

Water Filters 101 – City Water

Why should you filter your tap water? The United States has the safest drinking water in the world, so why filter it? The answer is in the definition of safe. Drinking water safety is monitored by the Environmental Protection Agency (EPA) and defined as the absence of infectious organisms (bacteria, viruses & parasites) and acceptably low levels of a select few dangerous substances such as lead, copper, chlorine, trihalomethanes and certain radioactive compounds. Whether your tap water is from a municipal supply or from a well, it contains contaminants that endanger your health. Every municipality is required to supply a free water report to anyone that asks, so check yours out! If you have well water, please see our handout “Water Filters 102 – Well Water.”

City water supplies contain:

- Chlorine (and lots of it!) to disinfect the water. Chlorine is highly oxidizing, which means it is damaging to everything it contacts. Chlorine is highly irritating and drying to skin, mucous membranes and hair. Chlorine is readily absorbed through the skin and gastrointestinal tract and therefore able to cause damage throughout your body. Inhaled chlorine damages lung tissue. Some municipalities are now using chloramines instead of chlorine because they have better anti-microbial properties. However, chloramines are just as damaging to our bodies as chlorine and carry the added risk of exposing us to ammonia.
- Trihalomethanes (THM). These are dangerous chemicals found in 100% of water supplies treated with chlorine. THM can affect the brain, nervous system, liver, kidney and heart and are known to be carcinogenic.
- Pharmaceutical, cleaning, industrial, agricultural and lawn care chemical contaminants. There are over 85,000 synthetic chemicals approved for use in consumer products and even more created as waste from manufacturing plants. All of these are in our water supply. Most have not undergone even the most basic safety testing. Many are known to be carcinogens, neurotoxins, hormone disruptors or immune system disruptors, and we have no way of knowing what harm these do in combination. Don't be fooled by city reports stating that these contaminants are present in levels measurable only in ppb (parts per billion) levels. Most pharmaceuticals are designed to have their desired effects at ppb levels, so these levels matter! No doubt our exposure through water is far less than if we were taking a medication, however it cannot be said to be trivial and should be taken seriously.
- Fluoride, which is ostensibly added to strengthen the enamel on our teeth. However, the fluoride used by most municipalities is not the expensive sodium fluoride that was used in dental studies. Instead, most communities use sodium fluorosilicate, a toxic byproduct of the phosphate fertilizer industry, which has neither been proven to be safe nor proven to be effective in reducing cavities. Furthermore, there is plenty of evidence that too much fluoride causes damage to our teeth (especially in children) and fluoride can interfere with thyroid function.
- Heavy Metals, such as lead, arsenic, mercury and chromium, all of which have devastating effects on the nervous system and/or can be carcinogenic.

Which filter is best for me?

KDF – KDF-55 is a common filter media consisting of an alloy of copper (Cu) and zinc (Zn). It eliminates chlorine by converting it to a safe chloride salt. It also removes heavy metals, such as lead, mercury and arsenic. Finally, it softens the water by changing the form of calcium salts in the water, which reduces scale in pipes and on appliances. KDF-55 can be used alone, but it does not remove chemical residues from water. For water treated with chlorine, a filter combining KDF-55 and GAC is an excellent choice. Most shower filters use KDF-55.

KDF-85 – KDF-85 is also an alloy of copper and zinc but with these metals present in different proportions than in KDF-55. KDF-85 is necessary if your water is treated with chloramines instead of chlorine. When chloramines are present, a 2-cartridge filter with KDF-85 in the first cartridge and KDF-55 plus GAC in the second cartridge is recommended. KDF-85 will break the chlorine-ammonia bond and then the KDF-55 will handle the chlorine and the GAC will handle the ammonia.

GAC – Granular Activated Charcoal is the most common filter media for drinking water. It will remove chlorine and over 99% of the chemical contaminants in the water. GAC does not remove fluoride well, reducing it typically by only 10-20%. The quality of the GAC used is important and greatly affects its ability to remove chemicals. Used by itself, GAC is a very effective filter media, but it is quickly saturated by the high levels of chlorine in our water and needs to be replaced frequently. Filters that combine KDF-55 as the first stage and GAC as the second stage of filtering will have a much longer life. There are many varieties of specialty carbons on the market most of these are designed to better handle only certain contaminants, which might not be present in your water, so before spending more money on a filter with a specialized carbon make sure that it will address an real issue in your water.

Sediment filters – Sediment is what municipalities are great at filtering out of our water, but sometimes an additional sediment filter is required. Most high quality drinking water filters will contain media that filters down to 5 microns. If cysts such as cryptosporidium are of concern due to specific medical issues, then a 1 micron filter should be used.

Fluoride Removal – Fluoride is notoriously difficult to remove. Reverse osmosis and distillation will remove it, but these systems have significant drawbacks (see below) and Dr. Marny recommends against using them. Activated alumina will remove 95% of fluoride when it is new and 75-80% of fluoride by the time the filter is rated for replacement. Activated alumina filters **MUST** be coupled with a GAC filter so that the activated alumina will be removed from the water prior to consumption!

Dr. Marny's Advice: Say "No Thank You" to Reverse Osmosis and Distilled Water Systems



Reverse osmosis and distillation are frequently hailed as the best filters for drinking water. This distinction really depends on what you are rating them on! Both reverse osmosis and distillation are capable of removing all contaminants from the drinking water, and lab reports on their efficiency are impressive. However, what the lab reports don't tell you is important to know:

1. **Reverse osmosis works well only at very specific temperatures and water pressures.** Without the precise conditions present in the lab, reverse osmosis systems frequently remove dramatically lower levels of the contaminants present in our water. The water temperature and pressure in your home may fluctuate significantly from day to day and almost certainly do not match the lab conditions. KDF/GAC systems are not limited by water temperature or water pressure.
2. **Both reverse osmosis and distillation are very slow to produce filtered water.** Both require holding tanks and if your water need exceeds the volume of the tank, you are out of luck until the system can filter more water. KDF/GAC systems give an instant and unlimited supply of filtered water.
3. **Both reverse osmosis and distillation take everything out of the water, including the minerals your body needs for good health.** Your body was designed to drink chemical-free water as it existed in nature before we introduced so many chemicals into the world. In nature, water always contains an abundance of minerals. Reverse osmosis and distillation create pure H₂O – just water molecules – something that has never existed in nature. When you drink RO or distilled water, your body has to scramble to find minerals to balance that water and will steal those minerals from various body tissues (calcium from bones, magnesium from muscle, etc.) in order to balance the mineral content of your blood. You cannot possibly replace these stolen minerals with minerals in your diet, even if you eat a raw, vegan or totally organic diet. The minerals in our diet are meant to supply our daily requirements, not to supply these and replace stolen minerals. So what about adding minerals back into RO or distilled water. Many people do this, but this requires dedicated effort on a daily basis, there is really no way to verify that you have added the right amount of minerals for your needs, and these added minerals are not as easily used by your body. Just as RO and distilled water leach minerals from your body, they will also cause much more leaching of chemicals from any plastic containers they are stored in.
4. **Both reverse osmosis and distillation create very acidic waters,** primarily because the minerals are absent. Our bodies are designed to function in a slightly alkaline environment. Everything we do all day tips our bodies toward acidity (eating, exercising, breathing, absorbing chemicals, etc.). Our bodies are equipped to buffer (or reverse) the acidity caused by healthy eating, regular exercise and breathing but are quickly overwhelmed when the acidity of the "standard American diet," soda, sports drinks, RO or distilled water and the typical exposure to synthetic chemicals are added to the load. The result is that the body is able to keep the blood stream at the correct pH for survival but the peripheral tissues become more and more acidic, which promotes cancer and all chronic diseases, including diabetes, arthritis, acid reflux, attention deficit disorder, and all other non-infectious diseases.



Healthy Green Goods Water Filters:

Single cartridge KDF-55/GAC filters:

Filters 10,000 gallons (2-3 years for most households)
5 Micron filter (1 micron upgrade available – add \$20)

Countertop model: \$160 (not advised with pull-out sprayer faucets)

Under-counter model direct to main faucet: \$170*

Under-counter model with dedicated faucet: \$210* (requires hole in sink or countertop)

Replacement cartridge (KDF-55/GAC) \$50 (1 micron replacement \$70)

Dual cartridge Fluoride Removal & KDF-55/GAC:

KDF-55/GAC Filters 10,000 gallons (2-3 years for most households)

Fluoride capacity varies depending on fluoride content in your water – average 1 year

5 Micron filter (1 micron upgrade available – add \$20)

Countertop model: \$290 (not advised with pull-out sprayer faucets)

Under-counter model with dedicated faucet: \$330* (requires hole in sink or countertop)

*Note: Under-counter model requires a dedicated faucet to reduce the flow rate and to avoid significantly more frequent fluoride filter changes.

Dual cartridge Chloramine Removal & KDF-55/GAC: \$320

KDF-55/GAC Filters 10,000 gallons (2-3 years for most households)

Chloramine cartridge lasts 1 year

5 Micron filter (1 micron upgrade available – add \$20)

Countertop or under-counter installation

Replacement Cartridges

5 Micron KDF-55/GAC \$50

1 micron KDF-55/GAC \$70

Activated Alumina for Fluoride Removal \$70

KDF-85 for Chloramine Removal \$65

Whole House KDF-55/GAC

Great peace of mind – filter all shower and bath water, have drinking water at every sink in the house, filter laundry to avoid chlorine damage to clothes, filter garden for healthier plants – with infrequent filter changes and no ongoing maintenance. \$800

Filters 300,000 gallons (2-3 years for most households)

Requires plumber for initial installation

Filters up to 8 gallons/minute with larger units available if higher flow rate is needed.

Replacement media (KDF-55/GAC) \$380 (no plumber needed to replace media)

See our separate information sheet on the whole house filter

We also offer individualized filter solutions for well water or any other water problem not covered above. Please ask for details.

Ask about shower and bath filters to remove chlorine!