Hardness

USEPA Contaminant Classification: Not Classified
EPA Maximum "Safe" Levels: None Set

Water Quality Association (WQA) Degrees of Hardness

Hardness Level	gpg	mg/L or ppm
Soft	Less than 1.0	Less than 17.1
Slightly Hard	1.0 to 3.5	17.1 to 60
Moderately Hard	3.6 to 7.0	60 to 120
Hard	7.0 to 10.5	120 to 180
Extremely Hard	10.5 and above	180 and above

gpg = grains per gallon
mg/L = milligrams per liter
ppm = parts per million

Source: Hardness in water is caused as acidic rainwater filters through a mineral layer in the Earth. When the water comes in contact with mineral (Limestone mainly consisting of Calcium and Magnesium) it dissolves them into the water. The more mineral the water contains; the "harder" the water is said to be. Hard water interferes with the function of soaps and detergents making them less effective in lathering. Hardness minerals are mainly composed of Calcium, Magnesium, Manganese and Potassium.

Health Effects: Hard water may cause dry, itchy skin. Hard water can also clog hair follicles causing unnecessary hair loss. Calcium, Potassium, and Magnesium are essential minerals and are beneficial when consumed. Hardness in water is neither classified as a Primary or Secondary water contaminant because it is not thought to have any adverse health effects.

Home Damage Effects: Hard water can stain plumbing fixtures with a whitish "soap scum". This staining appears wherever the water pools and evaporates. It is this mineral staining which appears on shower walls, clings to hair, clogs skin pores, and make house cleaning much more difficult. Hardness also clogs and obstructs pipes, drains and faucets. Mineral hardness can coat the heating element in hot water heaters causing them to operate inefficiently using a lot more energy and shortening their lifespan. The minerals when heated precipitate out of solution and may clog the hot water heater tank.

How to Fix Contaminated Water:

1. Softeners/Conditioners- These units are effective at removing hardness from water at very high levels. These units automatically clean (regenerate) their resin beds with a strong brine (salt) solution. These systems are very effective at softening water and require only the occasional addition of salt to the brine tank.

gpg = grain per gallon, (1.0 grain per gallon equals 17.1 parts per million)