



Groundwater Quality for Domestic Use - What the Results of your Water Sample Mean

All groundwater contains various kinds of dissolved salts (minerals). Small quantities of many of these salts are essential to good health. Excessive concentrations however, can limit the uses of the water.

Private laboratories can be found in the Yellow Pages. Government Laboratories are located at Department of Primary Industry, Fisheries and Mines, Berrimah Farm, phone: 89 992346 or the Tom Hare Building, Alice Springs, phone: 89 518233. Government charge fees for water testing depending upon the type of test undertaken. Water sampling methodologies and expected outcomes can be discussed with the Technician.

This sheet provides some information to help interpret the water analyses.

Source of Dissolved Salts

The salts originate from minute quantities dissolved in rain water and from the chemical breakdown of rocks. Nitrate is also produced in the soil by natural biological activity. Over long periods of time evaporation concentrates them to varying degrees. Elevated nitrate and Total Dissolved Solids (TDS) can indicate a source of pollution such as septic tank effluent or fertiliser.

Guideline Values

The maximum recommended values listed beside each salt are guidelines rather than strict limits. The reason for this is because there are often many factors governing how a particular salt affects the user. These can include a person's age and the total volume of water consumed. The guidelines given below are conservatively chosen in order to cover most situations.

Nitrate 50 mg/litre

Based on health considerations a limit of 50mg/litre is recommended for babies less than three months old and 100mg/litre for older children and adults. Nitrate levels can be reduced if necessary with the ion exchange process.

Fluoride 1.5mg/litre

This limit is based on health considerations. Excess fluoride can be removed by treating water with aluminium sulphate or bone char.

Iron 0.3mg/litre

Above this limit, taste may be unacceptable but it does not pose a health problem. High iron concentrations give water a rust brown appearance resulting in staining of laundry, pipe encrustation and odour problems. A common way to remove iron is to aerate the water by cascading it into a tank and allowing the iron floc to settle.

Hardness 200mg/litre

Hardness is a measure of the amount of calcium and magnesium in the water. Hard waters can cause the build up of scale in hot water pipes and fittings. They also require more soap to obtain a lather. It can be reduced by softening the water.

pH 6.5 - 8.5

This is a measure of the acidity or alkalinity. Values less than 6.5 indicate acidic water and can result in corrosion of pipes and fittings.

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When pH is more than 7.5, the water is alkaline and encrustation of pipes with calcium carbonate can occur. pH can be adjusted to a more desirable level with the addition of either an appropriate acid or alkali.

Total Dissolved Solids (TDS) 500mg/litre

Chloride 250mg/litre

Sulphate 250mg/litre

Sodium 180mg/litre

Above these limits for TDS, chloride, sulphate and sodium, taste may be unacceptable but it does not pose a health problem. TDS and the other salts can be reduced by reverse osmosis, ion exchange or distillation. If most of the TDS is due to hardness it can be reduced by softening the water. People with severe hypertension or heart disease should seek medical advice if sodium exceeds 20mg/litre in drinking water.

Water Treatment

Various methods are available for improving water quality to acceptable limits. These are relatively expensive but small scale treatment units using reverse osmosis and ion exchange are commercially available for household use. The main methods include:

Reverse Osmosis

Water is pumped through a very fine membrane which allows water to pass through but retains most of the salt.

Ion Exchange

Water is passed through a filter containing special resins which can remove undesirable salts.

Distillation

Distillation units boil water and condense the steam. All salts are removed by this process.

Further Information

The Department of Health and Community Services is responsible for monitoring and ensuring drinking water quality standards are current with national drinking water guidelines. To find out more about their role visit: www.nt.gov.au/health/healthdev/enviro_n_health/waterquality.shtml

On a national scale the National Health and Medical Research Council (NHMRC) in collaboration with the Natural Resource Management Ministerial Council (NHMRC) are responsible for the administration of the 2004 Australian Drinking Water Guidelines (ADWG). For more information regarding the guidelines visit: www.nhmrc.gov.au

For assistance, contact the Water Management Branch:

- **Palmerston**
4th Floor Goyder Building, PO Box 496 Palmerston NT 0831, Ph: 8999 3678
- **Katherine**
Randazzo Arcade, 16 Katherine Terrace, Katherine NT 0850, Ph: 8973 8100
- **Alice Springs**
1st Floor Alice Plaza, Todd Mall, PO Box 1120 Alice Springs NT 0871, Ph: 8951 9215

Internet Site : www.nt.gov.au/nreta/naturalresources

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