

Metals Analysis:

Description of Method:

For this study the method of sampling the ambient air for metals involves the collection of particulate matter on a Teflon sample filter that is then sent to a laboratory for analysis using X-ray Fluorescence. This method of sampling for metals is the standard method outlined by the EPA in its document “Compendium Method IO-3.3 DETERMINATION OF METALS IN AMBIENT PARTICULATE MATTER USING X-RAY FLUORESCENCE (XRF) SPECTROSCOPY”. The metals sample will be collected using a particulate sampler manufactured by AirMetrics, Inc. that uses a Teflon filter to collect 10 micron particles on a sample filter. The filters will then be sent to Cooper Environmental Services for analysis. Both the sampler and analytical laboratory are used by the EPA for the environmental sampling of particulate matter and metals analysis in the ambient air.



Hardware:

Sampler - Airmetrics - MiniVol™ Tactical Air Sampler (TAS)

Filter - Teflon Sample Filter

Analytic Laboratory - Cooper Environmental Services

Sample Compounds

Chemical	Det Limits (ng/cm²)
Arsenic	0.28
Cadmium	4.45
Chromium	0.28
Lead	0.48
Manganese	0.38
Nickel	0.29
Vanadium	0.26

Additional Compounds Include as Part of the Analysis

Chemical	Det Limits (ng/cm²)	Chemical	Det Limits (ng/cm²)
Antimony	6.93	Molybdenum	0.78
Barium	0.7	Niobium	0.68
Bromine	0.28	Rubidium	0.36
Calcium	0.43	Samarium	1.01
Cerium	0.64	Scandium	0.31
Cesium	0.66	Selenium	0.26
Cobalt	0.27	Silver	2.42
Copper	0.4	Strontium	0.46
Europium	0.98	Tantalum	1.08
Gallium	0.59	Terbium	0.94
Gold	0.66	Tin	4.95
Hafnium	1.14	Titanium	0.27
Indium	3.66	Tungsten	1.11
Iridium	1.17	Yttrium	0.52
Iron	0.43	Zinc	0.4
Lanthanum	0.61	Zirconium	0.6
Mercury	0.52		

Sample Frequency:

24 hour sample collected every 12 days

Sample Location: Neighborhood Monitoring Location

Quality Control / Quality Assurance:

- Standard Operating Procedure Manual for the Sampling Instrument.
- Sample will be transferred to analytic laboratory using chain-of-custody procedures outline by EPA.
- Sample will be analyzed using X-Ray Fluorescence following EPA Protocols for analysis.

Reference Documents:

Appendix A - Brochures from the supplier of the air sampler and the analytic laboratory

Appendix B - EPA's Compendium Method IO-3.3

Appendix C - Airmetrics TAS Operations Manual

Appendix D – Cooper Environmental Laboratory QA/QC Guide