

## Health implications of increased salinity of drinking water

Forecasts show that the salinity of the River Murray is increasing. The Murray accounts for 40% of Adelaide's water supply. In a drought year this can increase to 90%.

Will this water still be safe to drink in the future? The answer is yes – for the general population. The main issue will be the saltier taste that water at some locations may develop.

### What are Total Dissolved Solids (TDS)?

TDS are:

- used as a measure of the salinity of drinking water.
- inorganic salts including sodium, potassium, calcium, magnesium, chloride, sulphate, bicarbonate, carbonate and nitrate ions and often a small amount of organic matter dissolved in water.

Salinity is measured in microSiemens per cm (uS/cm) (or EC units).

TDS are measured in mg/L (or parts per million (ppm)).

$$\text{TDS (mg/L)} = \text{Salinity (EC)} \times 0.55$$

*(0.55 is used for River Murray water but this value ranges from 0.5-0.7 depending on the water source)*

### TDS in current SA water supplies

- rainwater usually <100 mg/L
- metro tap supplies 250-400 mg/L
- bores often >1000 mg/L

TDS levels can affect the taste of water. Taste is extremely personal; some people prefer rainwater, others prefer water straight from the tap or a bore.

### Is there a guideline level for TDS in drinking water?

YES – based on quality (taste), not safety (health risk).

### Australian Drinking Water Guidelines (ADWG):

- “based on taste, TDS in drinking water should not exceed 500 mg/L” although “water with a TDS content of up to 1000 mg/L is acceptable to many”
- water will become increasingly undrinkable in the 1000-2000 mg/L range.

### The World Health Organization (WHO) also comments:

- “the palatability of water with a TDS level of less than 600 mg/L is generally considered to be good; drinking-water becomes significantly and increasingly unpalatable at TDS levels greater than about 1000 mg/L”
- TDS >1200 mg/L may be objectionable to consumers.
- no health-based limit since “TDS occurs in drinking-water at concentrations well below those at which toxic effects may occur”

TDS guidelines vary because they are based on panels of tasters describing water; this is very subjective and dependant on personal preference and to what a person is accustomed.

# Water Quality Fact Sheet

## Health effects of elevated TDS in drinking water

A substantial increase in TDS in the Murray could result in SA drinking water developing a slightly saltier taste but should not pose a significant health risk to the general population.

There could be impacts for those who need to limit their daily salt intake (e.g. severely hypertensive, diabetic and renal dialysis patients) and in these cases advice should be sought from a doctor.

## Resources

- Environmental Health fact sheets on the Department of Health website: [www.dh.sa.gov.au/pehs/topics/drought-package.htm](http://www.dh.sa.gov.au/pehs/topics/drought-package.htm)
- Australian Drinking Water Guidelines: [www.nhmrc.gov.au/publications/synopses/eh19syn.htm](http://www.nhmrc.gov.au/publications/synopses/eh19syn.htm)

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