Sent Date: 25 Jan 04

Subject: Planned Emergency Water filtering In It's simplicity

One of the simplest and cheapest ways to get a quantity of quality drinking water in an emergency takes a bit of preparation before the need. One collects up a few basic things. For example:

1) Carbon or Carbon block filter cartridge rated at .5 to 1 micron 600 to 3000 Gallon capacity. The filters element is about 9.75" long and about 2.25" in diameter. Typical cost is about $10-$27/each. I used Home Depot's $9.99 unit.
2) Standard plastic case with removable filter canister, so the filter cartridge can be replaced. Has .5" or .75" pipe thread for input and output. Typical cost is about $13 to $25.
3) Plastic or brass adapter to change the pipe thread to plastic tubing. I used two .75" pipe to .5" tubing plastic adapter fittings that cost $1.49 each.
4) 5/8" Vinyl clear plastic tubing is about .5" inside diameter and works well. Easy to assembly by hand. You need a minimum of 10 ft and preferably more, say 40 ft. This is about $.30/ft.

My unit cost $33.47 for parts at Home Depot, and took about 10 minutes to assemble. I had two plastic buckets already ($3.00/each). These parts can typically be stored and built when the emergency arises. Storing extra filter cartridges as one can afford it is recommended.

Construction: One bucket is put on the floor, with the other bucket up in the air as high as possible. I used a stepladder for my testing. When needed, one could hang it from the ceiling, or a branch of a tree, or up a hill, or make a three-log tripod that it could be hung from. The hose runs from the high bucket to the input of the water filter at ground level. The output of the water filter uses a short as possible hose to just make it into the lower bucket.

One can cut a smaller than the hose-diameter-hole in the side of the upper plastic bucket near the bottom with a sharp knife or drill bit. This is planned out to be a tight pressure fit and seals its self when the hose is pushed into it. If this becomes a problem then fish tank silicon water sealant can be used to stiffen and seal the connection.

The higher the top bucket the higher the head pressure or flow rate. A height of 3.5 ft above the top rim of the bottom bucket to the bottom of the upper bucket gives about 6.6 Gallons/day output. At a height of 5.1 ft gives about 47 Gallons/day.

As the filter clogs up the rate will go down. So the idea is to build as much potential head pressure into the initial design as one can. The Block Carbon filters typically remove about 98% lead at a flow rate of .5 GPM or 720 gallons/day. Now if the flow

rate is several hundred times slower than rated flow rate then it can be expected the filtering percentage for lead and pathogens will improve. Typical any filter of less than 1 micron will filter pathogen cysts to a high percentage.

An option for improving the filtering capacity is to put one or more stages of particle filter canisters in front of the carbon filter. One could use 20 micron and/or 5 micron stages before the carbon block .5 to 1 micron filter. Doing this would greatly extend the time before the carbon filter pugs up.

The only special tool needed for maintenance or filter changing is a strap wrench or special stamped out plastic wrench that fits over the canister case to help tighten and loosen. I bought several strap wrenches on sale at Harborfreight tools for $3.99 each. Sometimes one is strong enough that one can tighten and loosen it by hand without a wrench.

MikeL

An important item to have is the following:
"RUBBER STRAP WRENCH" on sale now for $3.99. See
http://www.harborfreight.com/
Type in the number 40198 below the following line an hit go.
Find Item Number:
40198 & hit go

You can also get a similar item at most good local hardware stores for more cost. By the way these work good on stuck lids on jars.

MikeL <mikelob@gte.net> wrote:Home Depot recite says:

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084691790945 FXUTC      14.97   FOR FILTER CANISTER CASE
084691795896 GXWH01C     9.99   FOR CARBON FILTER ELEMENT .5 to 1
Micron
048643025561 VINYL TUBE  2.98   10FT OF 5/8" CLEAR VINYL TUBE
048643067431 BARB        1.49   3/4" PIPE TO 1/2" HOSE ADAPTER
048643067431 BARB        1.49   3/4" PIPE TO 1/2" HOSE ADAPTER
              subtotal   30.92
              Tax         2.55
              total      33.47
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MikeL