

Purifying water by Filtration

Ceramic/Diatomaceous Earth

The fine pores of Doulton ceramic (made from diatomaceous earth) remove parasites, organic & inorganic contaminants & chlorine but cannot filter out all the fluoride (just up to 99%). Some contain titanium zeolite to remove lead or silver to kill bacteria. They are often used instead of pasteurization in breweries. Ceramic filters are cleanable & DO NOT require electricity. www.aquarain.com

Carbon

Block and/or Granulated Activated Carbon filters (GAC) are used to remove organic and some inorganic contaminants & chlorine, but chlorine and hot water can deteriorate carbon. And bacteria may breed in a dirty carbon filter. Quality filters last up to 10 years and are biodegradable. (There is a tremendous range in quality of carbon filters.) Even distillers now add a small carbon filter to get the other .1% of micro-organisms that may actually survive distillation. www.pure-earth.com/comp.html

Distillers

Water is boiled (212 degrees) in a tank & transferred to a 2nd tank where it 'rains' almost pure H₂O, having removed heavy metals, nitrates & micro-organisms. But, this uses alot of electricity, is slow and creates 'empty (hungry) water.' If you don't eat mineral rich (organic) food, it's best to add minerals after distillation. www.purewaterinc.com/html/comparing.htm
www.freshwatersystems.com/c-167-waterwise.aspx

Paper or Cloth

Whole-house sediment cartridges remove particles & dirt to keep your hot water heater from breaking down, but may lower your water pressure in the shower & sinks.

www.lifesourcewater.com/technology.html
www.aquasana.com/?&discountcode=wfcg

Reverse Osmosis (RO) Filters

This method was first used to make saltwater fresh (desalination). It uses a synthetic membrane filter, (which may also breed bacteria when dirty unless used in conjunction with UV light or silver). A quality unit will remove most contaminants but requires 3-7 gallons to purify 1 gallon of water (not efficient in a water shortage). Because RO flushes concentrated bacteria back into a city water system, some cities have banned its use. Hence, they are best used with well water. (Older RO units require heavy water pressure & soft water.)

www.howstuffworks.com/question29.htm

Ultra, Micro & Nano-Filtration-similar to RO-used in food & beverage industry
www.nicewater.com/edu_technologies.html#ultraviolet

Purifying water with Additives

Chlorine

Most 'city water' in the USA is treated with chlorine to kill dangerous micro-organisms and algae (*although they remain in the water— just dead*). Unfortunately, it reacts with organic material to form chloro-organic compounds like chloroform and THMs (carcinogens) and destroys healthy intestinal bacteria and vitamin E in the body. www.selene.com/healthlink/chlor.html
After chlorination, many U.S. cities also add fluoride www.nofluoride.com—although fluoride has been banned in water treatment in 14 countries. It can cause brittle bones.

Grapefruit Seed Extract

Citricidal or GSE drops in water kill staph, strep, e.coli, parasites & more and then passes them—without harm—through the digestive tract. Simply put a **few drops** in the water &/or on your toothbrush. Most health food stores carry the product. www.nutriteam.com

Iodine

Hikers that drink from **streams** use iodine tablets or drops to kill viruses. It's not recommended for those with overactive thyroids. Iodine must be in the water for 30 minutes—longer if it's cold water. Add vitamin C to improve the taste.
<http://gorp.away.com/gorp/health/wtrflfaq.htm>
www.adventuresportsonline.com/waterfilter.htm

Enhancing water (*not purifying it*)

Softening

hard water has too much calcium in proportion to magnesium & may cause gall & kidney stones* Water softeners are used to reduce mineral buildup, make tubs and showers easier to clean, and reduce scale inside pipes and water heaters. They do **not purify water for drinking. Sodium bicarbonate (not regular salt—sodium chloride) is used. Some newer units use potassium instead of sodium—although a little sodium bicarbonate (not chloride) helps alkalinize the body. www.culligan.com/

Magnetizing

Coral, crushed lava, dolomite, marble chips, quartz crystals, zeolite & other minerals are being used to complement carbon or ceramic filtration, especially in aquariums. These minerals may add beneficial nutrients &/or magnetize it (resulting in less buildup on fixtures)..www.nikken.com/product.cfm?themeID=4
www.wholly-water.com/Magnetizer.htm

Other ways to Purify water

Light—Solar UV (Ultraviolet)

Swiss SODIS project: put water in a filled plastic bottle and leave it in full sunlight for at least 6 hours to eliminate viruses & bacteria. www.sodis.ch/Text2002/T-Howdoesitwork.htm
However, chemicals called phthalates are added to make some bottles more flexible & it can leach into the water when heated (*not frozen, though*). Glass bottles may work better.

Light—UV Lamps

UV light kills water-borne pathogens, but a sediment filter needs to be used first to extend the life of the lamp.

<http://pure-earth.com/uv.html>

www.nicewater.com/edu_technologies.html#ultraviolet

Minerals (Ionizing)

Copper & Zinc: Kinetic Degradation Fluxion (KDF) **shower filter**. Water is passed through copper and zinc granules that, when wet, create an electrostatic charge, oxidating & reducing ions to convert contaminants into harmless substances or peroxides which kill bacteria. It changes some heavy metals into insoluble salts & changes chlorine into food grade zinc-chloride
www.kdff.com

Copper & silver: Mineralizer/ Ionizer for **spas/ pools**. Copper is a natural algicide & silver is anti-bacterial. Low voltage DC current is passed between copper & silver electrodes, causing a loss of electrons. www.lifeguardsystems.com/

Oxygen (Ozonating)

Some **pools, aquariums & municipal water systems** (600 in France) kill bacteria and viruses & inactivate pesticides with an ozone (O₃) generator—which is made either by passing air through an electric current. www.O3water.com or with UV light. www.nicewater.com/edu_technologies.html

Plants (Biological)

Water hyacinths, rush, cattails, reeds & more...all act as **pond** water filters. Some remove heavy metals from water.
www.hoerrnursery.com/GardenInfo/WATERPlantsThatFilter.cfm

Note: Nuked Water

Water that has been contaminated with **radioactive fallout** can be safe to drink, but should be filtered several times (through paper or cloth) to remove fallout particles, then filtered.

Why do I need a filter?:

Go to your local Utilities Board website and read the most recent water quality reports. (Knox: www.KUB.org/ Loudon: www.lcub.com/)

Then, check out some of the different known contaminants and the diseases they are linked to at: www.epa.gov/ord/dw/rc.html

Now, even though local Utilities maintain pretty safe levels of regulated (and unregulated) organic and inorganic contaminants, keep in mind that virtually NO studies have been done to determine how the different contaminants may react **together** in the human body.

For instance, it may be perfectly safe to ingest a little Tagamet or Tylenol. It's even safe to inhale a little organophosphate pesticide (*such as used on golf courses*). It's safe to drink a few alcoholic beverages.

However, what happens if you **simultaneously** take Tagamet & breathe an organophosphate? Or drink alcohol & take some Tylenol? Both can be fatal.

That's why you need to drink, shower and bathe in the purest H₂O possible. Additives add up.

But, I have well water!

Protozoa, like Giardia & Cryptosporidium have been detected in 90% of U.S. surface water. You might want to read www.aquarain.com/cdc.htm

Few wells in the U.S. are unaffected by fertilizers, factory discharges & pesticides used nearby.

Drink Water—not Cola!

Avoid sodas because **caffeine is a dehydrating agent** (making the kidneys flush out more water), **carbonation erodes bones & teeth**, and **high fructose corn syrup** overloads the pancreas, eventually **causing diabetes**.

Some research indicates that **high cholesterol** is simply an adaptation of the body to a state of chronic **dehydration**. (*The natural thirst mechanism can be fooled by chemical additives—so the body doesn't even recognize that it's thirsty for water.*)

May I Suggest?:

For drinking water away from home:

Carry bottled water—bottled water analyses at: www.bottledwaterweb.com
&/or a sports bottle w/carbon filter www.aquamira.com/
&/or carry a 'Clean Sip' straw w/carbon & KDF www.Cleansip2000.com
&/or buy a portable non-electric small gravity filter (uses doulton ceramic/silver/carbon) www.waterfilters.cc/travelmate.htm

For drinking water at home:

Kitchen: Buy a countertop NON-ELECTRIC Gravity Filter AquaRain www.aquarain.com 800-572-2051 or www.purewater.com/pages/Doulton/GRAVITY2.htm
Icemaker: Install an inline water filter www.abundantearth.com/store/icewaterfilter.html
OR simply use the Aquarain filtered water to fill ice trays.

For showering at home:

For hand-held units: Attach a 'CQ-1000 Filter' (KDF & quartz crystal) www.waterfilter-usa.com/
For showerheads: Attach a 'Sprite Filter' (\$41) www.spriteshowerfilters.com (uses KDF & Chlorogon-for chlorine & ammonia)

For bathing away from home:

Float a 'Crystal Ball Filter' in the bathwater to eliminate chlorine (it uses a KDF to filter & quartz crystal to treat) www.toolsforwellness.com/75036.html (\$36)

For home swimming pools/spas:

Get 'The Mineralizer' Copper/Silver Electronic Ion Generator (\$200-\$700) www.lifeguardsystems.com/mineralizer.html
OR, forget chlorine and have a **SALT WATER SWIMMING POOL:** www.saltpoolinstaller.com/

Water



This research was done in May, 2007 and will be updated periodically. If you would like to receive updated information, please contact Ginger at ginger@2-acres.com or call (865) 986-6784.