system. Our NexSAR™ HPLC-ICP-MS speciation solution can provide comprehensive information regarding ion mobility, bioavailability, and toxicity, with an intuitive, user-friendly instrument that meets the user requirements for automation, ultralow baseline, powerful integration, and flexible data export.

- For more information on speciation studies on surface water and groundwater, click here.
- For more information on the NexSAR HPLC-ICP-MS speciation solution, click here.

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ORGANICS: WATER AND SOIL

Environmental testing labs, potable water suppliers, and waste treatment providers are increasingly responsible for testing higher volumes of samples and time-sensitive assays – all while adhering to strict and often-changing regulations. When it comes to organic pollutants, we stay current with applications and guidance for routine and emerging contaminants in water, delivering solutions for a broad range of volatile and semivolatile methods, geosmin, 2-MIB, fuel oxygenates, and disinfection byproducts, as well as for industrial solvents.

Most drinking water comes from surface and groundwater sources, which are susceptible to pollution by VOCs and SVOCs, including targets in herbicides and pesticides. Due to the chemical properties of these compounds and their detrimental effect on human and environment health, there are strict limits for their presence in water, wastewater, soil, and other wastes. We provide the precise, reliable, high-throughput testing capabilities and ultratrace-level detection essential for ensuring that drinking water sources meet regulatory standards.

ORGANICS ANALYSIS: WATER

ORGANICS ANALYSIS: WATER AND SOIL

Determination of Low Levels of SVOCs in Drinking Water: Liquid-Liquid Extraction and GC/MS

Determination of Methyl t-Butyl Ether (MTBE) in Water and Soil: GC/FID

The Determination of Low-Level BTEX in Drinking Water: Headspace Trap GC/MS

Determination of Low Levels of Semi-Volatile Organic Compounds in Drinking Water Using the Liquid-Liquid Extraction And GC/MS Large Volume Injection Method

SVOCs are regulated by most environmental agencies around the world due to their impact on the environment and human and animal health. Limits on the amount and types of SVOCs in environmental matrices are determined through standards such as those described in US EPA Method 8270D.

We have a fast, simple, single-step liquid-liquid extraction technique utilizing Method 8270D, followed by a large-volume direct injection of the extract into a Clarus® SQ8 GC/MS with a D-Swafer™ system for concentration, separation, and quantification.

- For more information on analysis of SVOCs in surface water, click here.
- For more information on our Clarus SQ 8 GC/MS systems, click here.

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Most drinking water comes from surface and groundwater sources, which are susceptible to pollution by VOCs and SVOCs, including targets in herbicides and pesticides. Due to the chemical properties of these compounds and their detrimental effect on human health and the environment, there are strict limits for their presence in water, wastewater, soil, and other wastes. We provide the precise, reliable, high-throughput testing capabilities and ultratrace-level detection essential for ensuring that drinking water sources meet regulatory standards.

ORGANICS ANALYSIS: WATER

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Determination of Low Levels of SVOCs in Drinking Water: Liquid-Liquid Extraction and GC/MS

Determination of Methyl t-Butyl Ether (MTBE) in Water and Soil: GC/FID

The Determination of Low-Level BTEX in Drinking Water: Headspace Trap GC/MS

Determination of Methyl t-Butyl Ether (MTBE) in Water and Soil: GC/FID

An additive to gasoline to enhance octane and to increase the oxygen content and reduce carbon monoxide, methyl-tert-butyl-ether (MTBE) has been found in increasingly high levels in groundwater, often as a result of accidental spills or leaking storage tanks. MTBE is very soluble in water, and it's slow to biodegrade. Water contaminated with MTBE has a pungent odor and unpleasant taste, and small amounts of it can render a drinking water source unfit for human consumption.

Methods that incorporate GC systems with a flame ionization detector (FID) have proven ideal for determination of MTBE in water and soil. Our Clarus 690 GC/FID with the TurboMatrix HS-40 Trap efficiently quantifies fuel oxygenates in a variety of matrices with exceptional precision, recovery, and linearity.

- For more information on determination of MTBE in water and soil, click here.
- For more information on our Clarus GC/FID and the TurboMatrix HS-40 Trap, click here.

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Most drinking water comes from surface and groundwater sources, which are susceptible to pollution by VOCs, SVOCs, including targets in herbicides and pesticides. As such, due to the chemical properties of VOCs (vaporize into air and dissolve in water easily) and SVOCs (heavy molecular weight – released more slowly from sources though readily adsorb to surfaces) and their detrimental effect on human health and the environment, there are strict limits for their presence in water, wastewater, soil and other wastes to protect drinking water sources. We provide the precise, reliable, high-throughput testing capabilities and ultra-trace-level detection that are essential for ensuring that drinking water sources meet regulatory standards.

ORGANICS ANALYSIS: WATER

ORGANICS ANALYSIS: WATER AND SOIL

Determination of Low Levels of SVOCs in Drinking Water: Liquid-Liquid Extraction and GC/MS

Determination of Methyl t-Butyl Ether (MTBE) in Water and Soil: GC/FID

The Determination of Low-Level BTEX in Drinking Water: Headspace Trap GC/MS

Determination of Low-Level BTEX in Drinking Water: GC/MS

Benzene, toluene, ethyl benzene, and xylenes (BTEX) are regulated toxic compounds, and benzene is also an EPA target carcinogen. In drinking water – even at low levels – these compounds can adversely affect public health. The determination of BTEX compounds in drinking water by Headspace Trap GC/MS are specified by EPA Method 524.2 and in ISO 20595:2018.

Using our Clarus SQ 8 GC/MS system with TurboMatrix HS-40 Trap provides not only exceptional sensitivity (and lower detection limits), but also additional analyte confirmation, for molecular-level identification and fewer false positives. In this way, we're able to exceed current EPA requirements for BTEX while also meeting or exceeding all other Method 524.2 requirements for these analytes.

- For more information on the determinations of VOCs in water, click here.
- For more information on our Clarus SQ 8 GC/MS and the TurboMatrix HS-40 Trap, click here.

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RADIOCHEMICAL ANALYSIS

Radioactivity is the tendency of unstable nuclei to emit particles to bring it closer to stability. These particles are encountered at typically very low level in nature. Sources for naturally occurring radioactivity include minerals containing radioactive elements, background cosmic rays, solar flux, radon gas, radioactive materials in manufacturing, nuclear medicine, and industrial operations such as nuclear power plants, nuclear laboratories, and radioactive waste handling and disposal.

Exposure to radioactive particles can be severely detrimental to humans and the ecosystem. Regulatory agencies have set concentration limits, standards, and analytical testing methods to detect radioactivity in environmental matrices. Any entities that deal with radioactive substances, and some suppliers of potable water or wastewater treatment (where required by authorities), must perform radioactivity-level determinations.

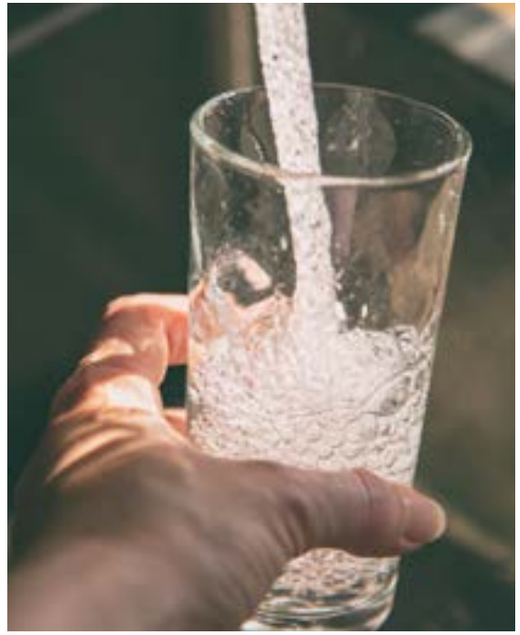
Determination of the ^{3}H, Gross α/β, and ^{222}Rn Activity Concentration in Drinking Water

Measurement of ^{90}Sr by Preconcentration/ Matrix Separation and Reaction Cell ICP-MS

Determination of the ^{3}H, Gross α/β, and ^{222}Rn Activity Concentration in Drinking Water

While determination of the activity of tritium (^{3}H), radon-222 (^{222}Rn), and gross α/β has been routine in many laboratories, the European Council Directive 2013/51/Euratom contains updated recommendations for sampling rate, detection limits, and other parameters that have forced labs to upgrade instrumentation and adjust methods. The Quantulus™ GCT provides the sensitivity needed to meet today's most stringent compliance requirements for measurements governed by this directive. The system's GCT makes it a suitable tool for low-level applications and can significantly reduce counting time compared to traditional instruments.

- For more information on determination of radioactivity in drinking water, click here.
- For more information on our Quantulus GCT, click here.



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The tsunami after the 2011 Tohoku earthquake devastated a vast coastal area of eastern Japan. The Fukushima Daiichi nuclear reactor suffered meltdowns of its uranium fuel rods, resulting in the release of radioactive isotopes, including strontium-90 (^{90}Sr), which has a half-life of 29 years. When organisms ingest ^{90}Sr, it accumulates in the bones and continues to emit beta radiation – so assessing environmental contamination by this isotope is essential for informed local public health decisions. Our NexION® ICP-MS reduces ^{90}Sr analysis time from 14 days to 14 minutes, which is vitally important when monitoring large volumes of samples following a nuclear incident and helping ensure the health and safety of the environment.

- For more information on the analysis of Strontium, click here.
- For more information on our NexION 2000 ICP-MS, click here.

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OUTDOOR AND AMBIENT AIR ANALYSIS

Urbanization, population density, and industrialization are all contributors to the increase of pollutants in our air. Climate change and the advent of new and more potentially harmful chemical emissions further add to the complexity of air monitoring and testing. Today the EPA, together with standards bodies in the E.U., China, and elsewhere, conducts a vast amount of research, produces findings, and develops technologies to help us understand air pollution causes and cures.

Environmental labs, governments, and industrial companies look to us for fast, accurate, reliable – and compliant – volatile and semivolatile organic compound analysis; ozone precursor, soil vapor intrusion, and fenceline monitoring solutions; even portable systems for fast, onsite analysis – everything environmental scientists and analysts need to achieve method and monitoring compliance.

We've been at the forefront of method development and optimizing workflows to determine the presence of organic compounds in a variety of matrices, including spearheading EPA Compendium Method TO-17. When soil vapor intrusion policies were being implemented, we extended the boiling range to include all regulated polycyclic aromatic hydrocarbons.

Determination of Volatile Organic Compounds in Soils By HS-GC/MS

Analysis of VOCs in Air Using EPA Method TO-17

Determination of Volatile Organic Compounds in Soils By HS-GC/MS

Volatile organic compounds (VOCs) have boiling points from 45 °C to 325 °C and are widely used as industrial chemicals/solvents. Low concentrations of VOCs can have a significant impact on human health, as many are regarded as highly toxic, refractory, and carcinogenic. The detection and determination of VOCs in the environment are of the upmost importance for both human and environmental health. One of the most widely used analytical methods for determining volatiles in soil is EPA Method 8260. It utilizes our Clarus SQ 8 system with purge-and-trap sample introduction to study 36 VOCs in soil, presenting detailed method parameters with precision, recovery, linearity, and detection limit results. The solution also meets or exceeds the performance criteria set out in HJ642-2013 and EPA method 5021/8260.

- For more information on analysis of of VOCs in soil, click here.
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Analysis of VOCs in Air Using EPA Method TO-17

Analysis of VOCs in Air Using EPA Method TO-17

It's incumbent upon governments and the scientific community to gain a better understanding of how VOCs and SVOCs impact human health. We've extended the hydrocarbon range of Method TO-17 for soil gas above napthelene and for fenceline monitoring at manufactured gas plant sites, where the range was extended to benzo(ghi)perylene – changing a two-method requirement to a single method.

EPA Method TO-17 in the US, Standard HJ 644-2013 in China and ISO 16000-6:2011(en) for Europe are used to determine toxic compounds in air, with sorbent tubes used as the sample collection method. These tubes can either adsorb specific compounds or a broad range of compounds, quantitatively. Our TurboMatrix™ Thermal Desorber and sorbent tubes, in conjunction with our Clarus® SQ 8 GC/MS system, provide a very cost-effective technique in the sampling and analysis of VOCs and SVOCs in air.

- For more information on analysis of VOCs in air, click here.
- For more information on our Clarus SQ 8 GC/MS and the TurboMatrix Thermal Desorber, click here.

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- Analysis of Volatile Organic Compounds in Air by Online TD-GC
- Augmenting Standard Methods of Measuring Airborne $PM_{2.5}$ Using IR Imaging
- Improvements to Ambient Air Monitoring (U.S. EPA PAMS) Using a Clarus 690 Gas Chromatograph

Analysis of Volatile Organic Compounds in Air by Online TD-GC

The U.S. EPA regulates 189 hazardous air pollutants under the Clean Air Act of 1990 – and 51% of them are VOCs. The CAA offers further regulation and guidance for the monitoring of VOCs and ozone pollution in ambient air with a list of 57 ozone-precursor target analytes monitored under U.S. EPA's Technical Assistance Document for Sampling and Analysis of Ozone Precursors, as well as the requirement of states to establish photochemical assessment monitoring stations (PAMS). One application for VOC monitoring with an extended target compound list utilizes our TurboMatrix 300 TD and PerkinElmer Clarus 580 GC with exceptional repeatability, linearity, and detection limits.

- For more information on analysis of VOCs in air, click here.
- For more information on our Clarus 580 GC system, click here.

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Analysis of Volatile Organic Compounds in Air by Online TD-GC

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Improvements to Ambient Air Monitoring (U.S. EPA PAMS) Using a Clarus 690 Gas Chromatograph

Augmenting Standard Methods of Measuring Airborne $PM_{2.5}$ Using IR Imaging

Air pollution continues to be a global challenge, despite the widespread adoption of clean-energy technologies and initiatives. One pollutant of concern is particulate matter (PM) – solid and liquid particles suspended in the atmosphere. The International Agency for Research on Cancer (IARC), and World Health Organization (WHO) designate particulates as Group 1 carcinogens. Particles under 2.5 micrometers in size ($PM_{2.5}$) are of concern because of links to respiratory diseases and lung cancer. The use of IR imaging to measure $PM_{2.5}$ particles gives information that's qualitative and quantitative. What's more, the IR imaging measurement takes only five minutes, whereas ion chromatography requires solvent extraction of the particulates and up to 25 minutes per sample.

- For more information on analysis of airborne $PM_{2.5}$, click here.
- For more information on our Spotlight 400 Imaging FT-IR microscope, click here.

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OUTDOOR AND AMBIENT AIR ANALYSIS

Urbanization, population density, and industrialization are all contributors to the increase of pollutants in our air. And climate change and the advent of new and more potentially harmful chemical emissions further add to the complexity of air monitoring and testing. Today the EPA, together with standards bodies in the E.U., China, and elsewhere, conducts a vast amount of research, produces findings, and develops technologies to help us understand air pollution causes and cures.

Environmental labs, governments, and industrial companies look to us for fast, accurate, reliable – and compliant – volatile and semivolatile organic compound analysis; ozone precursor, soil vapor intrusion, and fenceline monitoring solutions; even portable systems for fast, onsite analysis – everything environmental scientists and analysts need to achieve method and monitoring compliance.

We've been at the forefront of method development and optimizing workflows to determine the presence of organic compounds in a variety of matrices, including spearheading EPA Compendium Method TO-17. When soil vapor intrusion policies were being implemented, we extended the boiling range to include all regulated polycyclic aromatic hydrocarbons.

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VOCs are known to contribute to the formation of ground-level ozone. The Clean Air Act sets goals for ozone compliance, and urban areas that don't meet these goals are monitored by the Photochemical Assessment Monitoring Stations program (PAMS). One study shows that our On-line Ozone Precursor Analyzer achieves quantitation below 0.1 ppb (FID) with the capability of sampling for 40 minutes per hour, meeting the requirements of this exacting regulation. Our TurboMatrix TD system has also been shown to perform U.S. EPA ozone precursor analysis within the specifications required by the method.

- For more information on ambient air monitoring, click here.
- For more information on our Clarus 690 system, click here.

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ANALYSIS OF CONTAMINANTS OF EMERGING CONCERN

Since the 1990s, much of the environmental testing has centered around newer, manmade compounds in products we use every day, including medicines, personal care or household cleaning agents, and lawn care and agricultural products. These contaminants enter surface water, groundwater, and soil, making their way into drinking water sources and the aquatic ecosystem. They can also bioaccumulate up the food web, putting even nonaquatic species at risk from consumption of contaminated fish. The regulatory landscape for contaminants of emerging concern is dynamic, with advisory and maximum contaminant levels being added at the state and federal levels and a move toward more stringent detection limits.

Rapid Measurement of Nanoparticles in Seawater Using Single-Particle ICP-MS with All Matrix Solution

FT-IR Microscopic Analysis of Microplastics in Bottled Water

Rapid Measurement of Nanoparticles in Seawater Using Single-Particle ICP-MS with All Matrix Solution

Single-particle ICP-MS has become an essential tool for the analysis of nanoparticles in various environmental matrices. It enables fast, accurate analysis of particle size and concentration, plus ionic (dissolved) concentration, in a single analysis, making it the technique of choice for tracking nanoparticle transformations in natural systems. Our NexION 2000 ICP-MS All Matrix Solution measures particle size and concentration in seawater without the need for sample dilution, providing online gas dilution of the sample aerosol between the spray chamber and the plasma. This dilution alleviates the sample matrix without affecting the state of the nanoparticles in the sample, eliminating signal suppression.

- For more information on measurement of nanoparticles, click here.
- For more information on our NexION 2000 ICP-MS system, click here.

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FT-IR Microscopic Analysis of Microplastics in Bottled Water

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A recent study reports that microplastic particles have been detected in several brands of bottled drinking water. The effects on human health from microplastics are still to be determined, but the presence of microplastics containing priority organic pollutants (POPs) in food and beverages is a major concern. Analysis of bottled water can determine the presence, identity, size, and number of these microplastics. IR spectroscopy using our Spotlight 400 FT-IR imaging system is an ideal analytical technique for the identification of polymers, allowing for the detection and identification of microplastics of only a few microns.

- For more information on analysis of microplastics, click here.
- For more information on our Spotlight 400 FT-IR system, click here.

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A Simple and Sensitive Method for Rapid Determination of PFOA and PFOS in Water Samples by Direct Injection UHPLC/MS/MS

Analysis of PPCPs in Drinking Water at Low PPT Levels by Online SPE-UHPLC-MS/MS

Analysis of Challenging Polar Contaminants in Water by LC/MS/MS with Direct Injection

A Simple and Sensitive Method for Rapid Determination of PFOA and PFOS in Water Samples by Direct Injection UHPLC/MS/MS

Per- and polyfluoroalkyl substances (PFASs), otherwise known as per- and polyfluorinated compounds (PFCs), are a group of anthropogenic chemicals produced and widely used in industrial applications and consumer products since the 1950s. Among PFASs, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have been the most prevalent in the environment and may be considered carcinogenic in humans. Our QSight LX50 UHPLC system in tandem with our QSight 420 mass spectrometer provides a simple, rapid, sensitive, and cost-effective LC/MS/MS method for the analysis of PFOA and PFOS in drinking and surface water samples at sub to low ng/L (ppt) levels.

- For more information on determination of PFOA and FPOS in water, click here.
- For more information on our QSight system, click here.

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Analysis of PPCPs in Drinking Water at Low PPT Levels by Online SPE-UHPLC-MS/MS

Pharmaceutical and personal care products (PPCPs), including prescription drugs, over-the-counter medications, sunscreens, and soaps, are becoming an emerging environmental concern and can enter the environment through various sources, including municipal wastewater, surface water, and even drinking water. Testing for a wide variety of chemical classes/types typically present at parts-per-trillion (ng/L) concentrations in drinking water can be challenging. We provide an automated approach to detection that allows for significant and efficient analyte concentration, eliminating the need for elaborate and time-consuming sample preparation procedures.

- For more information on determination of PPCPs in water, click here.
- For more information on our QSight system, click here.

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ANALYSIS OF CONTAMINANTS OF EMERGING CONCERN

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Analysis of Challenging Polar Contaminants in Water by LC/MS/MS with Direct Injection

Analysis of Challenging Polar Contaminants in Water by LC/MS/MS with Direct Injection

The E.U.'s Water Framework Directive and other regulations indicate environmental quality standards for water and define more than 30 substances as significant risk to humans, including heavy metals, pesticides, herbicides, PPCPs, PFASs, and other industrial pollutants. These contaminants encompass a wide variety of compounds and chemical classes, presenting analytical challenges for water scientists. Our QSight LX50 UHPLC system coupled with the QSight 420 mass spectrometer provides an efficient and effective solution for tackling these tough compounds, with no need for special chromatographic separation techniques such as ion chromatography, which add additional hardware and cost to the system.

- For more information on analysis of polar contaminants in water, click here.
- For more information on our QSight system, click here.

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CONSUMABLES AND ACCESSORIES MAKE ALL THE DIFFERENCE

Governments and laboratories around the world that perform environmental testing need to analyze increasingly complex samples under tighter regulatory requirements. So we've made it our mission to provide not only a comprehensive portfolio of instrumentation, software, and applications, but also consumables and accessories to support every variety of environmental testing method across every environmental matrix.

Find out more about these leading consumables and accessories, click on the links:

Consumables for Atomic Spectroscopy

Consumables for Chromatography

Consumables for Material Characterization

Atomic Spectroscopy Consumables Interactive Catalog

Atomic Chromatography Consumables Interactive Catalog

Atomic Material Characterization Consumables Interactive Catalog

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SUPPORTING THE BUSINESS OF SCIENCE

In today's complex environmental regulatory landscape, every laboratory function must work together toward the goal of efficiency in the service of a more sustainable environment. That's the goal of OneSource® Laboratory Services, too. We deliver solutions that cover all aspects of scientific lab operations and can be customized for the scientific workflows – and business outcomes – you're driving toward.

OneSource is the one service organization with the requisite understanding of lab and R&D needs, delivering a customized systems approach to your success. With insights and expertise, our consultants pinpoint the issues and inefficiencies and engineer the right solutions to solve your scientific and business challenges. From everyday instrument repair and service to compliance and validation, from laboratory IT service to consulting and scientific staffing, OneSource Laboratory Services can help streamline your lab routines and get your scientists back to their main order of business – their science.

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