

# Boron in Drinking Water

## Information for Users of Pathfinder Village Public Water Supply

Boron is an element that is naturally present in our environment. It is often found in rock and soil, and is slowly released into water. Plants use boron that is obtained from soil. Some boron also gets into the environment from manufacturing of commercial products or pesticides. Because boron is widespread in our environment and food chain, we all have some of it in our bodies.

### Is Boron Toxic?

Any substance or chemical you take into your body in excess can be toxic. How toxic something is depends on many factors, such as: how much of it you take in; the period you are exposed to it; whether your contact is by eating, drinking, breathing, or touching it; the susceptibilities and resilience of the individual person; and the potency of the substance.

In animal studies, ingestion of high levels of boron affected the testes and sperm of males, and caused birth defects in the offspring of pregnant females. These reproductive and developmental effects occurred at much higher levels than are commonly found in drinking water. There is some uncertainty as to the health effects of low levels of boron in humans (since studies have only examined high levels of boron in animals). Also, it is possible that boron may actually be an essential nutrient at low levels.

### What is Considered a Safe Level of Boron?

The United States Environmental Protection Agency (EPA) does not have a standard for boron in drinking water and it is not a federally-regulated contaminant in public water supplies. However, the EPA and the National Academy of Sciences have evaluated the essentiality and toxicity of boron. The MDH has developed advice on boron in drinking water, based on these evaluations.

For most people, food and water are the only significant sources of boron. Diets and water consumption patterns differ significantly between adults, children and infants. The sole source of food for young infants is milk, either in the form of breast milk or as reconstituted formula. Because drinking water generally serves all age groups, not just adults, the MDH recommends that, as a general rule, drinking water should contain boron at concentrations no higher than 1000 micrograms per liter ( $\mu\text{g}/\text{l}$ ). This level is based on water consumption patterns for infants less

than one year of age and the assumption that the water utilized to reconstitute formula is the only source of boron.

### How Do You Know if There is Boron in the Water?

You cannot taste or smell boron in the water. The only way to determine how much boron is present in water is to have it tested by a laboratory. The MDH has worked with Pathfinder Village to test its public wells and has found boron over the recommended level in many wells serving the facility.

To know the level of boron present in a well, that specific well must be tested. You cannot use the results from one well to estimate the levels in another well because boron can vary greatly even within a small geographic area. Also, test results from a single well can vary over time, so tests must be repeated periodically to monitor levels.

If you have a private well at Pathfinder Village that has not been tested for boron, the MDH recommends that you submit a sample to a certified lab for analysis. A list of certified labs can be found at:

<http://www.health.state.mn.us/divs/phl/cert/contract.html>

Be sure to ask the lab if they can do analysis for boron in drinking water.

### How Can I Reduce My Exposure to Boron?

**In general, the MDH recommends that drinking water containing greater than 1000  $\mu\text{g}/\text{l}$  of boron not be used for drinking or other consumption. This restriction is especially important for bottle-fed infants.** Other susceptible populations may include other infants, pregnant women, and males in their reproductive years – depending on an individual's diet and water consumption.

Options for alternative sources of water include: 1) using commercially bottled water, and 2) obtaining water from a well that has been shown to have boron levels below 1000  $\mu\text{g}/\text{l}$ .

### For More Information

For more information about boron in drinking water contact Dave Hokanson of the MDH at 651/215-0753. For more information about steps Pathfinder Village is taking to address this problem, contact Andy Andrews at 320/384-7726 or visit the Pathfinder Village website at [www.pathfindervillage.net](http://www.pathfindervillage.net).



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