



Laboratory Analysis for Mercury, Trace Level Mercury and Methyl Mercury

Mercury is a naturally occurring element, existing in the environment in several forms, including elemental, inorganic and organic species. Mercury can be introduced into the environment and food chain through both natural and anthropogenic means such as the combustion of oil, coal, wood and wastes; manufacturing processes; mining; refining as well as other sources. Once airborne, mercury can travel great distances and then return to the ground and water in the form of rain or dust, thus entering the surrounding environment.

TestAmerica has more than three decades of experience analyzing samples for mercury, and offers multiple methods to ensure we support the reporting limits required for your project.

Total Mercury Analysis

Total mercury analysis is the most routine mercury testing procedure performed. Utilizing Cold Vapor Atomic Absorption (CVAA) technology, total mercury analysis is suitable for a variety of matrices including waters, soils, sediments and wastes. This cost effective and accurate method is suitable for many applications including commercial, industrial and permit-driven sampling events.

Dedicated instrumentation, along with 24 certified laboratories within our network, ensures superior capacity for standard and expedited turnaround time offerings, meeting the needs of all projects.

| Matrix | Methods | Reporting Limits |
|--------|-------------------------------|------------------|
| Water | SW-846 Method 7470, EPA 245.1 | 0.2 µg/L |
| Solid | SW-846 Method 7471 | 20 µg/kg |
| Waste | SW-846 Method 7471 | 20 µg/kg |

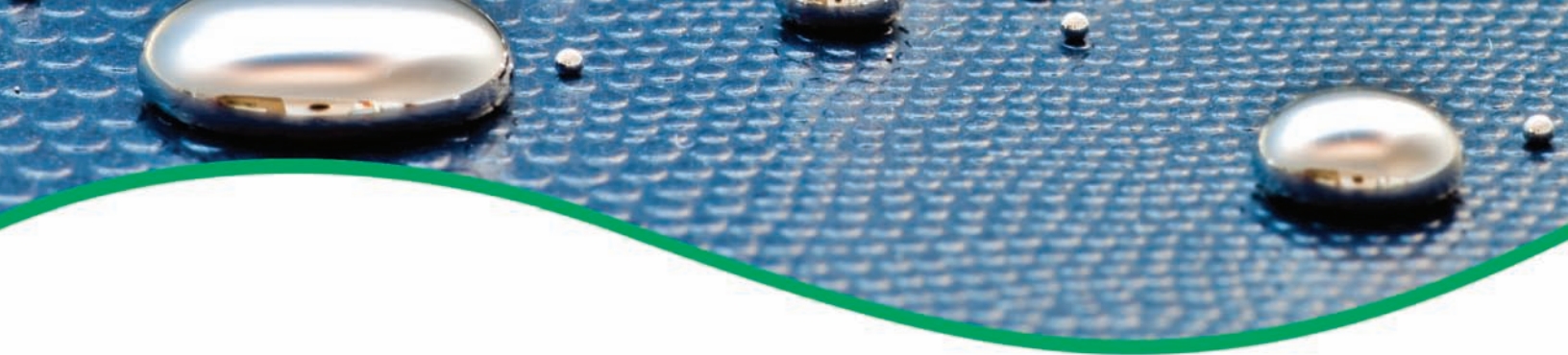
Mercury Analysis in Tissues

Mercury can bioaccumulate within the aquatic, estuarine and marine food chain, necessitating the analysis of tissues such as macro-invertebrates, worms, amphibians, shellfish, fish, birds, mammals, and vegetation. Accurate quantification of mercury levels in tissue samples aids in risk calculations, fate and transport studies, and in establishing fish consumption advisory warnings.

TestAmerica offers total mercury analysis on tissue samples at five strategically located laboratories throughout the nation; Knoxville, Pittsburgh, Pensacola, Seattle and Sacramento. Our highly trained analysts understand and work with our clients to provide solutions to the unique analytical challenges posed by tissue samples, including:

- Specialized handling and preparatory procedures including dissection of tissues, homogenization and moisture determination.
- The ability to support analysis with limited tissue mass availability.

TestAmerica has extensive experience working on high profile sites with mercury contamination. Leveraging this experience, our specialists will design a plan to meet your specific goals and ensure you receive the legally defensible data you need.



Trace Level Mercury Testing

TestAmerica also provides analysis of Low Level Mercury in water by EPA Method 1631E. This cold vapor atomic fluorescence spectroscopy (CVAFS) analytical technique was designed by the EPA to address the need to measure mercury at water quality criteria levels. These levels can be more than 250 times lower than the levels achievable by traditional total mercury analyses.

| Matrix | Methods | Reporting Limits |
|--------|------------------|------------------|
| Water | EPA Method 1613E | 0.5 ng/L |

Two of TestAmerica's laboratories, Canton and Pensacola, offer Low Level Mercury analysis. The increased capacity and redundancy offered by two network labs, along with certifications/accreditations in more than 25 states, allows TestAmerica to offer the service to clients in a variety of states, and sampling situations.

Methyl Mercury

Methyl mercury is the primary bioaccumulative mercury species, and can be harmful to both humans and wildlife. This organic species of mercury is formed when mercury combines with carbon in aquatic estuarine or marine systems. Quantifying the methyl mercury in sediment and tissue samples allows for improved facilitation of risk assessment, fate and transport studies.

TestAmerica provides analysis of methyl mercury in water by EPA Method 1630, utilizing gas chromatographic atomic fluorescence spectroscopy (GC-AFS) technology. For non-water matrices, TestAmerica utilizes a sample prep procedure developed by Florida's Department of Environmental Protection and US Geological Survey to extend the method to soil, sediment and tissue matrices. Standard methyl mercury reporting limits are listed below:

| Matrix | Methods | Reporting Limits |
|-------------|-----------------|------------------|
| Water | EPA Method 1630 | 0.05 ng/L |
| Soil/Tissue | EPA Method 1630 | 0.1 µg/kg |

Sampling Considerations

In developing methods for the determination of metals at trace levels, EPA found that one of the greatest difficulties was mitigating the potential for sample contamination during the collection, transport, and analysis of samples. As such, Method 1669 was developed to apply stringent guidelines to limit contamination throughout the sampling and analytical process, and is recommended when sampling for EPA Method 1631E and EPA Method 1630.

EPA Method 1699 employs the "clean hands, dirty hands" technique in which a team of two samplers works together to prevent the introduction of trace level contaminants into the sample. In the photo below, the sampler wearing blue gloves takes the role of "dirty hands," touching the outer packaging and sampling equipment. The "clean hands" sampler, wearing white gloves, handles the containers and restricts contact with all other materials. TestAmerica's low level mercury bottle kits have been specifically designed to aid in this process and reduce contamination through the sampling, shipping and receiving process.



**Supporting the Quality You Demand,
the Consistency You Seek and the Value You Expect.**

TestAmerica

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