



# Boron and Drinking Water

## What is Boron

Boron is a nonmetallic element used in the manufacture of glass, soaps, detergents and flame retardants.

## Where can boron be found

The general population obtains the greatest amount of boron through food intake, as it is naturally found in many edible plants. Foods that are good sources of boron include plant foods, especially

- non-citrus fruits
- leafy vegetables
- nuts
- legumes
- Wine, cider, beer are other good sources.

Boron is found naturally in ground water, but its presence in surface water is frequently a consequence of the discharge of treated sewage effluent, (containing detergent residues), to surface waters.

Concentrations vary widely and depend on the surrounding geology and wastewater discharges. For most of the world, the concentration range of boron in drinking water is judged to be between 0.1 and 0.3mg per liter.

## Functions

Boron is associated with the cell membranes. Evidence from animal studies show that boron deprivation affects two major organs: The brain and bone. With boron deficiency, brain composition and function are altered, and bone composition, structure, and strength are reduced. Because of the role of boron in bone, studies in humans have focused on its potential role in the development of osteoporosis. Some evidence suggests that boron may have actions similar to estrogens on bone. One report involving a rodent model has suggested that boron may actually improve bone strength.

## Treatment

Conventional water treatment (coagulation, sedimentation, and filtration) does not significantly remove boron, and special methods need to be installed in order to remove boron from the waters with high boron concentrations. Ion exchange reverse osmosis processes may enable substantial reduction but are prohibitively expensive. Blending with low-boron supplies may be the only economical method to reduce boron concentrations in waters where these concentrations are high.

Rand Water purifies the water through a conventional purification process, resulting in adequate boron levels in your tap water which is within SABS 0241 water specifications.

Visit [www.reservoir.co.za](http://www.reservoir.co.za) for further information on water quality in your area.

