

You Have Hard Water

What it is and what you can do about it.

What is hard water?

Hard water contains a high concentration of calcium and magnesium. These elements occur naturally in all water supplies. The town water supply is fed by wells which tend to be harder than surface sources such as lakes and reservoirs. The increased hardness is caused by the natural percolation of water through the soil. When surface water passes through the ground it collects minerals, which results in *hard* water.



Hard water does not pose any danger to your health however it can be a nuisance. The white mineral buildup that occurs in sinks and bathrooms, commonly referred to as scale is caused by calcium & magnesium from hard water. Scale buildup is increased anywhere hot water is used, such as;

USGS classifications for water hardness

0-60 mg/L	Soft
61-120 mg/L	Moderately hard
121-180 mg/L	Hard
180+ mg/L	Very hard
140 mg/L	Town of Hamilton
80-100 mg/L	Recommended (drinking only)



Scale inside of a water heater

heaters, pipes, dishwashers, and laundry machines. In addition to causing white staining; scale buildup can reduce the efficiency of water heaters particularly in gas & tank-less heaters. Hard water also reduces the effectiveness of soaps and detergents, resulting in increased usage.

One study found that hard water can reduce the life of linens as much as 39%. In an effort to combat these effects the town currently treats the water with

Aqua-Mag®; a blended phosphate metal sequestering agent which bonds with some of the calcium and magnesium causing it to stay in the water and not collect in plumbing and appliances. It does not remove these minerals from the water only *reduce* the amount that builds up in pipes and appliances. If you are experiencing problems with hard water, one option for further treatment would be to install an in-home softener.

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What you need to know about softeners.

In order to eliminate the problems caused by hard water it must be softened. This is accomplished by removing minerals from the water; primarily calcium and magnesium. Most water softeners work through ion-exchange; these softeners contain a resin (usually made from plastic) that stores sodium. When hard water comes into contact with this resin the calcium & magnesium are exchanged for sodium. When all of the sodium has been depleted the unit will regenerate using salt to reverse the process. The water used for regeneration is then discharged into the septic or sewer system. Softeners are relatively small and are usually installed in the basement (a typical softener is depicted at right). Before you install a softener it is important to understand what effects it will have on your water. The sodium that is used to soften water can be a problem for baby's because their developing kidneys are not as effective at filtering it from the blood. Individuals on low sodium diets should avoid drinking or cooking with artificially softened water. Consult your physician or pediatrician for further information. Due to increased levels of sodium, it is strongly recommended that households that are installing an ion-exchange softener also install a bypass that supplies un-softened water to common drinking and cooking sources; namely the kitchen sink and refrigerator. Refrigerator and most other household water filters (Pur®, Britta®, etc.) will *not* remove sodium, calcium, or magnesium from the water.



During a search for water softeners you will likely come across magnetic water softeners & conditioners (usually in the form of an electric coil or magnet that is affixed to a pipe) that claim to modify hard water in such a way that it will no longer form scale. These claims remain controversial within the scientific community and neither the American Water Works Association (AWWA) nor the Water Quality Association (WQA) endorses these types of products. One good way to ensure that the product you are purchasing will perform as advertised is to ensure that it is certified by the National Sanitation Foundation (NSF) or the American National Standards Institute (ANSI). You can also verify that a product is certified online at <http://www.nsf.org/certified/dwtu/>.

Other alternatives

If you are having problems with hard water and do not want to purchase a softener there are other alternatives that can reduce the effects of hard water. Additives for laundry can reduce spotting on clothing and are available where laundry detergent is sold. Rinse aids for dishwashers can reduce spotting on dishes and scale inside dishwashers. These additives reduce the amount of calcium and magnesium that form scale by keeping it in the water. Additives can be a simple solution; however they are often not as effective as a softener.



Additional Information



There is a lot of information on the internet about water softeners and the impacts of hard water on a household. While doing further research it is important that your information is coming from a credible and unbiased source. All of the resources used here are available on the town website at <http://tiny.cc/jsbdi>.

Works Cited

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Pictures

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