TAP INTO THE CONFIDENCE COMPLIANCE BRINGS

Drinking Water Analysis Solutions

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Prepare for Today's Regulations and Tomorrow's Challenges

Clean and pure drinking water is a necessity. That's why governments, contract labs, utilities and regulatory agencies test a high volume of samples, time-sensitive assays, and take on emergency sampling while adhering to strict and often-changing regulations.

If you are tasked with ensuring that drinking water resources meet regulatory requirements, including certifying water is safe for human consumption, testing must be conducted for a wide range of possible contaminants.

Reliable, Robust, Sensitive, and Efficient

Whether you are analyzing samples for trace elements, volatile compounds, semivolatile compounds, radiochemicals, PFAS or other emerging contaminants, PerkinElmer instruments and analytical solutions will help you achieve accurate, timely results.

Our workflows and intuitive user interfaces allow for the quick implementation of new technologies, education of new personnel, and optimization of laboratory throughput.

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Common Water Contaminants

How Water Quality May Be Compromised

Rain Passing Through Air Pollution and Acid Rain

Waste from Manufacturing Plants

Runoff from Agricultural Pesticides, Insecticides, and Fertilizers

Gasoline Leaks, Leaking Tanks

Animal Waste

Drug Residues Flushed into the Water Supply

Sewage and Waste Runoff

Copper and Lead Pipes

Leading To These Contaminants

Inorganic Compounds:
Arsenic, Copper, Chromium, Chlorine and Chloramine, Fluoride, Lead, Mercury, Nitrate/Nitrite

Organic Compounds: VOCs, SVOCs, PCBs, PCPs, PFAS (PFOA and PFOS), glyphosate, atrazine and other herbicides/pesticides/insecticides

Microorganisms: bacteria, parasitic pathogens, viruses

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Identifying Trace Elements

Respond to Regulatory Requirements of Trace Elemental Applications

Metals such as copper, lead and iron, metalloids, arsenic, and radionucleotides come from various natural and manmade sources. These trace elements can dissolve in water, where they can impact human health via drinking water sources.

The **NexION®** family of ICP-MS systems delivers high productivity, sensitivity, and user-friendly workflows to meet and exceed the demanding regulatory requirements of ultra-trace elemental applications, including EPA 200.8 and ISO 17294-2.

Application Highlights

- Simultaneous Analysis of Hydride and Non-Hydride Elements in Drinking Water with Avio 550 Max ICP-OES and HydraMist Sample Introduction System
- Rapid Water Analysis Following U.S. EPA 200.7 Using the Avio 560 Max ICP-OES
- Analysis of Drinking and Natural Waters with the NexION 2000 ICP-MS
- Quantification of Low Levels of Hexavalent Chromium in Water Using a NexSAR HPLC-ICP-MS
- Multi-Element Analysis of Drinking Water Using the NexION 1000 ICP-MS Following ISO 17294-2 and (EU) 2020/2184

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Detecting Volatile Organic Compounds (VOCs)

VOCs have a high vapor pressure and low water solubility and are **common ground-water contaminants**. Many VOCs are man-made chemicals used and produced in manufacturing fuel additives (BTEX), paints, pharmaceuticals, and refrigerants, as well as industrial solvents such as trichloroethylene, fuel oxygenates (MTBE), disinfection byproducts, and 1,4 dioxane.

The **GC 2400™** platform surpasses regulatory method criteria and offers unparalleled stability. Designed to deliver high throughput and rugged dependability it meets the most critical VOC requirements.

Application Highlights

- Read about Volatile Organic Compound Identification in Water by Portable SPME-GC/MS
- Learn more about• Determination of Low-Level Benzene, Toluene, Ethyl Benzene, and Xylenes (BTEX) in Drinking water by Headspace Trap GC/MS
- Read how we Determination of t-Butyl Methyl Ether (MTBE) in Water and Soil
- Learn about U.S. EPA Volatile Organics Method 524.2 Using Purge and Trap GC/MS.

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Investigating Semivolatile Compounds in Water

Approximately 90% of all drinking water comes from rivers, lakes, and streams. **Semivolatile Compounds** (SVOCs), Polynuclear Aromatic Hydrocarbons (PAHs), herbicides, and pesticides often pollute surface and groundwater sources such as rivers, lakes, and streams.

The **GC 2400** platform with robust liquid auto sampling provides reliable, ultratrace-level detection essential to ensuring that drinking water sources meet regulatory requirements.

Application Highlights

- Determination of Low Levels of Semivolatile Organic Compounds in Drinking Water Using the Liquid-Liquid Extraction and GC.MS Large Volume Injection Method
- Semivolatile Organics in Drinking water using EPA Method 525.2 Optimized for Greater Sensitivity
- Rapid UHPLC Determination of Nine Common Herbicides in Drinking Water with the PerkinElmer Flexar FX
- Analysis of Polycyclic Aromatic Hydrocarbons (PAHs) by Online SPE-LC/MS/MS in Drinking Water

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Measuring Radioactivity

Minute traces of radioactive radium and uranium are often found in drinking water. However, the concentration and composition of these radioactive elements vary regionally based on local rocks and soil. Globally, there are multitudes of regulations that set the maximum safe ultra-trace levels of radioactivity based on different measurements.

The **Quantulus™ GCT** liquid scintillation counter is the ideal system to test for Tritium, Radon-222 and gross a/β-activity samples taken from a water reservoir, tap water, or other sources to ensure consumer safety.

Application Highlights

- Determination of the 3H, Gross α/β, and 222Rn Activity Concentration in Drinking Water with the Quantulus GCT 6220
- Guide: Know All About Radioactivity Analysis in Drinking Water as per Regulatory Guidelines

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The Impact of Microplastics

Microplastics are tiny pieces of plastic less than five millimeters (0.2 inches) in diameter. Over the past decade, these minute structures have been discovered in a multitude of aquatic organisms and the environment.

The impact of microplastics on human health is unknown at this time, but the presence of microplastics, potentially containing Priority Organic Pollutants (POPs), is a major concern. Investigations into the presence of microplastics in bottled water and drinking water are underway, and proposed regulatory actions are being considered.

IR microscopy is an excellent analytical technique for detecting microplastics in various drinking water sources. The **Spotlight™ 400 FTIR** imaging system delivers intelligent automation and sophisticated analysis.

Application Highlights

- FT-IR Microscopic Analysis of Microplastics in Bottled Water
- FT-IR Imaging Analysis of Microplastic Test Sample
- University of Birmingham Team Uses Agile TGA-FTIR-GC/MS Workflow to Advance Microplastics Research

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Addressing Emerging Contaminants

One of the most critical groups of emerging contaminants is Pharmaceuticals and Personal Care Products (PPCPs), owing to their ability to effect human physiology at low concentration levels.

These emerging contaminants encompass a wide variety of chemical classes and types, including steroids, antibiotics, nonprescription and veterinary drugs, sunscreens, and more. Due to their diverse nature and ability to impact living systems at low concentrations, the development of analytical methods which provide both selectivity and sensitivity is a daunting task.

The **QSight® Triple Quadrupole LC/MS/MS** supports the work of researchers, regulatory bodies, and industry scientists investigating these chemicals by providing accurate, robust instrumentation and sample handling technologies to optimize lab workflow and performance.

Application Highlights

- 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

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The Rapid and Sensitive Analysis of PFAS

Per- and Polyfluoroalkyl Substances (PFAS) are a highly stable group of synthetic organic compounds. Their resistance to environmental degradation has led to concerns over accumulating levels of PFAS in the environment. Research has proven the need for more extensive testing, including regulatory mandated requirements to ensure drinking water does not contain PFAS.

To meet stricter regulations requiring lower detection limits while maximizing throughput and efficiency, utilize the **QSight® Triple Quadrupole LC/MS/MS**. Ideal for environmental samples, these systems come equipped with ready-to-implement solutions featuring one of the most sensitive instruments and highest throughputs available, providing the capacity to test the most challenging, complex samples.

Application Highlights

- Rapid and Sensitive Analysis of 17 Per- and Polyfluoroalkyl Substances in Water by Direct Injection with QSight 420
- Improved Throughput for the Analysis of Perfluoroalkyl and Polyfluoroalkyl Substances in Drinking Water by EPA Method 533 Analysis of Challenging Polar Contaminants in Water by LC/MS/MS with Direct Injection
- Analysis of PFAS in Drinking Water with EPA Method 537.1 Using QSight UHPLC/MS/MS
- A Simple and Sensitive Method for Rapid Determination of PFOA and PFOS in Water Samples by Direct Injection UHPLC/MS/MS

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Responding to Regulatory Requirements

Private individuals, large municipalities, and government entities rely on laboratories that perform drinking water testing to help keep them in compliance with regulations and provide safe and clean drinking water.

PerkinElmer can help ensure your lab has the right service and analytical abilities to complete these important tasks. We offer a comprehensive portfolio of instrumentation, software, applications and complete workflows including consumables and accessories.

Click Each Instrument to Learn More

NexION® ICP-MS Systems

AVIO® Max ICP-OES Series

PinAACLE™ 900T

QSight® LC/MS/MS

Spectrum Two™ FTIR

Quantulus® GCT

Spotlight® 400 FTIR

LC 300 HPLC/UHPC

Torion® T-9 Portable GC/MS

GC 2400™ Platform

KEEP READING

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Technology that Supports Your Science

	APPLICATIONS					
	Trace Elements / Metals	Pesticides and Residues	VOCs and SVOCs	Hydrocarbons	Radiation / Radioactivity	Emerging Contaminants
Sample Preparation	✓	✓	✓	✓		✓
Automated Liquid Handling	✓	✓	✓	✓	✓	✓
AA	✓					
GC		✓	✓	✓		✓
GC/MS		✓	✓	✓		✓
ICP-OES	✓					✓
ICP-MS	✓					✓
IR			✓			✓
LC		✓				✓
LC/ICP-MS	✓					
LC/MS/MS		✓				✓
Liquid Scintillation					✓	
UV/Vis	✓		✓	✓		
Consumables	✓	✓	✓	✓	✓	✓

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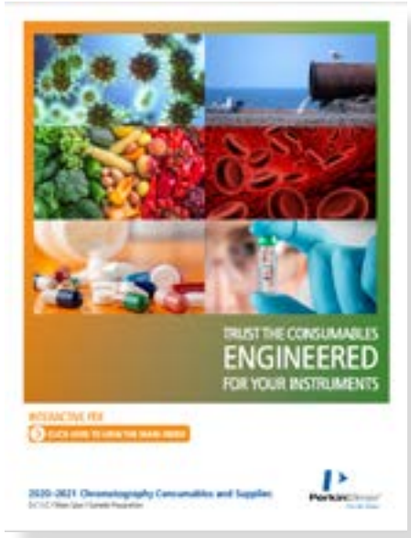
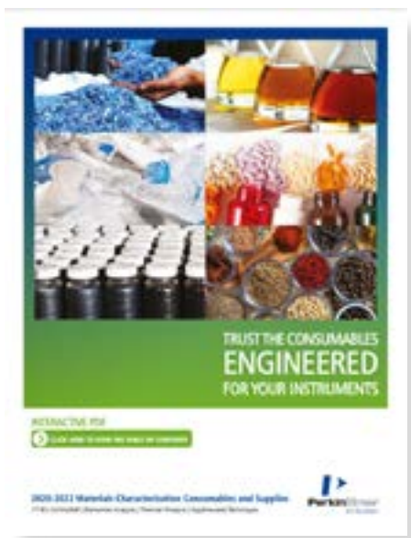
Keep Your Instruments Running Smoothly

Atomic Spectroscopy Consumables Catalog

Chromatography Consumables Catalog



Materials Characterization Consumables 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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For more information on our soil testing solutions, visit www.perkinelmer.com/category/drinking-water-analysis

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