

Water Filters and Home Treatment Devices

There are many reasons you may choose to use a home treatment device. Concerns for most people include taste, odor and hardness of their water. For most people in the United States, the use of a water filter is not necessary to ensure water safety. If you do choose you use a home treatment device, the important thing is to make an informed decision and not be taken in by misleading marketing tactics.



Is my tap water safe to drink?

In 1974, the federal government established the Safe Drinking Water Act to protect the public from water-related illnesses. This law requires community water systems to regularly test their water supplies and meet strict federal water quality standards. Many states have even more stringent requirements. Water providers conduct thousands of analyses each year to verify that the public water supply meets these standards, and the Safe Drinking Water Act requires they provide annual water quality reports to their customers. Contact your local water provider if you have not received a copy of your report.

Does my water need additional treatment?

For most people, the answer is no. Safe Drinking Water Act standards are set to ensure that your tap water is safe. People who have medical conditions that might put them at special risk should discuss the need for a water filter with their doctors.

One of the most common complaints about water taste and odor is chlorine. Another is water that is too soft or too hard. Other concerns can include lead, copper, color, manganese, and sediments. Regardless of your concern, the most important issue is that you make an informed decision and get a device that effectively resolves your specific problem.

In Home Treatment Devices

Many stores and companies sell various home treatment devices, ranging from small faucet-mounted filters to "whole-house" systems to water softeners. While AWWA cannot recommend specific brands or products, the following information should be helpful. For specific project information, contact NSF International, Consumer Reports, or the device manufacturer. Maintenance is important with any home treatment device, as an inadequately maintained filter can actually reduce water quality.

Sediment Control Filter

Sediment control or Pre-Filters can be used to filter out the large particles including sand and sediment that can be delivered to the house water system. These are typically installed in a pressure housing near the point of entry of the water to the house. The filters range in ability to filter small particles, as measured by the pore size or micron rating. The typical house filter will have a micron size rating of 75 microns or lower. These filters effectively remove sediment and other particles from the incoming water.

Activated Carbon Filters

These are the filters you are probably most familiar with. There are several types of these filters available, including carafe-style, faucet-mounted, and under-sink units. Activated carbon filters can improve taste, odor and color problems associated with organic chemicals in the water. They are particularly effective at reducing taste and odor associated with chlorine. Activated carbon filters need to be replaced often.

See ACWWA's website for an Activated Carbon Fact Sheet (PDF) – www.arapahoewater.org

Reverse Osmosis Filters

Reverse Osmosis, sometimes called RO, involves the movement of water through a membrane. RO filters can remove many substances, including fluoride and many minerals associated with "hard" water. RO can be expensive. It also "wastes" several gallons of water for each gallon produced.

See ACWWA's website for a Reverse Osmosis Fact Sheet (PDF) – www.arapahoewater.org

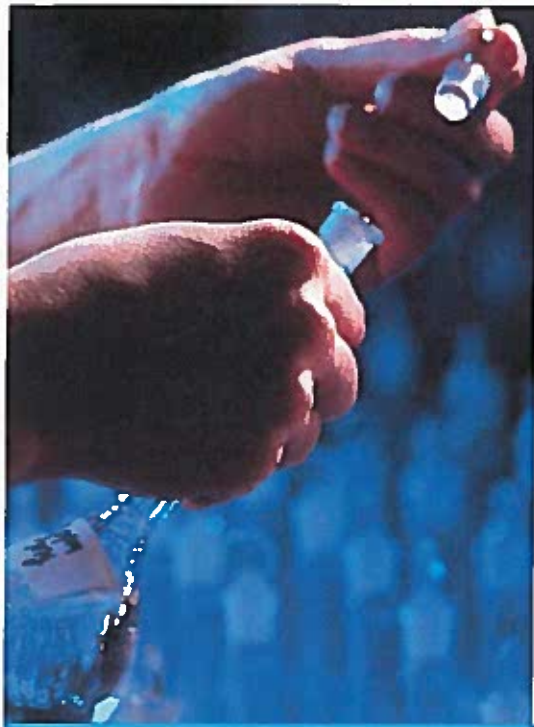
Water Softeners

Water softeners are specifically designed to exchange "hard" minerals, like calcium and manganese, for "soft" minerals, usually sodium or potassium.

See ACWWA's website for a Water Softeners Fact Sheet (PDF) – www.arapahoewater.org

Copyright © 2015 American Water Works Association

See <<http://www.drinktap.org/home/water-information/water-filters.aspx>> for more information



Facts

and

Filters



Activated Carbon Filters

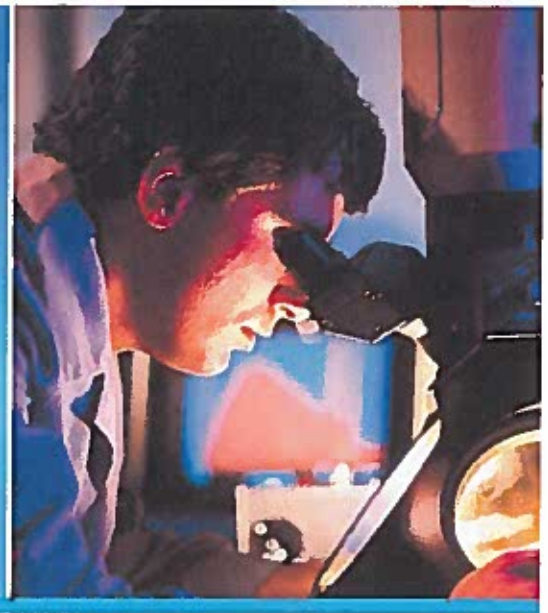
An activated carbon filter (most popular pitcher/faucet filters are activated carbon) can improve taste, odor, and color problems associated with organic chemicals in the water. It is particularly effective at reducing the taste and odor associated with chlorine, an additive used by water agencies to protect tap water from biological contaminants. This type of filter does not remove hardness minerals, sodium, microbes, nitrates or fluoride.

An activated carbon filter works by attracting and holding certain chemicals as water passes through it. The effectiveness of this process depends on a variety of factors, including temperature, pH, and the flow rate of water through the filter.

There are several types of activated carbon filters available for household use. They include carafe-style units, faucet-mounted filters and under-sink models. Activated carbon filters may also be installed along the water line leading to icemakers and refrigerator water dispensers. The activated carbon within the filter holders may be granular, powdered, or in a solid block. *(continued on back)*

- ▲ Properly maintaining equipment is essential because inadequately maintained filters can actually reduce water quality.
- ▲ All filtering systems are different. It's important to make sure the device you choose addresses your particular concern.
- ▲ Questions regarding specific devices, as well as specific guidelines for maintenance, should be directed to the manufacturer.
- ▲ Individuals with specific concerns about medical conditions should discuss options with their doctor.





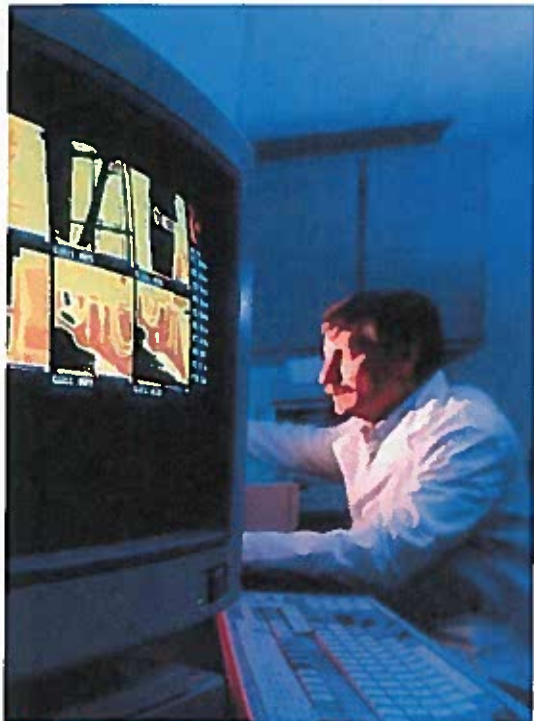
(continued from front)

Over time, an AC filter loses its ability to remove contaminants, because it is holding all the material it can. Most manufacturers recommend a filter change after a specific volume of water has passed through the filter. A general guideline is to change the filter after six months of use or 1,000 gallons of filtered water.

Activated carbon filtration should only be used on water that has been tested and found to be bacteria free or effectively treated for pathogenic bacteria. Public water systems treat for disease-causing bacteria; therefore, the likelihood of disease-causing bacteria being introduced to an activated carbon filter from public drinking water is remote.

However, bacteria that do not cause diseases can grow in AC filters. While consuming these bacteria poses little risk to healthy people, people with special medical conditions should check with their doctor before deciding on a supplemental treatment system.





Facts

and

Filters



Reverse Osmosis

Reverse Osmosis (RO) systems can reduce levels of many substances that may be in water, like those that cause foul tastes, smells, or colors, and substances that may cause adverse health effects in some susceptible populations. They also remove fluoride and the minerals associated with “hard” water.

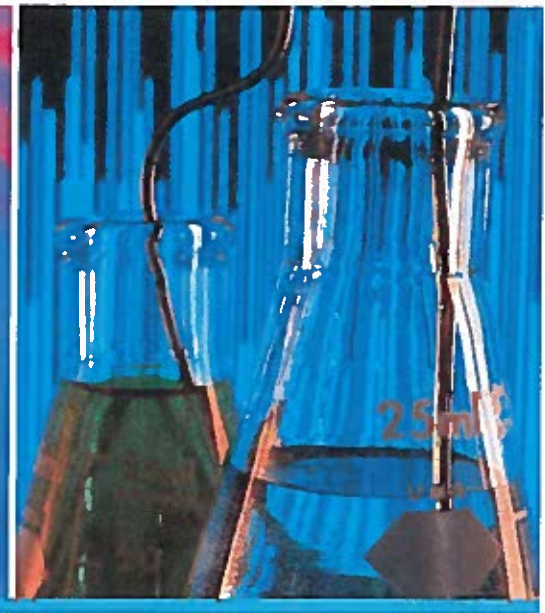
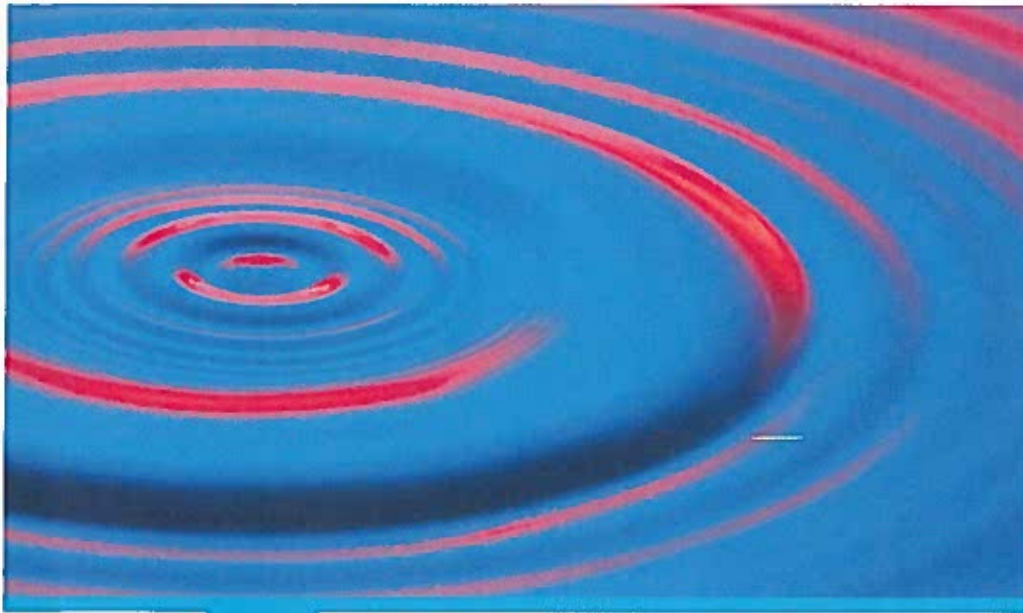
RO involves the movement of water through a membrane with microscopic openings that allow water molecules to pass through. Because this process is relatively expensive, RO systems are generally used only to treat drinking and cooking water supplies.

A drawback to RO units is that most “waste” several gallons of water for each gallon they produce (that is, they generally recover only a small percentage of the water entering the unit; the remainder is sent to the sanitary sewer system). However, RO units can vary dramatically in this regard, and there are high-efficiency models available.

(continued on back)

- ▲ Properly maintaining equipment is essential because inadequately maintained filters can actually reduce water quality.
- ▲ All filtering systems are different. It's important to make sure the device you choose addresses your particular concern.
- ▲ Questions regarding specific devices, as well as specific guidelines for maintenance, should be directed to the manufacturer.
- ▲ Individuals with specific concerns about medical conditions should discuss options with their doctor.





(continued from front)

RO systems can lower the pH of water to below state and federal standards. RO systems also remove beneficial minerals such as calcium, magnesium and fluoride.

Removal of these minerals along with the lower pH makes the water similar to distilled water. Thus, some consumers may not like the taste of RO water. Sampling RO water is recommended before purchasing this equipment.

RO systems are usually installed below the kitchen sink. RO systems consist of the pre-filter, RO membrane unit, a pressurized storage tank for the treated water, a post-filter, and a separate delivery tap for the treated water supply. Because these components require a significant amount of space, available room beneath the sink should be considered.

When comparing purchase to lease/rent options, consider the initial costs of the system. RO units range in cost from less than \$300 to \$3,000 or more. Installation and maintenance costs can vary and should be a factor when deciding on a system.





Facts

and

Filters



Water Softeners

Water dissolves rocks and minerals, releasing calcium and magnesium ions that cause water to be "hard". Water softeners will remove nearly all these ions from the water. They typically treat all of the water coming into the home.

Hardness of Water

Water Classification	Hardness in mg/L or ppm	Hardness in grains per gallon
Soft	0-17	0-1.0
Slightly hard	17-60	1.0-3.5
Moderately hard	60-120	3.5-7.0
Hard	120-180	7.0-10.5
Very hard*	180 and over	10.5 and over

**Most people don't need a water softener unless their water is very hard.*

1 grain per gallon = 17.1 mg/L hardness

Hard water can be a real pain, but it is not a health issue. Water softening is popular because most people prefer softened water for bathing, cleaning and washing. In addition to leaving chalky deposits on faucets and other fixtures, hard water interferes with many household-cleaning tasks (laundry, dishwashing, etc.). While household

- ▶ Properly maintaining equipment is essential because inadequately maintained filters can actually reduce water quality.
- ▶ All filtering systems are different. It's important to make sure the device you choose addresses your particular concern.
- ▶ If you're concerned about lead or other contaminants, you should have water tested at the tap.
- ▶ Questions regarding specific devices, as well as specific guidelines for maintenance, should be directed to the manufacturer.
- ▶ Our water supply meets all state and federal water quality standards [Note: Remove if this is not true]. Questions about water quality should be directed to (insert utility customer service number)
- ▶ Individuals with specific concerns about medical conditions should discuss options with their doctor.

Presented in cooperation with

 American Water Works Association





appliances, including water heaters, may be adversely affected by hard water. (see the hardness table above), problems can be easily avoided by proper maintenance and cleaning. For example, draining some water from hot water tanks removes deposits.

Water can be softened by a process called ion exchange. Sodium (or potassium) ions are used to coat an exchange medium in the softener. As hard water passes through the unit, the water "trades" its calcium and magnesium for the sodium or potassium.

Water softeners are classified in five different categories: manual, semi-automatic, automatic, demand-initiated regeneration (DIR), and off-site regeneration. In terms of efficiency, DIR units are considered desirable because they regenerate only after a certain volume of water has been processed.

Retail prices for home water softeners may range from a few hundred to several thousand dollars, depending on the size and type of softener. The cost of salt to replenish the brine solution is approximately \$5 to \$7 per month, depending on the form purchased.

Advantages of water softeners include improved "feel" on skin when bathing

(subjective); cleaner, softer clothes; longer life of some appliances; reduced use of household cleaning products; and reduction of water spots and deposits. Disadvantages of water softeners include increased sodium which may concern some people on restrictive diets (check with your doctor about this issue); harm to houseplants because of elevated salt content; and overload or reduced effectiveness of septic systems.

There are several alternatives to reduce problems associated with hard water. They include laundry detergents that contain water-softening agents; dishwasher rinse aids; bath salts; and lime- or mineral-dissolving household cleaners. Deposits on fixtures and countertops can be prevented by wiping surfaces dry; mineral residue on surfaces only occurs when water is allowed to evaporate.

Other technologies, called water "conditioners," are marketed as salt-free alternatives to softeners. Consumers must decide individually on the validity of these claims. It should be noted that neither the American Water Works Association nor the Water Quality Association endorses these technologies.

Presented in cooperation with

 American Water Works Association

