

Interpretation of results from physical and chemical testing and analysis of drinking water

This fact sheet has been developed to provide information about the physical and chemical testing and analysis of 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 should I test for?

The *Australian Drinking Water Guidelines 2011* (ADWG) state that the greatest risk to consumer health from drinking water is pathogenic microorganisms.

Chemical tests, provide a good indication of the palatability or taste quality of your drinking water as well as determining its overall chemical quality. A standard range of chemical tests include the following parameters:

pH, electrical conductivity (EC), total dissolved solids (TDS), Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), total hardness, total alkalinity, Iron (Fe), Chlorine (Cl), Sulphate (SO₄), Nitrate (NO₃), Fluoride (F) and Salt (NaCl).

Physical characteristics are generally not of direct public health concern. They relate to the appearance, taste and odour of the water, but can also impact on health hardware such as toilets, taps and hot water systems. The parameters measured to determine these qualities are: True colour, turbidity, hardness, total dissolved solids (TDS), pH, temperature, and dissolved oxygen

Where can I get my water tested?

Water can be tested for physical characteristics and chemical 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.

- Alice Springs (AZRI) – Department of Primary Industry and Resources – (08) 8951 8110
- Darwin – Department of Primary Industry and Resources - (08) 8999 2196
- Darwin – Northern Territory Environmental Laboratories Pty Ltd (NTEL) - (08) 8947 0510

What does the analysis of my water mean?

The Australian Drinking Water Guidelines (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.

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 the most commonly tested chemical and physical characteristics in drinking water with reference to the 2011 ADWG.

| Parameter | Health Guideline (mg/L) | Aesthetic Guideline (mg/L) | Comments |
|-----------------|-------------------------|----------------------------|---|
| Cl | 5 | 0.6 | Chlorine is added to water to kill harmful bacteria. The aesthetic guideline is based on an odour threshold. |
| F | 1.5 | Not applicable | Fluoride is added to many town water supplies and levels up to 1 mg/L protect against dental caries. Levels above 1.5 mg/L can cause dental fluorosis (mottling of teeth). |
| 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. |
| K | None set | None set | Potassium is an essential element for humans. |
| Na | None set | 180 | Above this value the water is likely to taste salty. |
| NaCl | None set | None set | The presence of high levels of sodium chloride in bore water may indicate the disruption of the water table in the immediate area, leading to salination of the bore. This is of particular concern in coastal areas. |
| NO ₃ | 50 | Not applicable | The nitrate level has been set to protect bottle-fed infants less than 3 months old. Up to 100mg/L can be safely consumed by adults and children above 3 months of age. |

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| Parameter | Health Guideline (mg/L) | Aesthetic Guideline (mg/L) | Comments |
|------------------------------|-------------------------|----------------------------|---|
| pH | None set | 6.5-8.5 | A pH of 7 is neutral, above 7 the pH is alkaline and below 7 the pH is acidic. A pH below 6.5 may be corrosive to pipe work. A pH above 8.5 may cause scale and taste problems and decreases the disinfection efficiency of chlorine. |
| SO ₄ | 500 | 250 | The aesthetic value is based on a taste threshold. Negative health effects do not occur below 500 mg/L of Sulfate, and can include dehydration and diarrhoea. |
| TDS (Total Dissolved Solids) | None set | 600 | Water with a TDS level of 1000 and above, can cause excessive scaling and corrosion of pipes and fittings. |
| Total Hardness | None set | 200 | Hard water causes scaling problems in pipes and fittings and soft water can cause corrosion of pipes and fittings. Below 60 mg/L the water may be corrosive. Above 200 mg/L the water may cause scaling problems. |
| True Colour | Not necessary | 15 HU | Colour is generally related to organic content. 15 HU is just noticeable in a glass of water. Up to 25 HU is acceptable if turbidity is low. Chlorination of water high in colour may produce disinfection by-products. |
| Turbidity | | 5 NTU | 5 NTU is just noticeable in a glass of water. For effective disinfection turbidity below 1 NTU is desirable. Turbidity above 1 NTU may shield micro-organisms from disinfection. |

What if I have further questions?

For further information please contact Environmental Health;

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