FILTERS

Filters are used to remove impurities from the water by physically catching the contaminant. Contaminants can include particles, chemicals, and bacteria.

Particles are not usually a problem in a cistern system as the filter box will remove most and the rest should settle out in the tank. Ceramic or cellulose cartridge filters can be used if particulate impurities are a problem in your system. These filters cost $20-$40.

CARBON/CHARCOAL

Charcoal can be used to remove organic chemicals and some heavy metals. This is usually in the form of granular activated carbon, a specially processed charcoal. Carbon filters are avaialable commercially for $10 to $500. The cheaper ones will remove the tastes and odors but not the more dangerous chemicals. The more expensive ones remove taste, odor, and most of the dangerous chemicals. It is also possible to make your own carbon filter that is very effective. The secret is to filter the water very slowly through the carbon, this gives the carbon a better chance to absorb the chemicals.

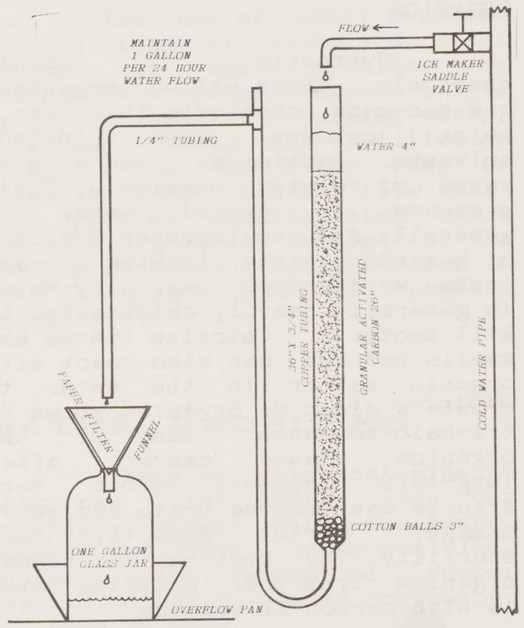
A charcoal filter must be replaced periodically to prevent the absorbed chemicals from recontaminating the water. If this maintenance is not done regularly the unit is of no value.

REVERSE OSMOSIS

Another process to remove contaminants is reverse osmosis. This is basically a process of forcing the water through a very fine membrane. The large molecules of complex chemicals cannot pass through the membrane. Reverse osmsis units cost from $90-$400. The more expensive units give you more flow and better filtration.

PORTABLE PRESSURE FILTERS

Several different types of portable pressure filters are available for removing bacterial contamination from water. Two respected names are First Need and Katadyn. These are sold primarily for use while camping but could be use in the home. Cost is from $30-$550. The more expensive the unit the less often the cartridge needs replacement and the faster the filter.



DO-IT-YOURSELF CARBON FILTER

WATER DISINFECTION

Disinfection is the usual way to deal with bacterial contamination. There are several different methods.

CHLORINE

The most common means of disinfection is chlorine. In high enough concentrations chlorine kills most micro-organisms. It has long been used for disinfecting water because of its relatively low cost. Household bleach can be diluted and used to dinfect contaminated water. The standard rate for cisterns is 1 cup of bleach for every 1500 gallons of water, for wells 1 cup per 100 gallons. Dilute with water and add to water supply. Run the water until you smell chlorine at all outlets. Allow to stand overnight. If you use chlorine, it is generally a good idea to use activated carbon, to remove the excess chlorine and dangerous by-products.

IODINE

Another disinfectant chemical is iodine. It can be more effective than chlorine but is more costly and should not be used for long periods of time. Its primary use is for camping.

OZONE

Another means of disinfecting water is ozone. This form of oxygen is generated by passing electricity through air. It is then mixed with the water where it kills any microbes. Ozone units cost from $300 to $600,

ULTRAVIOLET LIGHT

Ultraviolet light is another way to disinfect water. Strong enough UV light will kill micro-organisms. This works best in clear water as any particles or cloudiness can shield bacteria and prevent their being killed. Cost is similar to ozone units.

DISTILLATION

Water distillers can remove bacteria and particles but are only effective in removing some of the chemicals. Many of the dangerous organic chemicals can remain in distilled water unless fractional distillation is used. Distilling units are expensive to operate, with fractional distillers actually boiling the water. Units can cost $200-$300.

SOURCES

While by no means exhaustive, this list gives some representative sources of products and services mentioned. Entry does not signify endorsement.

Cisterns

Redwood:
T. E. Brown
14361 Chapman Rd
San Leandro, CA 94578
(415)357-4840

Plastic Tanks:
Cole Parmer
7425 N Oak Pk Ave
Chicago, IL 60648-9930

Plumbing

Pipe

Poly-butylene:
local plumbing supply

Solar Components
P O Box 237
Manchester, NH 03105
(603)668-8186 (800)258-3072

Hand Pumps

Pitcher pumps:
local hardware stores.
Sears.

Force pumps:
Baker-Monitor Division
133 Enterprise St
Evansville, WI 53536

Dempster Industries
P O Box 848
Beatrice, NE 68310

Ram Pumps(see also REFERENCES)
Rife Mfg.
P O Box 415
Andover, NJ 07821

The Ram Co.
Box 698
Amherst, VA 24521
(804)946-2430

Independent Power (above)