



## Chelex® Method for Determining Metals Bioavailability in Natural Waters



Envirolab was the first commercial laboratory to be NATA Accredited for the determination of Bioavailable Metals by the Chelex Method.

The Chelex® Method results in an estimation of the bioavailability by determining the affinity of the metals for a Chelex® resin under certain conditions.

Samples should be either **0.45µm** or **0.1µm field filtered** into an unpreserved metals bottle.

### NATA Accreditation covers:

- |      |      |
|------|------|
| ✓ Al | ✓ Hg |
| ✓ Ba | ✓ Pb |
| ✓ Be | ✓ Mn |
| ✓ Cd | ✓ Mo |
| ✓ Cr | ✓ Ni |
| ✓ Cu | ✓ Sn |
| ✓ Co | ✓ V  |
| ✓ Fe | ✓ Zn |

Water is a valuable resource for drinking water supplies, agricultural and industrial development, as well as the management of ecosystems.

Particularly because water quality is affected by the presence of trace metals, the assessment of speciation, bioavailability and toxicity levels is critical to help support compliance monitoring and standards for industries and agencies managing discharges to waterways.

Envirolab is **NATA Accredited** in estimating bioavailability for the determination of Chelex - Bioavailable Metal Speciation in natural waters.

Our detailed reports will provide you with absolute information on water quality and other important findings relevant to your testing requirements. In addition to testing services, our team of dedicated specialists can support you with ongoing monitoring services.

### FACT

The toxicity of metals in sufficient concentration is attributed to their ability to compete for intracellular sites normally occupied by functional metabolites, thereby interfering with normal cell functions.



Accreditation Number 2901

**NATA Accreditation** means we have independent recognition and backing by an external body that the quality of our results are of the highest standard nationally.

This also ensures that our laboratory is always up to date with new technical developments and trends.

## Reporting Bioavailable Elements

Analytes	Total Metals (in µg/L)	Filtered 0.45 µm (in µg/L)	Filtered 0.10 µm (in µg/L)	Filtered 0.45 µm Post Chelex™	Metals Retained by Chelex™ 0.45µm (in µg/L)	Chelex™ (in %)
Al	800	650	500	80	570	87.7%
Ba	60	50	25	10	40	80.0%
Be	45	28	22	9	19	67.8%
Cd	10	8	7	2	6	75.0%
Co	200	175	160	50	125	71.4%
Cr	50	45	45	40	5	11.1%
Cu	650	620	560	320	300	48.4%
Fe	2000	1700	1300	600	1100	64.7%
Pb	50	45	45	40	5	11.1%
Mn	2000	1800	1300	700	1100	61.1%
Mo	35	33	33	20	13	39.4%
Hg	0.6	0.6	0.5	<0.1	N/A	100%
Ni	200	180	175	30	150	83.3%
Sn	38	34	30	18	16	47.0%
V	85	61	52	30	31	50.8%
Zn	1500	1300	1200	400	900	69.2%

Our team is comprised of dedicated experts in our fields.

Ask us how we can help you with your scientific testing requirements.

- 1 Metals by ICP MS after digestion with a mix of acids
- 2 Metals results after filtration of the samples through 0.45 µm (field filtered) and determination by an ICP-MS
- 3 Metals results after filtration of the samples through 0.10 µm (field filtered) and determination by an ICP-MS
- 4 Metals results in the elutriate after the sample has been passed through the Chelex™ resin. This can be the result of the sample filtered through a 0.45µm filter or a 0.1 µm filter (in this case, 0.45 µm as an example)
- 5 This is the difference between 2) and 4). Basically, the difference of the Metals concentration before the Chelex™ and post Chelex™. These are the "bioavailable" metals.
- 6 Chelex retained metals but in %. Basically, the difference of the Metals concentration before the Chelex™ and post Chelex™, but in %.

For further information contact our laboratories



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