

Interpretation of metal analysis results in drinking water

This fact sheet has been developed to provide information about the testing and analysis of mineral compounds such as metals in drinking water.

Who should test their drinking water?

Any person providing or using drinking water not sourced from a reticulated licensed water supply should from time to time get their water tested, irrespective of whether the water comes from a bore, rainwater tank or surface water.

Why test drinking water?

Drinking water should be tested to ensure that it is safe for drinking and palatable.

What metals should I test for?

Mineral compounds such as metals can occur naturally in water or be present as a result of activities within catchment around the water source.

If your water has never been tested before, it should be tested for the complete 'metal suite' to ascertain what metals are present, and at what levels.

If metal testing is carried out as part of a monitoring plan two options are available, you can either test for the complete 'metal suite' or select the metals that have been identified in the monitoring plan as a concern.

Where can I get my water tested?

Water can be tested for metal composition by any laboratory accredited to do so and shown below. Note that the owner of the water supply will need to meet the costs for testing of samples.

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What does the analysis of my water mean?

The Australian Drinking Water Guidelines 2011 (ADWG) were developed by the National Health and Medical Research Council (NHMRC) and provide a framework for good management of drinking water supplies. The ADWG when implemented assure the safety of drinking water and also provide health and aesthetic guideline values for chemical, physical and radiological water quality characteristics.

A **health guideline value** is the concentration or measure of a water quality characteristic that, based on present knowledge, does not result in any significant risk to the health of consumers over a lifetime of consumption.

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An **aesthetic guideline value** is the concentration or measure of a water quality characteristic that is associated with acceptability of water to the consumer, such as appearance, taste and odour.

The following table provides information on metals commonly part of a 'metal suite' test for drinking water with reference to the 2011 ADWG.

Parameter	Health Guideline (mg/L)	Aesthetic Guideline (mg/L)	Comments
Al	None established currently	0.2	The aesthetic guideline for Aluminium is based on problems associated with flocculation treatment.
Ag	0.1	Not applicable	Silver is occasionally found in groundwater.
As	0.01	Not applicable	Arsenic has been found in groundwater and surface water from both natural processes and industrial activities. Arsenic compounds have been shown to produce acute and chronic toxic effects, which include systemic irreversible damage.
B	4		Low levels of Boron can occur naturally in groundwater. High levels of Boron may be associated with seawater intrusion.
Ba	2.0	Not applicable	Barium is naturally occurring in rocks, soils and groundwater.
Br	0.02		Bromate is unlikely to be found in groundwater, but can be in drinking water as a by-product of ozone disinfection
Cu	2	1	Copper may be present in the water supply due to the corrosion of pipes and fittings.

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Parameter	Health Guideline (mg/L)	Aesthetic Guideline (mg/L)	Comments
			Staining of fittings may occur above the aesthetic guideline value.
Cd	0.002	Not applicable	Cadmium can occur naturally in groundwater, or enter drinking water due to the corrosion of galvanised pipes and fittings.
Cr	0.05		Chromium can be present in drinking water due to the corrosion of pipes and fittings or from agricultural and industrial processes.
Fe	None set	0.3	Above this value the water may taste strange. High iron can give water a rusty-brown appearance and can stain laundry and fittings.
Hg	0.001	Not applicable	Mercury can occur naturally in groundwater or enter drinking water as a result of industrial emissions or spills.
I	0.5		Iodide occurs naturally in some groundwater.
Mo	0.05	Not applicable	Molybdenum occurs naturally in soil and groundwater and is used in agriculture and mining.
Mn	0.5	0.1	Manganese occurs naturally in groundwater. Levels above the aesthetic guideline value may cause taste issues and staining of fittings.

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Parameter	Health Guideline (mg/L)	Aesthetic Guideline (mg/L)	Comments
Ni	0.02	Not applicable	Nickel occurs naturally in soils, ground water and surface waters and is often used in the manufacturing of stainless steel and alloy products.
Pb	0.01		Lead can occur in groundwater as a natural component, but is most likely to be in drinking water due to corrosion of pipes and fittings.
Sb	0.003	Not applicable	Antimony can occur naturally in groundwater, and is used in various manufacturing processes.
Se	0.01	Not applicable	Selenium can occur naturally in groundwater.
Sn	No health based guideline is considered necessary		Tin is one of the least toxic metals, and concentrations in water are usually very low.
U	0.017		Uranium can occur naturally in groundwater.
Zn	None established currently	3	The aesthetic guideline value is based on taste threshold.

What if I have further questions?

For more information please contact Environmental Health;

<https://health.nt.gov.au/professionals/environmental-health>