

Home Water Treatment

Water quality is a concern to everyone. Home water treatment, or water filtration, is one of the fastest-growing segments of the housewares industry. There are many home water treatment devices available in the marketplace. They filter out a wide array of contaminants. However, the most common reason people give for purchasing a water filter is to get better tasting water. It is estimated that one in every five homes in the United States has some type of water filter or treatment device.

Products available range from simple filter pitchers to whole-house treatment units. Many devices are now readily available through retail outlets. Others must be purchased from a water treatment equipment dealer or contractor. Three common types of water filtration systems sold through retail channels are faucet-mount filters, countertop filters, and water filter pitchers. Other products available include under-counter systems that require plumbing installation and whole-house systems. Whole house systems are connected to the water line where water enters the house.

Types of Treatment Systems

There are six general types of water treatment equipment. Each is designed to perform very specific functions. Following is a brief description of each of these six.

Disinfection Systems

Disinfection kills bacteria and other microorganisms. The most common systems use chlorine. Continuous chlorination systems either inject liquid chlorine into the water or drop in dry chlorine pellets. Shock chlorination can also be used with wells and cisterns. Shock chlorination involves mixing a high dose of chlorine into the well or cistern. There are several safety measures that should be followed when using shock chlorination. Your local county Extension office can provide instructions for disinfecting well and cisterns with shock chlorination. Ultraviolet and ozone systems are also available for disinfecting water. These systems provide instantaneous disinfection, but do not continue to disinfect the water beyond the treatment point like chlorine.

Carbon Filters

Carbon filters remove most of the organic compounds in water. These organic compounds are usually the cause of taste and odor problems. Certain types of carbon filters can also reduce lead levels in water. Carbon filters should only be used with water that is free of bacteria.

Physical Filters

Physical filters are simple units designed to remove things like grit, sediment, dirt and rust from water. They are often made of fabric, fiber, ceramic, or other screening materials. These types of filters remove a limited range of contaminants, and they do not purify or soften water.

Distillers

Distillers produce water that is almost pure. They remove minerals like nitrates and sodium, many organic chemicals, and virtually all impurities. The heat used for the distillation process also kills bacteria. Distillers only produce one to two quarts of distilled water per hour.

Reverse Osmosis Units

A reverse osmosis (RO) unit removes a variety of inorganic chemicals, such as nitrates, calcium and magnesium. These units are up to 95% effective, but they can remove beneficial chemicals like fluoride. Typically, a RO unit is only used to treat water for drinking and cooking. The units can be expensive to purchase and maintain.

Water Softeners

Water hardness is caused by the presence of minerals like calcium and magnesium. Hardness is typically measured in grains/gallon (gpg). Water is considered hard if the level is above 7.0 gpg. Water softeners use a process called ion exchange to soften water. Water passes through a bed of ion-exchange resin. The calcium and magnesium is replaced by sodium in the resin. The increased sodium in the water can be a concern for people on restricted diets.

Purchasing Water Treatment Equipment

Before purchasing water treatment equipment, there are several things that should be considered. First and foremost is to know what you want to change about the water you are treating. Testing water is the best way to determine what may need to be changed.

For public water system customers, water will most likely meet national safety standards. To verify this, a person can contact the local water company and request a copy of the water quality report / Consumer Confidence Report. The most common things that public water system customers want to change about their water is the taste and, occasionally, the odor. Other aesthetic problems like hardness, corrosivity, foaming and staining can also be addressed with home water treatment equipment.

For homeowners who use a private water supply, the situation is quite different. Though most private water systems are safe, determining the quality is up to the individual. Private water system users should always test their water before purchasing any type of water treatment equipment. Testing the water will aid in identifying problems that exist and guide decision-making on the type of equipment to purchase.

Any equipment purchased should be certified to do what it claims. NSF International, Inc. and Underwriters Laboratory (UL) each test water filters and treatment systems to determine if they comply with industry standards. Equipment that has been tested will carry the seal of either NSF or UL. The Water Quality Association (WQA), a trade association for water treatment equipment dealers and manufacturers, also requires that equipment be evaluated. Member products will carry the WQA seal.

Before making a purchase, homeowners should consider the total cost, including installation, maintenance and filter replacement. If you are purchasing from a water treatment equipment dealer, check the reputation and background of the company. Also, be sure to review the product warranty and maintenance schedules. Consumers must follow the directions for home treatment precisely and change filters routinely according to the directions for the product.

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References

- Federal Trade Commission. 1993. *Facts for Consumers: Home Water Treatment Units*. Federal Trade Commission, Washington, DC.
- Herman, Glenda M. and Gregory D. Jennings. 1994. *Home Drinking Water Treatment Systems*. North Carolina Cooperative Extension Service, Raleigh, NC.
- Symons, James N. 1997. *Plain Talk About Drinking Water*. American Water Works Association, Denver, CO.