

Residential Water Treatment Systems: Pros and Cons

| SYSTEM | PROS | CONS |
|--------------------------|--|--|
| Softener | Numerous manufacturers | Water can taste salty if system is not operated properly |
| | Commonly used | Requires adding salt to system regularly |
| | Also effective for removing iron and manganese | Requires disposal of softener backwash water |
| | Provides softer water | |
| Reverse Osmosis | Removes most chemicals | Reject waste stream volume can be as high as 50% of amount treated |
| | | Disposal of reject water could overload the septic system |
| | | Can leach out copper or other metals from pipes or plumbing |
| | | More sophisticated type treatment |
| | | Membranes must be replaced periodically |
| Carbon Filtration | Removes most chemicals | Carbon requires regular replacement |



For More Information

A good source for information is the National Sanitation Foundation, more commonly known as NSF International.
www.nsf.org

The NSF website provides information on types of residential water treatment systems:
<http://www.nsf.org/consumer-resources/what-is-nsf-certification/water-filters-treatment-certification/selecting-a-water-treatment-system>

Water Testing

Water testing can be done by contacting a Maryland Certified Drinking water laboratory from the list found at:
www.mde.state.md.us/programs/Water/Water_Supply/Documents/WSP-Lab-2013jan08.pdf



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Our Mission

*To provide operational and technical services
to protect and enhance the environment
for the benefit of the people of Maryland*

Residential Water Treatment Systems

Technical Information



Treatment System Types

There are many different types of water treatment devices and systems available for homes. They can be as simple as a single filter or more sophisticated and use multiple types and combinations of treatment that can remove all contaminants.

The first step is to have your water tested to determine the concentration of the various contaminants in your well water. The test results can then be used to determine the best type of treatment.

Pretreatment

Filtration

Filters can be used to pretreat the water prior to treatment using the other systems listed below. Pretreatment filters are used to remove sediments and colloidal particles. If the water quality is good, it may be possible to use filters as the only treatment, while other locations may require additional treatment after filtration.

Acid Neutralizer

Since most groundwater in this part of Cecil County is acidic, the use of an acid neutralizer is used to increase the pH to make it more neutral. This is also done as pre-treatment. An acid neutralizer works by passing the water through a bed of calcite to raise the pH. The acid neutralizer requires occasional backwashing. The backwash water should be discharged to a dedicated drain field separate from the septic drain field.

Softeners

Softeners use an ion exchange resin to replace calcium and magnesium with sodium. Their primary purpose is to make water softer but they are also effective at removing iron, radium, and other type constituents. Soft water uses less detergent for washing and eliminates bathtub rings, and other scaling problems.

Softeners use a brine solution to backwash and regenerate the resin. The backwash water should be disposed of in a dedicated drain field separate from the septic drain field.

Activated Carbon Filters

Activated carbon filters are very effective at removing most organic contaminants. Pretreatment filters should be used in conjunction with carbon filters to remove sediment and other colloidal material. Disinfection is recommended prior to carbon filters using ultra violet light or chlorine. Disinfection prevents bacterial growth on the carbon. Carbon filters have to be replaced periodically to maintain their effectiveness.

Reverse Osmosis (RO)

RO uses a synthetic membrane as a type of filter and can remove most contaminants. Prefiltration is usually recommended prior to the RO unit so that the membrane is not clogged by excessive sediment. The membranes require replacement periodically.

RO systems generate a significant amount of reject wastewater. Typical systems can reject 2 to 5 gallons of water for every 10 gallons treated.

It is recommended that the reject waste stream be disposed of in a dedicated drain field. Due to high reject flows, RO treatment is usually only used for drinking water.

A Note About Maintenance

Home water treatment systems need regular maintenance to operate effectively. Follow the instructions in the operating manual that comes with your water treatment system to ensure you are operating your system in accordance with the manufacturer's directions. Replace filter cartridges, carbon, reverse osmosis membranes and other items on a regular basis as recommended by the manufacturer of your system.

If you do not have a copy of your owner's manual, most manufacturers have them on their websites.

