



water & forestry

Department:
Water Affairs and Forestry
REPUBLIC OF SOUTH AFRICA

Water Quality

Substances which are general indicators of water quality

Substances which are general indicators of water quality

A great many substances can be found in water. However, only a few of these commonly occur in concentrations high enough to be of concern to domestic water users. The most important substances to measure are those that often occur in concentrations high enough to cause health, aesthetic or other problems. The following substances are of concern to the domestic user and are general indicators of **water quality**.

Electrical conductivity

Conductivity is an indicator of total dissolved salts (TDS), and also establishes if the water is drinkable and capable of slaking thirst.

Definition: "A measurement of salt content of soil or water; it measures the property of the substance to transfer an electrical charge and is measured in microsiemens per centimetre or metre". Department of Environment & Climate Change NSW (<http://www.environment.nsw.gov.au/soe/95/28.htm>)

Faecal coliforms

This is an indicator of the possible presence of disease-causing organisms. It establishes if water is polluted with faecal matter.

Refer to the Consumer Fact sheet on: Faecal coliforms & E.coli of the U.S. Environmental Protection Agency (<http://www.epa.gov/safewater/hfacts.html#Microbiological>): Bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhoea, cramps, nausea, headaches, or other symptoms.

pH value

This has a marked effect on the taste of the water and also indicates possible corrosion problems and potential copper, zinc and cadmium problems.

Definition: "pH is a measure of the acidity or alkalinity of a solution. Solutions with a pH less than 7 are considered acidic, while those with a pH greater than seven are considered basic (alkaline). pH 7 is defined as neutral because it is the pH of pure water at 25 °Wikipedia (en.wikipedia.org/wiki/PH)

Turbidity

This affects the appearance, and thus the aesthetic acceptability, of the water. Turbidity is commonly high in surface waters.

Refer to the Consumer Factsheet on: Turbidity of the U.S. Environmental Protection Agency (<http://www.epa.gov/safewater/hfacts.html#Microbiological>): **Turbidity** has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhoea, and associated headaches.

Free available chlorine (Residual chlorine)

This is a measure of the effectiveness of the disinfection of the water. Residual chlorine is the chlorine concentration remaining at least 30 minutes after disinfection. There should be residual chlorine in the water, but if concentrations are too high it may impart an unpleasant taste and smell to the water.

Refer to the Consumer Fact sheet on: Chlorine of the U.S. Environmental Protection Agency (<http://www.epa.gov/safewater/hfacts.html#Microbiological>): Some people who use drinking water containing chlorine well in excess of EPA's standard could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of EPA's standard could experience stomach discomfort.

These substances are indicative of potential problems and should be frequently tested at all point in the water supply system, irrespective of the source of the water. Free available (or residual) chlorine has to be measured only if the water has been treated with chlorine-based disinfectants.

References:

DWAF (1998). Quality of domestic water supplies. Vol. 3: Analyses Guide. WRC No. TT 129/00, p. 8.