

Metals Analysis at Analytical Services Tasmania

AST provides an extensive chemical testing service in Inorganic Metals Chemistry for waters (fresh, saline and ground), soils & solids, filters and biota.

Metals can vary from being beneficial, problematic or toxic to the environment, biological systems or to human health. The concentration and form of each individual metal can determine if it is likely to have a beneficial or detrimental effect. Many metals are regulated or recommended for human consumption, environmental discharges, aquatic systems or plant and animal growth. Analytical Services Tasmania has the capacity to test for more than 30 different metals and semi-metals at high, trace, and ultra-trace levels.

The following table lists the Limit of Reporting (LOR) for metals and semi-metals currently tested for at AST (* Instrument analytes marked with “*” are not currently NATA accredited):

Analyte	1311 - Metals in Water by ICPMS (Drinking Water) µg/L		1315 – Metals in Saline Water by ICPAES (Marine Water) µg/L	1301 – Metals in Water by ICPAES (Industrial Effluents) µg/L	2301 – Metals in Soil by ICPAES (Soils or Sediments) mg/kg	3301 - Metals in Biota by ICPAES (Living organisms) mg/kg
	LOR µg/L	MU %				
Aluminium (Al)	8	18	20	20	5	0.1*
Antimony (Sb)	0.5	14	20	20	1*	1*
Arsenic (As)	1	13	10	20	1	0.1
Barium (Ba)	1	14	-	5	1	0.1
Beryllium (Be)	0.2	17	1	1	1	0.1
Boron (B)	20*	-	-	50	5	1*
Cadmium (Cd)	0.1	12	1	2	0.5	0.1
Calcium (Ca)	80	20	-	100	5	5*
Chromium (Cr)	1	12	1	2	1	0.1
Cobalt (Co)	0.5	14	3	3	1	0.1
Copper (Cu)	1	18	2	2	1	0.1
Iron (Fe)	20	18	20	20	5	0.1
Lead (Pb)	0.5	15	10	10	1	0.1
Lithium (Li)	2	-	-	100	1	-
Magnesium (Mg)	80	21	-	50	1	5*
Manganese (Mn)	1	17	2	5	1	0.1
Molybdenum (Mo)	0.5	17	2	5	1	0.1
Nickel (Ni)	0.5	15	10	10	1	0.1
Phosphorous (P)	50*	-	20	50	5	10
Potassium (K)	80	14	-	50	5	5*
Selenium (Se)	2	13	20	30	5	0.5
Silicon (Si)	200*	-	-	200*	-	-
Silver (Ag)	0.5	25	-	2*	1*	-
Sodium (Na)	80	22	-	50	10	5*
Strontium (Sr)	1*	-	-	5*	-	-
Sulphur (S)	-	-	-	500*	5*	100
Thallium (Tl)	0.5	17	-	50*	-	-
Thorium (Th)	1	14	-	-	-	-
Tin (Sn)	1*	-	20*	30	1*	-
Uranium (U)	0.2	19	-	-	-	-
Vanadium (V)	1	16	2	2	1	0.1
Zinc (Zn)	2	20	2	2	1	0.1

Mercury (Hg) #	0.05	0.05	0.05	0.02	0.02
----------------	------	------	------	------	------

Mercury analysis by CVAFS Method 1305 (waters), Method 2304 (soils), Method 3303 (biota)

AST's metal methods are equivalent to USEPA, APHA or Australian Standard methods. This includes preservations, extraction times and hold-before-analysis times. Our testing may take a little longer due to our strict adherence to these internationally recognised standards, however customers can be assured they are receiving high quality results and exceptional service.

TCLP & Bulletin 105

Solid waste disposal to landfill requires chemistry testing for classification. AST's metals section provides a comprehensive service to assist with meeting this requirement including total and dissolved metals, and the Toxicity Characteristic Leachate Procedure (TCLP). Our TCLP method uses extraction fluids as recommended by USEPA and Australian Standard to meet state and national guidelines.

Environmental monitoring in soils, waters, fish, plants and primary produce

AST is able to support environmental monitoring obligations by providing trace level metals analysis for a variety of sample types. Our robust ICP-AES and Mercury cold vapour fluorimeter (CV-AFS) ensures low level limits are consistently achieved for even the trickiest sample types.

Drinking water quality

AST provides trace level analysis for metals by ICP-MS in clean waters. AST holds NATA accreditation for metals according to the Australian Drinking Water Guidelines (ADWG) for both aesthetic and health limits. AST also supports the Tasmanian community by providing a Tasmanian private water suppliers suite of chemical analysis as per the DHHS public health recommendations.

Bottle/sampling requirements:

Bottles supplied by AST are prepared specifically for each suite of testing and are batch tested to ensure they are free of contaminants. Requirements for metals testing are as follows:

- Red labelled 250mL bottle. This is the minimum volume required when total and dissolved metals (including Mercury) are required.
- Keep cool and return to AST when practicable.
- Where dissolved metals are required, filtering on site is recommended. Please contact AST for syringe filters and tubes.