

Water Filtration Buyer's Guide



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1. HOW DOES YOUR WATER GET CONTAMINATED?

“Drinking water comes from freshwater lakes, streams and underground reservoirs. These sources act like catch-basins for naturally occurring and artificial substances found in the environment, some of which are harmful to humans.

For example, rain washes pollutants and pesticides from the air, city lawns and streets, and farmers' fields into rivers and streams. In some communities, industrial effluents and municipal sewage are flushed directly into watercourses. Leaking underground storage tanks, septic tanks and hazardous waste dumps can also contaminate sources of drinking water.

Not all contaminants are man-made. Many species of microorganisms -- viruses, bacteria and protozoa -- often thrive in fresh water and can make it unfit for drinking. Water can contain humic and fulvic acids from decaying vegetation. Naturally occurring substances such as arsenic, cadmium, iron, manganese and uranium can leach into water from rock formations in the earth.”¹

Here is a breakdown of the process:

RAIN: Rain water picks up toxins before it ever hits the ground. Some of these toxins can include, but are not limited to:

1. Bacteria
2. Dust
3. Smoke
4. Carbon Dioxide
5. Smog
6. Acid Rain
7. Molds

* A lot of these toxins come from factories that can emit toxins such as lead, strontium 90, and radium 226 and 228.

DRAINAGE: That water travels both on top of the surface and below the surface collecting minerals and contaminants along its path. Some of these minerals and contaminants can include, but are not limited to:

1. Calcium
2. Magnesium

¹ http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/truth-lumiere/contaminated-contamination_e.html

3. Dirt and Silt
4. Fungicides
5. Salinity
6. Nitrate
7. Hydrogen Sulfide

REUSE: The municipalities do everything to standards before the water hits your home. Some of these contaminants, from rivers and lakes, that run to the municipalities that are hopefully rid of are, but not limited to:

1. Mercury
2. THM's
3. Solvents
4. Trihalomethanes
5. Petroleum
6. Phosphates
7. Animal Wastes

HOME REUSE: Finally, the water enters your home for you and your families' usage.

I bet you have a question. How does this affect MY drinking water? As we explore section **1.2. WHAT CONTAMINATIONS ARE BAD FOR YOU?**; we are going to talk about three contaminants that are very real, not good for you, and found most commonly in your water.

1.2 WHAT CONTAMINENTS ARE BAD FOR YOU?

1.2. A. CALCIUM AND MAGNESIUM

Calcium and magnesium dissolved in water are the two most common minerals that make water "hard." The degree of hardness becomes greater as the calcium and magnesium content increases and is the concentration of multivalent cations dissolved in the water.

Indications of Hard Water

"Hard water interferes with almost every cleaning task from laundering and dishwashing to bathing and personal grooming. Clothes laundered in hard water may look dingy and feel harsh and scratchy. Dishes and glasses may be spotted when dry. Hard water may cause a film on glass shower doors, shower

walls, bathtubs, sinks, faucets, etc. Hair washed in hard water may feel sticky and look dull. Water flow may be reduced by deposits in pipes.

Dealing with hard water problems in the home can be a nuisance. The amount of hardness minerals in water affects the amount of soap and detergent necessary for cleaning. Soap used in hard water combines with the minerals to form a sticky soap curd. Some synthetic detergents are less effective in hard water because the active ingredient is partially inactivated by hardness, even though it stays dissolved. Bathing with soap in hard water leaves a film of sticky soap curd on the skin. The film may prevent removal of soil and bacteria. Soap curd interferes with the return of skin to its normal, slightly acid condition, and may lead to irritation. Soap curd on hair may make it dull, lifeless and difficult to manage.

When doing laundry in hard water, soap curds lodge in fabric during washing to make fabric stiff and rough. Incomplete soil removal from laundry causes graying of white fabric and the loss of brightness in colors. A sour odor can develop in clothes. Continuous laundering in hard water can shorten the life of clothes. In addition, soap curds can deposit on dishes, bathtubs and showers, and all water fixtures.

Hard water also contributes to inefficient and costly operation of water-using appliances. Heated hard water forms a scale of calcium and magnesium minerals that can contribute to the inefficient operation or failure of water-using appliances. Pipes can become clogged with scale that reduces water flow and ultimately requires pipe replacement.²

1.2. B. **IRON**

Iron accounts for 5% of all the earth's crust-that is why the element can be found in just about all types of water supplies whether it is from the ground, surface, or well water. Iron in water is more of a nuisance than a health problem. Iron can be present as more than one form and can change forms when exposed to air, heat or chlorine.

Some symptoms of having too much iron in your water:

1. Metallic or distorted taste in your water
2. Brown-red stains on fixtures, dishes or laundry
3. Water turning brown or red when drawn from the tap
4. Clothing becomes discolored when laundered
5. Tends to darken beverages

² <http://www.water-research.net/hardness.htm>

And these are just a few....

Remember, water may contain one or more types or associated forms of iron. Your total iron is the sum of the contents.

The forms of iron that can be most commonly found in your water are:

Clear Water Iron: Clear water iron is otherwise known as ferrous iron. It is dissolved in water and will be clear at first. It will gradually turn slightly yellow or brown as the iron oxidizes.

Red Water Iron: Red water iron is otherwise known as ferric iron. It is clear water iron that has oxidized to a particle form. These yellow, red orange or reddish particles are suspended in water and will settle out after a short period of time.

Colloidal Iron: This iron is red water iron that is too small to be filtered by standard means. Colloidal iron will stay in suspension giving the water a red-pink turbid cast.

Organic Iron: Organic iron is bound or complexed to organic compounds such as tannin or humic acids. It can be colorless but occurs most often as a yellow, yellowish-brown or pink color.

Bacterial Iron: A bacteria that feeds on clear water iron using it in their metabolic processes. It will cause staining, plugging, taste and odor issues.

1.2. C. **MANGANESE**

Manganese is less abundant than iron but whose behavior closely parallels. It is an element rarely found alone and usually occurs with dissolved iron. Deposits of these contaminants will collect in the plumbing of your house and appear when tap water is drawn. The bacteria can also cause clogging in piping and fittings. The difference between manganese and iron ultimately is that manganese oxidizes more slowly and requires more oxygen.

Some of the symptoms that occur if you have a high level of manganese:

1. Black sediment
2. Blackish turbidity
3. Black water
4. Clogged pipes

1.2. D. OTHER CONTAMINANTS

Tannins: When we refer to tannins in water supplies, we refer potentially to a number of such organic compounds that may be present. Two broad sub-categories are humic and fulvic acids - giving the typical tea color to the water.

Sodium: Most water contains some sodium which naturally leaches from rocks and soils. An excess of sodium in water may cause a salty taste or odor, as well as presenting long-term health effects.

E-coli: *E. coli* comes from human and animal wastes. During rainfalls, snow melts, or other types of precipitation, *E. coli* may be washed into creeks, rivers, streams, lakes, or groundwater. When these waters are used as sources of drinking water and the water is not treated or inadequately treated, *E. coli* may end up in drinking water.

Nitrate: Drinking water high in nitrate is potentially harmful to human and animal health. Nitrate (NO₃) is a naturally occurring form of nitrogen (N) which is very mobile in water. It is essential for plant growth and is often added to soil to improve productivity. Water moving down through soil after rainfall or irrigation carries dissolved nitrate with it to ground water. In this way, nitrate enters the water supplies of many homeowners who use wells or springs. It is estimated that about three percent of residential wells in North Carolina contain nitrate at levels exceeding the safe drinking water standard.

There are many other contaminants to think about and the best way to see what is in your water is by calling a company like Universal Water Systems and ask them for their free water analysis.

Water treatment system vendors are also listed in the yellow pages under "**Water Filtration & Purification Equipment.**" It is important to ask if the system you are purchasing will remove contaminants of concern. Not all systems can.

2. DO I EVEN NEED A WATER FILTRATION SYSTEM?

A water filtration system is a system that removes impurities from your tap water. This water may be used in your bath, kitchen, and laundry and anywhere else water is used.

A water filtration system should ultimately work two-fold for the best effect:

First you have a system that performs water conditioning which is a treatment to take care of “hard water”. As discussed earlier, hard water is caused by magnesium and calcium and can make your water extremely rough on your clothes, appliances and pipes.

Secondly, you have another system that performs reverse-osmosis. Reverse-osmosis treats the other impurities in your water by taking away contaminants that you drink.

Below, we will review what water conditioning and reverse-osmosis means and how it will benefit your water at home.

2. A. WATER CONDITIONING

It is important to know the difference between a system that performs just water softening and one that performs water conditioning. A system that just softens your water makes it simply, soft, but does not remove ANY contaminants that are in your water. A system that performs water conditioning (a refinement system) not only softens your water, but also pulls out most bad contaminants, especially chlorine (One of the top issues in municipal water). Remember, **chlorine** is used by municipal water treatment centers to kill massive bacteria like e-coli, but it can be a double-edged sword. The active ingredient sodium hypochlorite is also the active ingredient in bleach. Though we need chlorine to kill bacteria, we also need to make sure that the level content is not too high in your home water use and not being ingested and absorbed in your skin. Chlorine is usually not a problem, but it is smart to get your water tested to make sure.

It is essential to have a system that does both. Softening your water is important because it takes out that calcium and magnesium that hardens your water, which in turn, ruins your pipes, appliances, clothes and more. Conditioning takes out the stuff that can affect your health. Adding the reverse-osmosis system takes away any other sediments and contaminants that might be in your water. The result: 95-99% pure drinking water.

2. B. REVERSE OSMOSIS

To understand reverse osmosis, first let us take a look at what osmosis is.

OSOMOSIS:

Basically, osmosis is a natural phenomenon by which concentrated solutions will try to dilute themselves by absorbing a lesser concentrated solution. A membrane is used to separate the two different concentrations. The membrane is permeable allowing the less concentrated water pass through it while leaving behind dissolved solids.

So, now that we understand the basics of osmosis, reverse osmosis is the idea that the direction of the water passing through the membrane will reverse. The sheer force of outside pressure presses the water through the membrane. The membrane again allows the water to pass while filtering the dissolved solids out of the solution.

Some of the benefits of reverse osmosis include:

1. Can move virtually 90-99% of all organic compounds, particles and ions so that you have better and safer drinking water.
2. Low energy requirement.
3. Allows oxygen to pass so that the water does not taste flat.
4. Does not require chemical additions to your water.

So do you need a water filtration system? Well, if you are worried about contaminants that may be in your water, it is important to get a FREE water analysis. Here are some sure signs that you may need one, but not limited to:

- Dry skin, spots on your dishes, rough clothes, clogged pipes, dirty rings in your bath and toilet, cloudy water from your tap, smelly water, water with a bad taste, child has skin issues, and so forth.

2.2. WHAT WOULD THE BEST SYSTEM BE FOR MY HOME?

A water filtration system should be easy to have, comprehensible, and ultimately no work on your end. Below is a two step approach of how a whole home system works:

1. Water enters your home flows through your water conditioner/refiner where impurities are removed through softening, filtering or refining. This is where your "hard water" is taken care of.

2. Water that is used for drinking, making ice cubes and humidifying your home is further filtered by reverse osmosis where most dissolved solids are removed.

Your RO system consists of three cartridges:

1. Sediment/Carbon Pre-filter Cartridge: reduces sediment, dirt, sand and chlorine.
2. Reverse Osmosis Cartridge: reduces barium, lead, copper, nitrate and other contaminants.
3. Carbon Post-filter Cartridge: reduces taste and odor

There are a lot of different systems on the market. Most work well at some level, but do not take care of a lot of unforeseen issues you may have with your water. It is important to remember that this is a purchase that will change your life. You want a system that will take care of your problems, have qualified and friendly service, a great warranty, and deal with a company that have the seals of approval that warrant their expertise and quality.

2.2. A. Seals of Approval

These seals of approval are not easy to come by. It is important that a company has all of these seals that distinguish themselves as a company who knows there stuff:



2.2. B. Making Choices

It is difficult to compare different systems because there are so many on the market. It is important to do your research to make sure you are getting the best system for your dollar. Some systems are cheaper, but do not perform well, optimize the best water quality for you, and so forth. Some are over priced and still do not optimize your water.

Ultimately, it is about finding a company that is well-versed in the business, believe in their community, and ultimately wants to make sure they are perfecting the water for your life. Here are some important questions you should ask:

Is the water filtration system a refinement/conditioning system?

Is the company I am dealing with insured? Bonded? Certified?

Are the plumbers trained on the products? Are they continuously trained?

Are the plumbers insured and certified? Are they in-house or contracted?

Does the company have a 24 hour emergency hotline if problems would occur?

Does the company have their own in-house service team?

How does a company's warranties compare to others?

Here at Universal Water Systems, we would have not put this guide together for you unless we cared, knew our stuff, and built relationships so strong with our customers, that yes, we are #1 in this business. Our systems, EcoWater Systems, are the number one systems in the market, but it is not about that, it is about knowing how to make sure you are receiving the best customer service, the most qualified installers and service technicians, and all you need to do is sit back, relax, and have a nice cold glass of that universal drink: water.

3. What is the process of getting a water filtration system?

The process of getting a water filtration system should be easy.....period. Below, we will go through the first thing that you will need to have done to see if you even need a water filtration system: a water test.

3.2. Water test

Water treatment is complicated, so it is important to have qualified technicians and sales people help you understand the chemistry of your water. There are so many variables involved and your house may not have the same issues as your neighbors or the person down the street.

Water testing should always be offered for free and no purchase should be necessary. Water testing only tells you about your water quality at the time the test is taken. With this uncertainty about how good your water is, it is nice to know that water treatment is something that works for you 24 hours a day, 365 days a year. Remember, most water issues are treatable, but needs to be professionally recognized so that your water system can be correctly applied.

3.3. What are some of the benefits?

What are the benefits? If your home needs to have a water filtration system, the aptitude of health and lifestyle benefits is the first thing that comes to mind. I am sure after reading this water filtration buyer's guide; you get the idea of how it will benefit you. Some of the immediate things to know:

1. No more spots on your dishes
2. No more rough laundry
3. Keep your appliances working for a longer period of time to avoid costly replacements.
4. Keep your pipes in your home healthy to avoid costly replacements.
5. No more dry skin.
6. Softer hair.
7. Save up to 70-80% of soap costs from your laundry and dishwashing.
8. Helps with eczema that is very common with young children.
9. Takes away 95-99% of sediments and contaminants for simply healthier drinking and bathing water.
10. No more bottled water costs.
11. Increases the value of your home.
12. Decreases chlorine.

There are so many more benefits to having a reliable water conditioning system in your home.

DISCLAIMER:

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If you are truly worried about the health of you and your family and believe it has to do with your water supply, please consult your physician immediately.