



The most common problems in groundwater are:

Salinity

In most cases groundwater has high TDS (total dissolved solids) concentrations, especially those in the drier regions of the country where the predominant geological formations are sedimentary rocks of marine origin. The Karoo shales are a prime example of this. Salinity can be removed only at high cost and by means of, for instance, reverse osmosis, electro dialysis or deionisation.

Fluoride

Fluoride concentrations in groundwater in some areas tend to be high, especially in the central and western parts of the country. In the coal-bearing regions of the country fluoride concentrations tend to be very high. Fluoride removal is expensive.

Sulphate and Chloride

Water with high TDS (total dissolved solids) concentrations tends to have high sulphate concentrations as well. Sulphate removal is expensive (desalination or ion exchange processes are required) and normally not considered viable.

Calcium and Magnesium

The groundwater in the dolomitic areas and the northern parts of the country tends to be very hard. This usually has no health implications, except where concentrations are extremely high. It does however, lead to clogging of pipes and scaling of the elements in hot water appliances. The cost of replacement and maintenance of these appliances may make it cheaper to treat the water. For small communities, or single households, water softening by means of ion exchange is recommended. For larger communities, chemical dosing, settling and filtration will be more economic.

It is important to note that water softening by means of ion exchange will add sodium to the water. This could prove problematic if the sodium concentration is already high.

Iron and/or manganese

Iron and manganese commonly occur in high concentrations in groundwater. Treatment for both these problems is cheap and easy, consisting of oxidation by means of aeration, or by adding chlorine.



Reference: DWAF (1998). Quality of domestic water supplies. Vol. 1: Treatment Guide. WRC No. TT 101/98