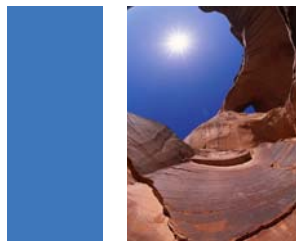


MEASURE MERCURY COMPOUNDS IN GEOLOGICAL SAMPLES



vapor
water
mineral
cinnabar



Frontier GeoSciences, Inc. (FGS) is an innovative environmental science research, consulting, and analytical services company. Since 1992 FGS has provided unmatched expertise and proven reliability in ultra-low trace metals detection and speciation to satisfy even the most demanding requirements.

FGS specializes in progressive research on the sources, fate, and effects of toxic trace metals in the environment. FGS was responsible for authoring or co-authoring many of the EPA 1600- series analytical methods for the determination of ultra-low trace metals in various media. As the referee laboratory for the EPA Method Validation of the 1600- series, FGS has the proven capabilities to provide quality data with an unparalleled reputation for accuracy.

FGS' project managers and principal investigators, in conjunction with our analytical staff, have the knowledge, skills, and experience necessary to develop, plan, and successfully complete even the most difficult projects. We provide tailored consultation for each project regarding sampling equipment requirements and procedures, quality control strategies, and expert data interpretation.

SELECTIVE SEQUENTIAL EXTRACTIONS

While the analysis of soil, sediment, or mine tailings for mercury and methyl mercury can provide valuable information about the absolute level of local contamination, the determination of the hazard to human health or the development of a remediation strategy requires a more complete understanding of the type and concentration of specific mercury compounds present at a site.

Frontier GeoSciences has developed an innovative method using a selective sequential extraction technique to accurately assess the type and concentration of mercury compounds typically found at contaminated geological sites. This method provides much more specific information about the expected mobility and bioaccessibility of various mercury compounds, supplying you with a behavioral profile of the contaminate and a better understanding its potential effect.

Each sample is subjected to multiple sequential extraction procedures to selectively separate specific mercury compounds at decreasing levels of bioavailability for analysis. Each step requires extended extraction, centrifuging, separation, rinsing, and preservation before analysis for mercury by cold vapor atomic fluorescence spectrometry (CVAFS).

Contact FGS today to find out how you can take advantage of any combination of these innovative selective sequential extraction methods to accurately and effectively determine the types of mercury compounds in your geological samples.

Step	Extractant	Description	Typical Compounds
F0	headspace gas	vapor equilibrium	Hg ⁰
F1	deionized water	water	HgCl ₂ , HgSO ₄
F2	pH 2 HCl/HO Ac	"stomach acid"	HgO
F3	1N KOH	organo-complexed	Hg-humics, Hg ₂ Cl ₂
F4	12NHNO ₃	strong-complexed	mineral lattice, Hg ₂ , Hg ⁰
F5	aqua regia	cinnabar	HgS, m-HgS, HgSe, HgAu
F6	HNO ₃ /HCl/HF	mineral-bound	Hg in crystal lattice
FS	-	sum	total Hg



Frontier GeoSciences, Inc.
414 Pontius Ave. N.
Seattle WA 98109
206.622.6960
info@frontiergeosciences.com
www.frontiergeosciences.com

