THE WATER COLLECTION FACT SHEET: Water Quality

Substances which may lead to health problems

A great many substances can be found in water. However, only a few of these occur commonly in concentrations high enough to be of concern to domestic water users. The following substances are of concern to the domestic user and are commonly present at concentrations which may lead to **health problems**. .

Nitrate & Nitrite

These are common in groundwater (borehole) samples, particularly in areas of intensive agricultural activity, or where pit latrines are used. Severe toxic effects are possible in infants

Refer to the Consumer Factsheet on: Nitrate and nitrite of the U.S. Environmental Protection Agency (http://www.epa.gov/safewater/dwh/c- ioc/nitrates.html): **Nitrates and nitrites** are nitrogen-oxygen chemical units which combines with various organic and inorganic compounds. Once taken into the body, nitrates are converted into nitrites. The greatest use of nitrates is as a fertilizer.

Fluoride

This is often elevated in groundwater in hot, arid areas. They can cause damage to the skeleton and the marking of teeth.

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.

Sulphate

This is particularly common in mining areas. Causes diarrhoea, particularly in users not accustomed to drinking water with high sulphate concentrations.

Anthropogenic sources of **sulfate** include: the burning of sulfur-containing fossil fuels, household wastes including detergents, and industrial effluents from tanneries, steel mills, sulfate-pulp mills, and textile plants. (U.S. Environmental Protection Agency (2003))

Chloride

This is often elevated in hot, arid areas and on the western and southern Cape coasts (particularly in groundwater). It may cause nausea and vomiting at very high concentrations.

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Arsenic

This may be present in groundwater, particularly in mining areas. It can lead to arsenic poisoning.

Refer to the Consumer Factsheet on: Arsenic of the U.S. Environmental Protection Agency http://www.epa.gov/safewater/arsenic/index.html):
Arsenic is a semi-metal element in the periodic table. It is odorless and tasteless. It enters drinking water supplies from natural deposits in the earth or from agricultural and industrial practices. Non-cancer effects can include thickening and discoloration of the skin, stomach pain, nausea, vomiting; diarrhea; numbness in hands and feet; partial paralysis; and blindness. Arsenic has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate.

Total Coliforms

This provides an additional indicator to ***Faecal Coliform*** and ***E.coli*** of disease-causing organisms and the effectiveness of disinfection.

NOTE: The presence/concentration of this group of substances should be determined before the water is supplied. The frequency of testing depends on the source and the\treatment applied. Note that substances of concern due to pollution sources in the area may have to be added to these (See fact sheet "Other substances depending on nearby pollution sources").

References: DWAF (1998). Quality of domestic water supplies. Vol. 3: Analyses Guide. WRC No. TT 129/00, p.9.
U.S. Environmental Protection Agency (2003). Contaminant Candidate List Regulatory Determination Support Document for Sulfate. EPA-815-R-03-16