

Summary of Home Water Treatment Options

When possible, it is best to remove sources of contamination or replace a contaminated water supply with a safer water supply rather than rely on a home water treatment unit.

No single treatment process can remove all substances in water. If you decide to install a home water treatment unit, the unit (or units) you choose should be certified and labeled to reduce or remove the substance you are concerned about. If there is more than one substance you want removed from your water, you may need to combine several treatment processes into one system.

Even well designed treatments systems can fail. You should continue to test your drinking water after you install a treatment unit. All home water treatment units require regular maintenance to work properly. Regular maintenance can include changing filters, disinfecting the unit, or cleaning scale buildup. You should always follow the manufacturer’s recommendations for installing, cleaning, and maintaining a treatment unit.

Point of Use Treatment	<p>Point of use (POU) treatment systems are designed to treat small amounts of water, usually for drinking and cooking. The treatment system is likely to be located on the counter, attached to the sink faucet, or installed under the sink. Some refrigerators with water/ice dispensers also have a POU treatment system installed.</p>			
Treatment Option	Removes or Reduces	Description	Advantages	Disadvantages
<p>Reverse Osmosis (RO)</p>	<p>arsenic 3 arsenic 5 chloride lead manganese nitrate and nitrite pesticides PFCs/PFASs radium sodium sulfate other dissolved solids</p>	<p>In a reverse osmosis (RO) system, dissolved solids are removed from water as the water diffuses across membrane with pores tiny enough to let water pass through but stop many contaminants.</p>	<p>Effectively reduces the widest array of contaminants and can remove multiple contaminants.</p>	<p>RO systems can create a lot of wastewater when the membrane is operating (to keep it clean and functioning).</p>

SUMMARY OF HOME WATER TREATMENT OPTIONS

Point of Use Treatment				
Point of use (POU) treatment systems are designed to treat small amounts of water, usually for drinking and cooking. The treatment system is likely to be located on the counter, attached to the sink faucet, or installed under the sink. Some refrigerators with water/ice dispensers also have a POU treatment system installed.				
Treatment Option	Removes or Reduces	Description	Advantages	Disadvantages
Distillation	bacteria manganese arsenic nitrate lead iron sulfate viruses and bacteria Other dissolved solids	Distillers use heat to boil the water. Steam is produced and rises, leaving contaminants behind. The steam hits a cooling section where it condenses back to liquid.	Distillation can remove up to 99.5 percent of dissolved solids.	It can be expensive to heat the water to create the steam that is required for distillation. VOCs and other contaminants may not be removed. Water may taste 'flat' because oxygen and minerals are reduced.
Carbon filter in a pour-through pitcher, faucet attachment, or refrigerator water/ice dispenser	chlorine hydrogen sulfide lead manganese PFCs/PFASs radon volatile organic compounds (VOCs)	Contaminants adsorb on the surface of the activated carbon filter. The contaminants are discarded when the filter is removed and replaced with a new filter (which must be done regularly).	Carbon filters are inexpensive, widely available, and easy to use.	Installed units are best used on a single tap or faucet because water with iron and/or manganese will fill the filter quickly and will need to be replaced more often. Without proper maintenance, carbon filter units can have significant bacteria growth, which can make you sick.

SUMMARY OF HOME WATER TREATMENT OPTIONS

Point of Entry (Whole House) Treatment				
Point of entry (POE) treatment systems are designed to treat all of the household water. POE systems are installed at the location where water enters the home. When a POE system is used, treated water will be available for all household uses including drinking, cooking, cleaning, bathing, and laundry.				
Treatment Option	Removes or Reduces	Description	Advantages	Disadvantages
Water Softening (Ion Exchange)	calcium chlorides copper iron magnesium manganese nitrate sulfates other dissolved solids	Dissolved minerals in the water are removed by water softener ion exchange resins. These resins typically switch sodium or potassium for the main hardness ions calcium and magnesium. A water softener may be piped to treat only the hot water or to not treat the kitchen cold tap. To determine which taps are soft in your home, follow the plumbing or use a hardness test strip.	Water softeners are common and easy to use. Sodium chloride and potassium chloride are safe to handle and readily available.	Owner has to buy salt and resupply the storage tank as needed. Tank needs to be cleaned regularly.
Oxidizing Filter Media	iron manganese hydrogen sulfide	Oxidizing filters have a media bed that changes dissolved contaminants into solid particles. Those solid particles are then large enough to be filtered out of the water.	Properly maintained oxidizing filters are very efficient.	Greensand filters require periodic regeneration of the media, which is messy and toxic, so must be handled and stored carefully according to specific safety measures.

SUMMARY OF HOME WATER TREATMENT OPTIONS

Point of Entry (Whole House) Treatment				
Point of entry (POE) treatment systems are designed to treat all of the household water. POE systems are installed at the location where water enters the home. When a POE system is used, treated water will be available for all household uses including drinking, cooking, cleaning, bathing, and laundry.				
Treatment Option	Removes or Reduces	Description	Advantages	Disadvantages
Oxidizing by Ozonation and Filtration	bacteria iron manganese viruses other color, taste, or odor problems	Ozone is generated using electricity and then injected in the water. The ozone changes dissolved contaminants into solid particles. Those solid particles are large enough to be filtered out of the water.	Useful when there are multiple water quality issues. Does not require adding other chemicals to the water.	Ozonation systems require significant maintenance and may be more expensive than other treatment options.
Oxidizing by Aeration and Filtration	ammonia chlorine dissolved gases (carbon dioxide, radon, methane) hydrogen sulfide iron manganese volatile organic compounds (VOCs)	An aerator brings oxygen into the water. The oxygen helps change dissolved contaminants into solid particles. Those solid particles are large enough to be filtered out of the water. For dissolved gases, the oxygen bubbles	Aeration does not add additional chemicals to the water and may reduce multiple contaminants.	Water with too much oxygen can become corrosive and damage plumbing. Aeration filters may require a large tank or multiple tanks and uses large amounts of water.
Oxidizing by Continuous Chlorination and Filter	bacteria hydrogen sulfide iron viruses	A pump feeds chlorine into the water, which helps change dissolved contaminants into solid particles. Those solid particles are large enough to be filtered out of the water.	Useful when there are multiple water quality issues.	Chlorination may require a large tank or multiple tanks and frequent maintenance and monitoring is required. Chlorination systems are complex and can be expensive. An additional carbon filter may be needed for drinking water to remove the chlorine taste.