Trace Metals Analysis in Support of Environmental Research

RTI International performs trace metals analyses and methods development research in support of many types of environmental research. We work for federal, state, and local agencies, as well as commercial companies to monitor the health of the food chain and support compliance with environmental regulations.

RTI performs trace measurements of a wide array of environmental sample matrices—animal and plant tissues, soils and sediments, hazardous wastes, and water, as well as ambient, workplace, and industrial air. Our trace inorganics program has acquired a national and international reputation for specialized trace measurements, including speciation of

- Elemental, organic, and inorganic mercury
- Hexavalent and trivalent chromium
- Inorganic and organic arsenic
- Soluble, metallic, sulfidic, and oxidic compounds of nickel
- Organic tin compounds.

We also perform trace and ultra-trace measurement of toxic/heavy metals in biota and X-ray flourescence (XRF) measurements of 48 elements in fine particulate matter ($PM_{2.5}$) samples.

Meeting Scientific Challenges in Methods Development

RTI has a strong tradition of scientific creativity and flexibility, developing analytical methods to accommodate the specific needs of each client and project. Several such methods developed by RTI chemists have been adopted as standards by the U.S. Environmental Protection Agency and other agencies and are widely used today.

Broad Research Experience

RTI's experience in analysis of trace metals in environmental samples spans all media and many industrial sectors. We have designed and directed research programs to

- Develop portable measurement methods for lead in paints, soils, and dusts
- Assess exposure to inorganic deck lumber treatments
- Determine the half-life of hexavalent chromium (Cr(VI)) species in ambient air
- Determine the efficiency of respirators to protect the wearer against organic tin compounds
- Develop numerous inorganic reference/audit materials.

Laboratories and Instrumentation

RTI laboratories are equipped with state-of-the-art instrumentation. We conduct many measurement programs in Class 100 and 1000 atmospheres, and we use an all-plastic hood to provide a Class 10 atmosphere for ultra-low-level sample preparation.

Trace Inorganics Instruments

- Inductively coupled plasma high-resolution mass spectrometry (Thermo Finnigan ELEMENT2 ICP-HR-MS)
- Inductively coupled plasma quadrupole mass spectrometry
- Thermo NORAN X-ray flourescence for analysis of environmental filters
- Ion chromatrography/inductively coupled plasma mass spectrometry (IC-ICP-MS) for speciation of metallo-organic compounds
- Inductively coupled plasma atomic emission spectrometry (ICP-AES)
- Graphite furnace atomic absorption spectroscopy (GFAAS)
- Cold vapor atomic absorption spectroscopy (CVAAS)
- Atomic flourscence spectroscopy (AFS) for ultra-trace mercury and hydride-forming elements such as arsenic, selenium, and antimony.

For more information, please contact

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