Why is Water Quality so Important?

Potable Water is Scarce

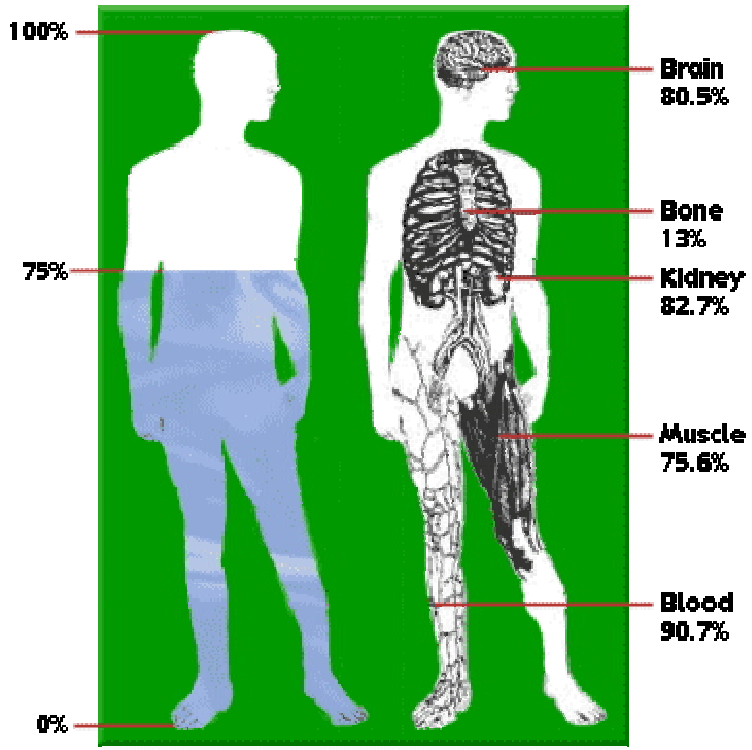
Only 3% of the world's water is suitable for drinking…

Potable Water is Scarce

…2% of which is found in glaciers and ice…

…so in reality, only **1%** of the earth's water is accessible *and* potable!

We Are Water



The majority of the human body is comprised of water.

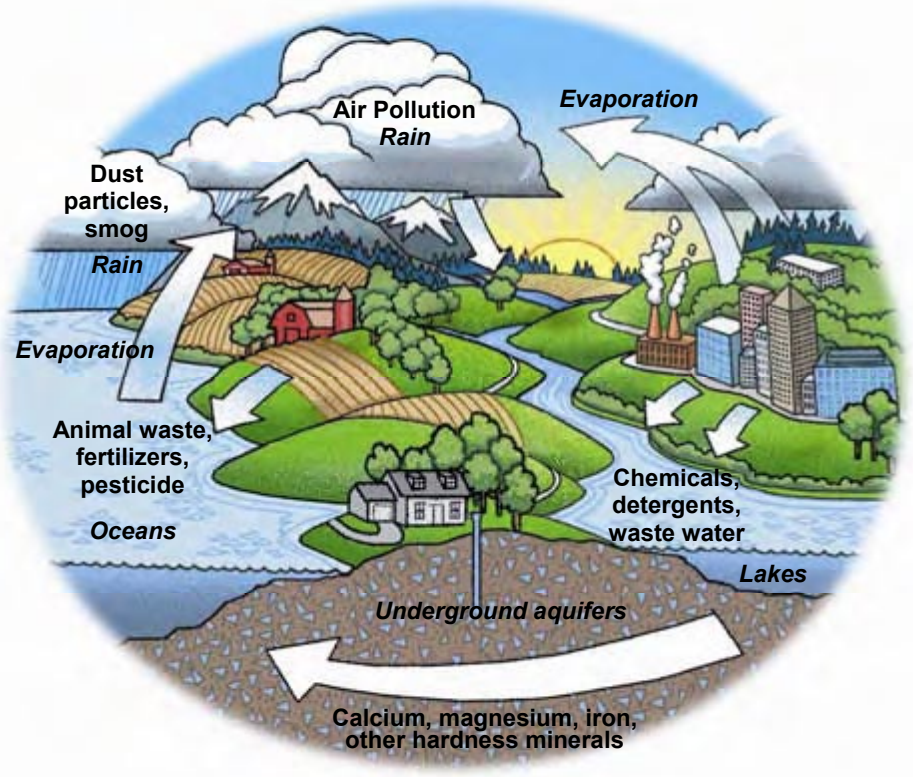
Water is Important to Daily Life

- Quality drinking water is important to our health and well-being.
- We use water daily throughout our homes for cooking, cleaning, bathing, laundry and a host of other purposes.
- Water is critical to most items we purchase and consume in one way or another.
- Some interesting facts:
  - The typical person uses about 75 gallons of water a day – roughly equivalent to 800 cans of soda.
  - Approximately 4,000 gallons of water are used to manufacture a single automobile.
  - The process of making 1 pint of beer requires close to 2 gallons of water.

How Does Water Become Contaminated?

The **hydrologic cycle** moves water from the air to the earth and back again.

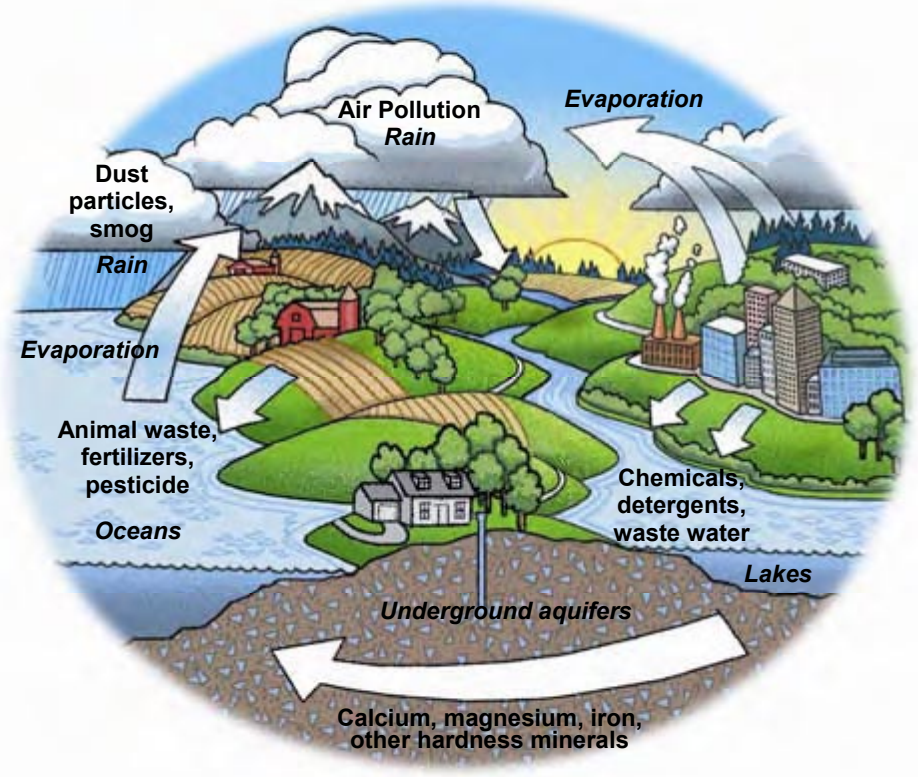
Water is a natural solvent that dissolves everything it touches. As water passes through the earth to the water tables below, it "carries" with it substances such as….



The Hydrologic Cycle

How Does Water Become Contaminated?

- Air Pollution
- Chemicals
- Detergents
- Animal Waste
- Fertilizers
- Pesticides
- Herbicides
- Waste Water
- Bacteria
- Sulfur from Smokestack
- Lead from Pipe Solder
- Hard Minerals (Calcium, Iron, Magnesium)
- Other Minerals (Limestone, Arsenic)
- And more…



The Hydrologic Cycle

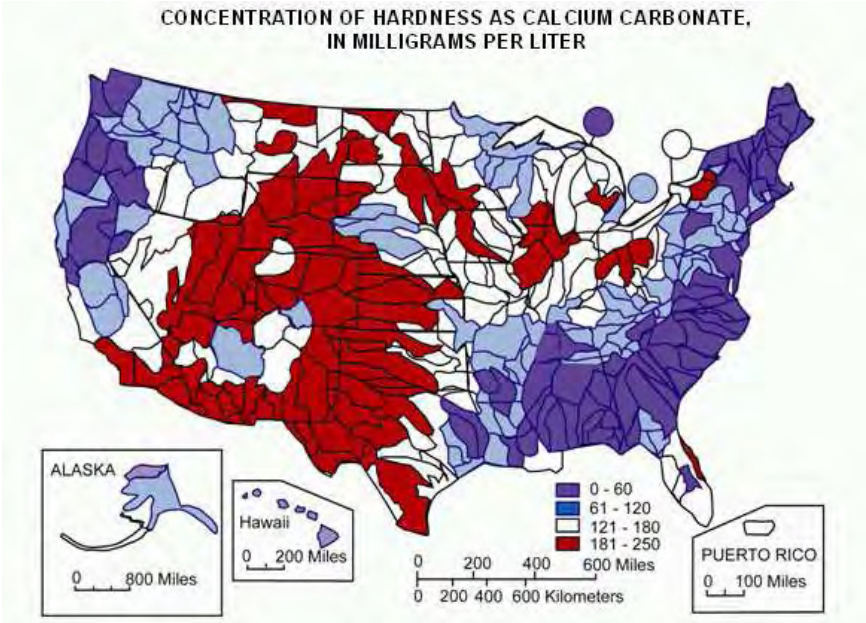
Safe, Clean Water for Your Home & Health:

Hard Water Concerns

Hard Water

85% of U.S. water is hard due to high dissolved mineral content.

- As a result, virtually all water in the U.S. is hard water, contaminated with minerals and undesirable things.
- Even if your water is soft, it may still be contaminated.



Mean hardness as calcium carbonate at NASQAN water-monitoring sites during 1975 water year.
Colors represent site data representing streamflow from the hydrologic-unit rea.
(Map edited by USEPA, 2005)

You Can See and Feel Hard Water

- **Scale** in pipes, water heaters and other appliances reduces operational life
- **Mineral spots** on glasses
- Hard water **stains**, **scum** and **scale** on sinks, tubs, toilets and fixtures
- **Dry**, **itchy** skin from soap residue
- **Dull-looking**, **dry** hair
- **Rough-feeling** clothes and **dull** colors after washing
- Soaps **don't lather** as well
- **Use more** soap, detergents and cleaning products – and your time - to get things truly clean

Hard Water = Lost Time!

The average household spends 6 hours each month cleaning the effects of scale, scum and hardness deposits throughout the home. *Ohio State University*

Hard Water = Higher Costs!

1/8” of scale in a water heater requires 20% more energy to operate. *US Bureau of Standards*

The life of clothing, towels, sheets and other textiles is extended by 15% when washed in soft water. *The School of Civil Engineering and the School of Consumer and Family Sciences Purdue University*

The Cost of Doing Nothing

Water heaters using LP gas consume 30% more energy/BTU's with hard water. *New Mexico State University Research*

20% of supermarket expenses are for detergents, soaps, cleaning chemicals and personal products such as shampoos – products largely necessary due to the impacts of hard water. *Orange County Calif. Consumer Survey*

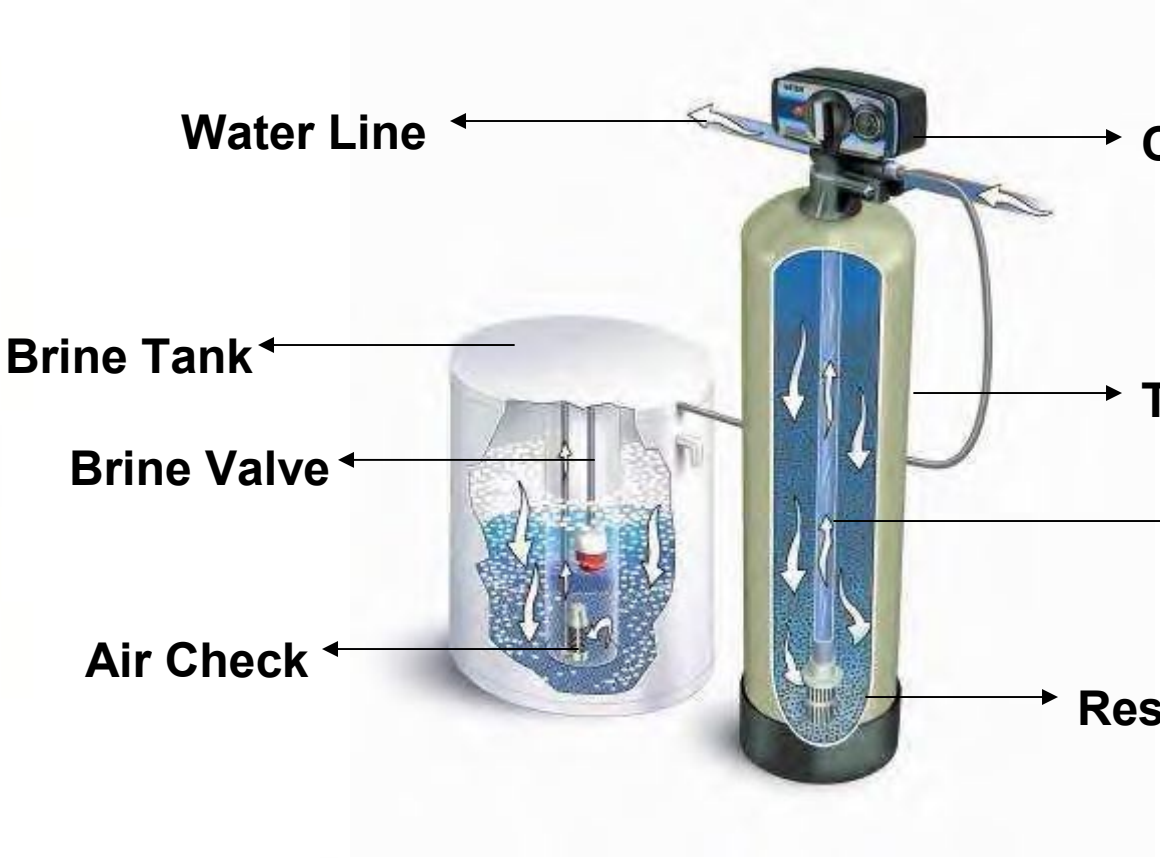
And if I Have Soft Water?

- Save up to 70% in soap and detergent usage
- Save up to 65% in cleaning product usage
- Waste less hot water
- Reduce home energy expense
- Spend less time cleaning and shopping

Save time and money…

relax and lead a better life!

The Solution? A Water Softener



(A typical softener system)

How Does a Water Softener Work?

- The **cation exchange process** reduces the level of hardness in (softens) water through the use of a material called a "**cation exchange resin**."
- An **ion** is an electrically charged atom or group of atoms, and a **cation** is a positively charged ion.
- The **resin** used in most home water softeners contains **sodium or potassium cations** which can exchange with the hardness ions (calcium and magnesium) in your water as it passes over the resin.

How Does a Water Softener Work?

- This exchange process removes the **hardness ions** and leaves them in the resin.
- The resin must be **regenerated** or “recharged” by passing a concentrated **brine** of sodium chloride or potassium chloride through the system.
- This process replaces the “**hardness**” (calcium and magnesium ions) previously filtered out of the water with “**softness**” (positively charged sodium ions), so the resin bed is ready to use again.

The Best Softeners Feature Pentair Water Components

A softener featuring Fleck® precision-manufactured Control Valves and Structural® Tanks offer:

- Advanced technology
- More choices
- Easy to maintain
- Lowest total cost of ownership

Our products have been on the market for over 50 years and are tested to last 2.5 times the industry norm.

Other products “seem similar”, but insist on a quality system not a disposable one! Fleck- and Structural-based softener systems are simply the best investment!

FLECK
Pentair Water

STRUCTURAL
Pentair Water

Safe, Clean Water for Your Home & Health:

Potable Water Concerns

Potable Water Quality Concerns

- A softener will not solve every water quality concern in your home – even if your water is soft, it may still be contaminated in ways that are unsuitable for drinking and cooking purposes.
- Typical homeowner water quality concerns beyond hardness include:
  - Turbidity, cloudiness
  - Sediment particles
  - Chlorine taste & odor
  - Lead
  - Bacteria
  - Chemicals
  - Other aesthetic and health-related issues

The Potable Water Solution?

- Homeowners typically pursue one of two whole house options:
  - Purchase bottled water from outside the home.
  - Filter/treat water from inside the home.
- While bottled water is perceived to be the most convenient choice by many…
- Filtering/treating your home's tap water is just as convenient plus it costs less, is better for the environment and is just as good (if not better) for you!

Bottled Versus Tap Water

Isn't bottled water safer than tap water?

- **No, not necessarily.** The National Research Defense Council (NRDC) conducted a four-year review of the bottled water industry and the safety standards that govern it, including a comparison of national bottled water rules with national tap water rules, and independent testing of over 1,000 bottles of water.
- Their conclusion was that there is no assurance that just because water comes out of a bottle it is any cleaner or safer than water from the tap.
- And in fact, an estimated 25 percent or more of bottled water is really just *tap water in a bottle* – sometimes further treated, sometimes not.

Bottled Versus Tap Water

Isn’t bottled water safer than tap water?

- To ensure that your bottled water is safe, check to see that the product is independently certified. National Sanitation Foundation (NSF) International is a not-for-profit, non-governmental organization that provides product certification and safety audits for the food and water industries. Look for the NSF Mark on the label or visit www.nsf.org to verify the certification of your favorite brands of bottled water.

Bottled Versus Tap Water

Save money!

- A single 20-ounce bottle of water costing $1.50 would pay for about 1,000 gallons of municipal water – enough to fill the same bottle every day for 13 years.

- If you drink eight glasses of water each day – the amount most health experts advise – you'll spend about 49 cents per year for tap water. If you buy the same amount of bottled water, it will cost about $1400 per year, or 2900 times more.

Bottled Versus Tap Water

Protect the environment –

- Americans used 50 billion plastic water bottles last year. 40 billion of them ended up in landfills. fastcompany.com
- Nearly 90% of water bottles are not recycled and wind up in landfills where it takes thousands of years for the plastic to decompose. treehugger.com
- The 29 billion plastic bottles manufactured in the U.S. each year require the equivalent of more than 17 million barrels of crude oil to produce. The Week
- To distribute the bottled water that's hauled to and fro within the U.S. each week requires the equivalent of 37,800 18-wheel trucks. fastcompany.com

Bottled Versus Tap Water

If I drink tap water, should I filter/treat my water?

- Yes. If you have a tap water quality or taste problem, or want to take extra precautions – a water filter is your best option for ensuring safe, clean water for yourself, your family and your home.

What types of filters are most effective?

- There are many choices so we recommend purchasing products certified by NSF International (800 NSF-MARK, or www.nsf.org).
- These filters designate which contaminants they remove, and you can also look for one that removes contaminants of special concern (e.g. lead, arsenic, cryptosporidium). NSF certification is not necessarily a water safety guarantee, but it is better than no certification at all.
- It is critically important that all filters be maintained and replaced at least as often as recommended by the manufacturer, or they might make the problem worse.

Solution Options

Whole House Solutions

- Also known as Point-of-Entry (POE). These systems connect to the water supply where it enters the house. This allows all of the water used throughout your home to be treated, including water used in your kitchen, bathrooms and laundry.
- Examples: Water Softener, Whole House Sediment and Carbon Filters

Point-of-Use (POU) Solutions

- These systems may use some of the same technologies as Whole House, such as Sediment Filters, activated Carbon Filters or Reverse Osmosis – but instead of treating the water coming into the entire house, POU devices only treat the water designated for a particular tap or use.
- Examples: Faucet Filter, Pitcher Filter, Undersink Filter System

Any questions?

What are your water quality concerns?

We can help identify and provide solutions to meet *your* specific needs.

Roanoke
Water
Treatment

Thank you for your time and interest!