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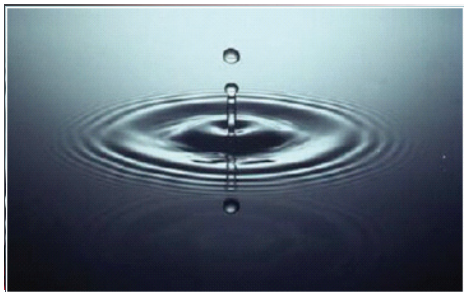

Drinking water guidelines

total dissolved solids

The recommended guideline maximum of 500 mg/L is based on taste. Generally water with less than 500 mg/L is regarded as good quality water but values of up to 1000 mg/L can be tolerated. Corrosion may also become a problem with high TDS levels.
TDS is related to Electrical Conductivity (EC) of the water and high EC normally produces a high TDS.
There are no health effects associated with high TDS but the components which make up the TDS may cause problems in their own right. It is difficult to lower the TDS.
Suitable treatments include reverse osmosis, ion exchange and distillation. These may be expensive to operate.

pH

The guideline value of 6.5 to 8.5 is based on the need to control corrosion and scaling. When the pH falls below 6.5 (acidic) metal corrosion can become a problem. Above 8.5 (Alkaline) scaling of pipes may occur.
pH values above 9.5 can cause a bitter taste and may promote skin irritation. The pH of water can be adjusted by the addition of acid or alkali, but care needs to be taken to avoid excessive addition.

colour

Based on appearance, true colour in drinking water should not exceed 15 HZU, up to 25 HZU is acceptable if the turbidity is low.
Colour in water can be caused by a number of factors but is most commonly due to either suspended solids or dissolved organic matter.
If true colour is much less than apparent colour, then filtration is recommended. If scavenged colour is much less than true colour then activated carbon filters may also be required.

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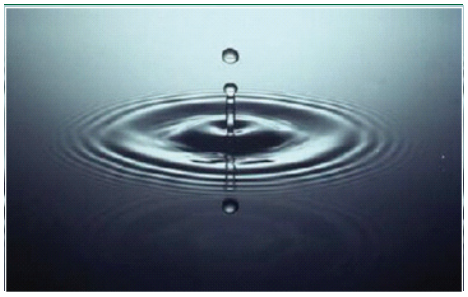

turbidity

Based on appearance turbidity should not exceed 5 NTU. If bacterial disinfection is in place, then a turbidity of less than 1 NTU at the time of treatment is desirable.
Turbidity in water is caused by the presence of fine suspended particles. Depending on the size and density of these particles, turbidity can be reduced by either filtration or settlement. Water from new bores will often decrease in turbidity after a period of bore use.

nitrite

Levels of Nitrite above 3 mg/L may cause health problems by interfering with haemoglobin in the blood. Nitrite levels in water can be reduced by oxidation.
Nitrite contamination is often associated with sewage contamination as it is generated nitrate reducing bacteria.

iron

The guideline of 0.3 mg/L is based on taste and appearance. High iron levels do not have any health effects. In the range 0.3 to 1.0 mg/L the water will be acceptable to some but not to others. Above 1.0 mg/L most will consider the water to be of poor quality for drinking.

Iron can be removed from the water supply by filtration, although preliminary oxidation and/or pH adjustment may be required in some cases. Levels above 1 mg/L can produce brown staining where the water is used for spray irrigation.

manganese

The guideline value of 0.1 mg/L is based on taste and black staining. Health considerations will arise at levels greater than 0.5 mg/L.
Manganese can take several forms in water. Manganese can be removed by filtration, but some forms of manganese may require oxidation prior to filtration.

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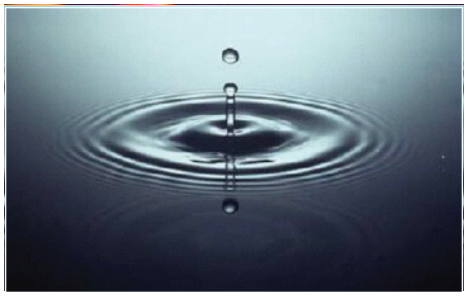

silicon

Silicon in water is not considered to have any health or aesthetic effect.
However it can interfere with some reverse osmosis filters where the level exceeds 5 mg/L. Above 50 mg/L reverse osmosis treatment is generally unsatisfactory without pretreatment.

sulphate

The guideline value of 250 mg/L is based mainly on taste. If the level exceeds 500 mg/L then purgative effects may occur. Sulphate levels can be reduced by reverse osmosis, ion exchange or distillation but these may be expensive to operate.

lead

Lead can be present in drinking water as a result of dissolution from natural sources, or from household plumbing systems containing lead. These may include lead in pipes, or in solder used to seal joints.
The amount of lead dissolved will depend on a number of factors including pH, water hardness, and the standing time of the water.
In humans, lead is a cumulative poison that can severely affect the central nervous system. Infants, foetuses and pregnant women are most susceptible.

hardness

To minimise build up of scale in the hot water systems, hardness should not exceed 200 mg/L as Calcium Carbonate. Soft water, where hardness is less than 60 mg/L, may cause corrosion problems. There is no evidence that high hardness may have any adverse health effects.
Hardness can be removed from water by ionexchange systems, and these are available commercially as “water softening” units. High levels of hardness can cause problems with some plants if spray irrigation is used.

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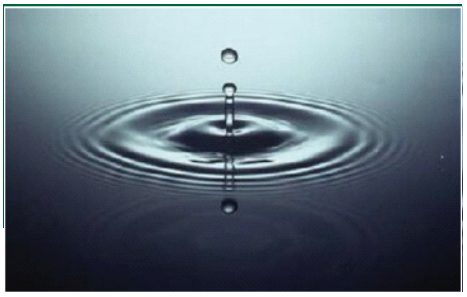

sodium

The guideline value of 180 mg/L is based primarily on taste. However medical practitioners treating people with severe hypertension or congestive heart failure should be aware if the sodium concentration exceeds 20 mg/L.
Sodium is usually present in water as Sodium Chloride. Reverse osmosis, ion exchange or distillation can reduce sodium levels but these may be expensive to operate.

copper

Copper in household water usually comes from corrosion of copper pipes caused by low pH water.
Concentrations above 1 mg/L may cause blue or green stains on sanitary wire. Concentrations above 2 mg/L are known to cause ill effects in some people. The taste threshold for copper is 3 mg/L.

nitrate

The guideline value of 50 mg/L is established to protect bottle-fed infants less than 3 months of age. Up to 100 mg/L can be safely consumed by adults and children over three months.
Nitrate can be removed by use of special ionexchange plants.

chloride

High chloride levels in water are usually caused by high salt (sodium chloride) levels. High chloride is not thought to cause health problems but high sodium levels that usually accompany it (may cause health effects).
The recommended maximum of 250 mg/L is based on taste considerations. High chloride levels can be reduced through reverse osmosis, ion exchange or distillation, but all of these may be expensive to operate.

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