

# MEASURE TRACE METALS IN HYDROCARBONS



arsenic  
cadmium  
lead  
mercury



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.



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

## COMPLETE DECOMPOSITION OF HYDROCARBONS

Trace metal contamination of hydrocarbons has a significant impact on the petroleum and related industries. Accelerated equipment depreciation, compliance with additional safety regulations, and expensive pollution controls entail considerable costs. Mercury, for example, amalgamates with aluminum equipment creating a brittle alloy that leads to structural failures. It also prematurely poisons expensive catalysts used in refinement making them inoperative.

Contaminates accumulate in refinement, transportation, and storage equipment creating serious health and safety concerns for industry workers. Solid waste, wastewater, and gaseous emissions from the production, processing, and combustion of trace metal contaminated hydrocarbons often require costly remediation to meet environmental regulations.

Due to these inherent costs, the value of hydrocarbons contaminated with trace metals is often significantly discounted. However, the concentrations of mercury and other trace metals in hydrocarbons have been dramatically overestimated in the past due to the utilization of inaccurate analytical methods with insufficiently low detection limits. The difficulty of completely decomposing samples without contamination or the loss of volatile analytes has made it nearly impossible to accurately determine trace metal concentrations in hydrocarbons.

Frontier GeoSciences (FGS), through rigorous research, has overcome the issues associated with decomposition and developed a highly accurate method for the determination of trace metals in hydrocarbons. FGS is able to achieve complete decomposition of hydrocarbons without contamination or a loss of analytes through wet-chemical pressure digestion in a high-pressure asher. Even the most resolute matrices, including tars, asphalts, waxes, and plastics, once fully decomposed, are ideally suited for common trace metal analysis methods.

Contact FGS today.

Trace Metal	MDL (ppm)
aluminum	0.301
antimony	0.09
arsenic	0.122
barium	0.077
boron	0.21
cadmium	0.27
cobalt	0.171
copper	0.211
iron	16.346
lead	0.393
magnesium	0.198
manganese	0.055
mercury	0.000465
molybdenum	0.297
nickel	0.186
potassium	2.211
selenium	0.165
silver	0.006
strontium	0.199
thallium	0.180
vanadium	0.219
zinc	0.088