HARD FACTS ABOUT HARD WATER

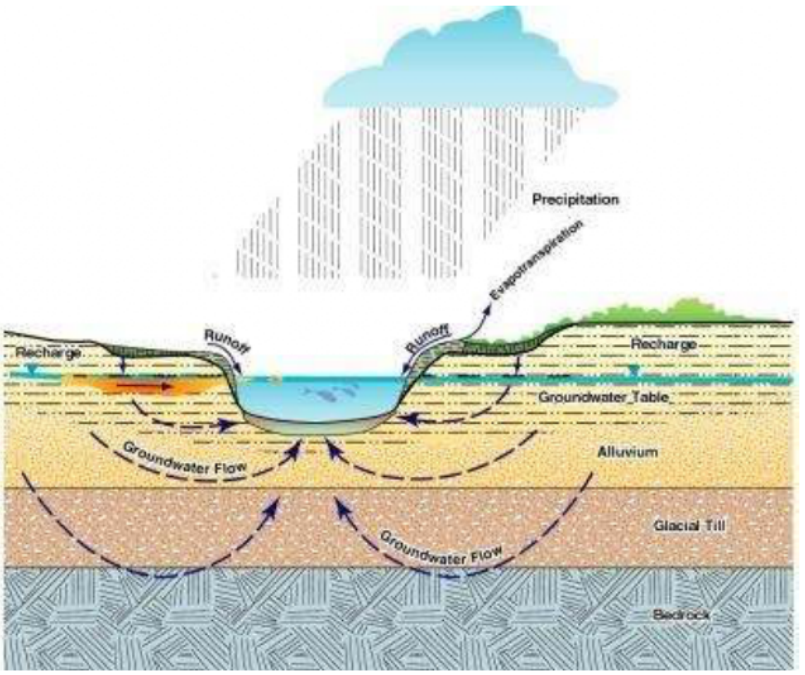
What Is Hard Water?

Water hardness is one of the most common water quality concerns reported by consumers in the United States. Water that is considered to be “hard” is high in dissolved minerals, specifically calcium and magnesium. As the concentration of the dissolved minerals increase, the water becomes harder. Hard water received this name because it requires more soap to get a good lather and makes the water “hard” to work with. Water hardness concentration is reported in parts-per-million (ppm).

How Does Water Become Hard?

Water becomes hard as it passes over river beds or through certain geological formations that contain calcium or magnesium.

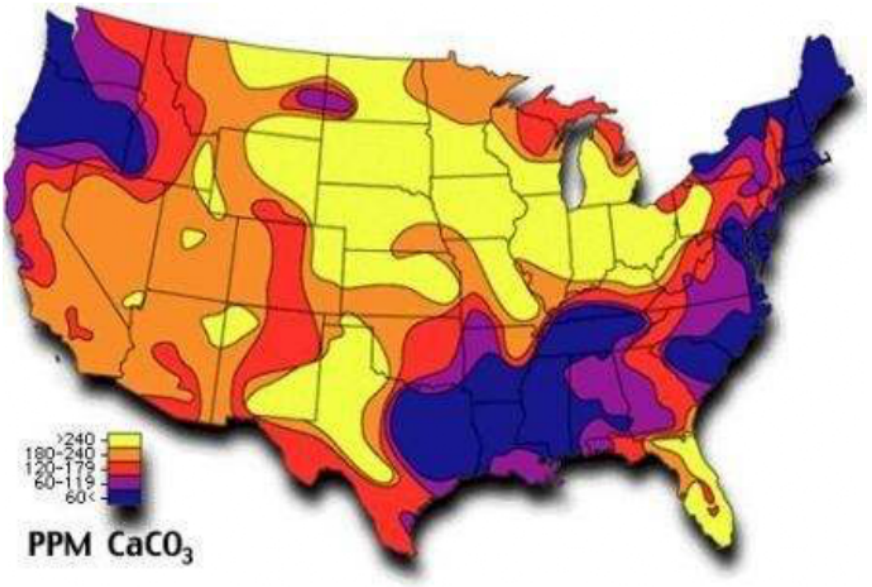
- Surface water can tend to be hard because it may passed over river bed formations.
- Well water becomes hard as it percolates down to the water table though sediment deposits rich in calcium/magnesium bearing minerals that dissolve in water.



Water Hardness in the U.S.

The hardness of water varies widely throughout the United States. But for the most part, the states of the Southwest and upper Midwest have hard water. In the Southwest, low rainfall, hot weather, and high mineral content in the soil contribute to water hardness.

A comparison of water hardness values in the United States



What About the Perkasie Regional Authority Water?

The average hardness of Perkasie Regional Authority water averages about 310 ppm of total hardness. This average is derived from blended groundwater from the 4 PRA municipal wells in the system. The wells hardness are as follows: Well #5 – 312 ppm, Well #6 – 312 ppm, Well #7 – 309 ppm, Well #10 – 312 ppm and Well #11 – 307 ppm.

What Does Hard Water Mean To Me At Home?

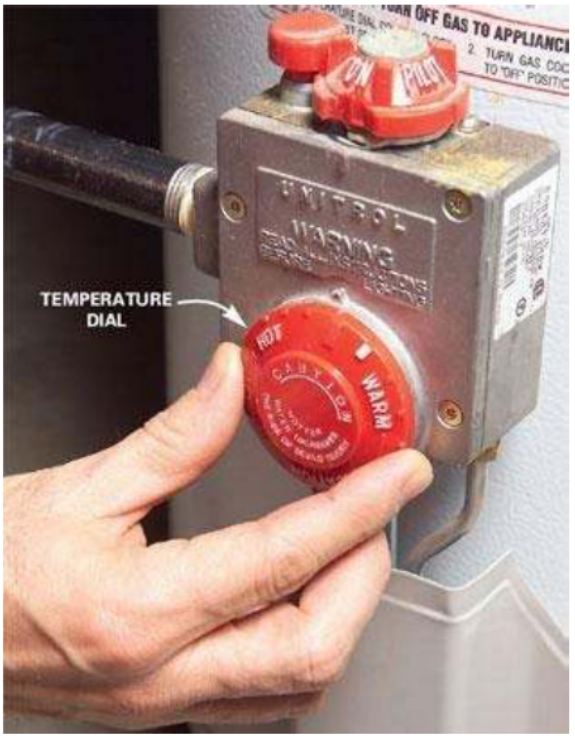
The minerals in hard water can cause spots to form on dishes that are washed in a dishwasher; or a scale to form on showerheads, drip irrigation emitters, and kitchen appliances. How fast mineral buildups occur depends on how hard the water is at your home. It's important that you follow the manufacturer's guidelines for hard water used in appliances. You also may want to use some de-scaling products and change some of your cleaning habits to address the residual effects of hard water.

Here are some things that you can do to lessen the effects of hard water around your home:

• The Dish Washer

Hard water may cause spotting and filming on your dishes. This is because the minerals in hard water are released faster when the water comes in contact with heat, such as the heating element in your hot water heater or dishwasher.

Here are some things you can do to reduce spotting and filming:



1. Reduce the temperature of your hot water heater.

   The higher the temperature setting on your hot water heater, the more mineral residue will occur in the dishwasher. It is recommended that you turn the water heater down to 130 degrees, or the "vacation setting." At this setting you should have enough hot water for your shower and you will maintain sanitary conditions in your dishwasher.

2. Detergent Selection.

   According to the National Soap and Detergent Association, you should start with the manufacturer's recommended amount of detergent and increase by one tablespoon at a time until you achieve the desired cleaning/spot prevention. Read the labels of products and experiment to find which works best for you.

3. Rinse Agents

To remove heavy, cloudy, hard water film or spotting from dishware, you can add a commercially produced film and spot remover or use regular household white vinegar as a rinse agent. If your dishwasher does not have a dispenser, you can create your own by putting some vinegar in a cup and placing it on a dishwasher rack. If you use a film and spot remover, make sure to follow the manufacturer's directions. If you use vinegar, the National Soap and Detergent Association recommend removing flatware or other metal items from the dishwasher.

Before you decide which method to use, read your dishwasher operating manual to see what the manufacturer recommends for hard water use.

• The Hot Water Heater

Decreasing the temperature of the hot water heater will reduce the amount of mineral buildup in the hot water tank, but nevertheless, mineral “scaling” in the tank will eventually reduce the energy efficiency of the heater. Therefore, it is important to follow the manufacturer’s guidelines for periodically flushing your hot water heater

• Tile, Ceramic and Metal

Mineral buildup on tile, ceramic, and metal surfaces such as showerheads, sinks, bathtubs, faucet fixtures, simply require more maintenance to keep water spotting and filming to a minimum. With most cleaning products, following the manufacturer’s instructions will get the desired results. For heavy scale buildup on tile, ceramics, and porcelain, a pumice stone works nicely.

• The Coffee Maker

There are products on the market that will remove mineral buildup from your drip coffee maker or you can run a pot of strong vinegar water through your coffee maker on occasion. Refer to the manufacturer's guidelines.

• The Laundry

Most laundry products are detergent-based and therefore work better in hard water than soap-based products. Today's detergents are formulated to perform over a wide range of water hardness. According to the National Soap and Detergent Association, a powdered detergent with phosphate will perform well in hard water as will any of the liquid laundry detergents. Regardless of the form of detergent you use, you will still need extra detergent to overcome the hardness of the water. Water conditioning and detergent-boosting products also are available and are especially effective in hard water. Most soap and detergent manufacturers have toll-free customer service numbers if you need more information.

Will Water Hardness Affect My Garden?

The high mineral content in hard water may lead to an increase in salt and mineral buildup in the soil when you water your plants, trees, or vegetables. Good drainage is important and soil additives such as gypsum, peat, and compost will be helpful. Use mulches that reduce moisture loss. Native plants will be less sensitive to mineral buildup than exotics, citrus, and vegetables. For more information, you should contact your nursery or landscape professional.

Will The Minerals In Hard Water Clog The Water Pipes In My Home?

The calcium in your water will not build up fast enough to limit the useful life of your household plumbing. The calcium in hard water can create a natural protective coating on the inside of your pipes. If your home has lead or copper pipes or pipes with lead solder, this coating has a beneficial effect by preventing lead and copper from leaching into your home's water supply. However, mineral buildup in sink aerators may restrict water flow. Simply remove the aerator, clean it with vinegar, and replace. Hot water re-circulating systems used by commercial customers and in larger homes are more subject to scale buildup and require close monitoring of those systems.

Will Hard Water Affect My Health?

The World Health Organization says that "there does not appear to be any convincing evidence that water hardness causes adverse health effects in humans." The National Academy of Sciences states that hard drinking water generally contributes a small amount toward total calcium and magnesium human dietary needs. They further state that in some instances, where dissolved calcium and magnesium are very high, water could be a major contributor of calcium and magnesium to the diet. Some people experience more skin dryness with hard water, but the majority of people will not see any change. If you have questions, you may want to consult your dermatologist, or physician.

Should I Purchase A Home Water Softener?

A water softener can improve the aesthetic qualities of your household water. For example, soap products perform better in softer water. But a water softener does not improve the quality of water as it relates to health. Most water softeners exchange sodium for existing calcium and magnesium in the water and therefore, increase the sodium content of the water. If the sodium increase in softened water is a concern, you should consult your physician. There is evidence that softened water may be corrosive to certain metallic pipe materials. Some water softeners also discharge brine into the wastewater system. The cost of softening water is another factor that must be taken into consideration. Water softeners can consume from 15 to 120 gallons of water for every 1,000 gallons of water processed. Accordingly, the decision to purchase a home water softener is one of personal preference that can be discussed with a sales representative.

Types of Water Softeners:

- Salt-Based Ion Exchange Systems
  These systems exchange sodium ions for calcium and magnesium. They add small amounts sodium to the water, but at levels that are generally not a health issue for most people. These systems require frequent additions of salt (one 50 pound bag lasts about 2 to 4 weeks), but otherwise require minimal maintenance.
- Reverse Osmosis Systems
  These systems use membranes to filter calcium and magnesium in water. Generally, reverse osmosis systems require more maintenance than ion exchange systems and some vendors offer a maintenance program to simplify the process for owners.
- Magnetic Systems
  These systems apply an electromagnetic charge to incoming water which causes the water molecules to behave differently. In essence, the water acts as if it were soft water even though no change in mineral concentration has occurred. Some of these systems require very little maintenance.

Useful links with information on:

Hard Water Stains

1. How To Clean Stuff.net
2. Vinegar For Soap Scum and Hard Water Stains

Hot Water Heaters:

1. Chili Pepper App.com
2. Home Wizard.com

Dish Washers:

1. Ehow.com-Dishwasher Build-up
2. Repair 2000.com

Water Treatment Systems

1. Water Quality Association