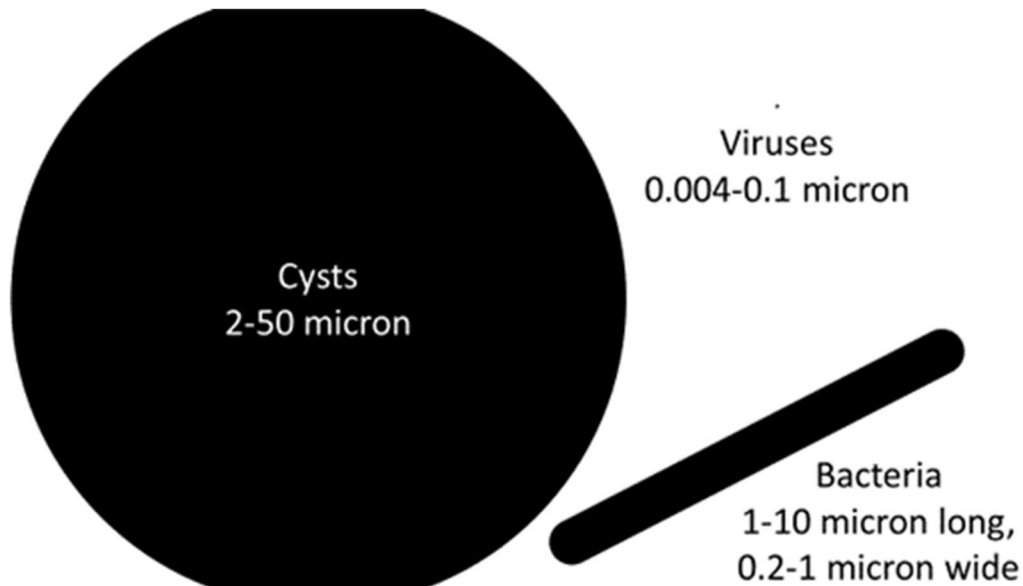


Water Filters and Purchased Systems

What's the difference between filtration and purification?

- **Filtration.** Water is passed through a medium that removes particles of a certain size.
- **Purification.** Bacteria, viruses, and protozoa are either removed or killed in the treatment process.



Methods of Treatment

- **Filtration**
 - Most common filters (such as LifeStraw and Sawyer) use pores measuring between 0.1–0.2 microns. This is *filtration*.
 - Advanced filters (like the Berkey, the Katadyn, and an advanced LifeStraw design) use a much smaller pore size of approximately 0.02 microns. This is *purification*.
- **Disinfection**
 - UV lights in a water bottle is *purification*.
 - Adding a disinfectant like chlorine or iodine to water is *purification*.
 - Boiling water 1–3 minutes is *purification*.
- **Other**
 - Some systems will offer additional stages or filters that remove chemicals and heavy metals. This is typically done with ion exchange or activated carbon. These systems work well but **usually have to be replaced frequently**.

How do you choose?

- **Initial Analysis**
 - Water Source:
 - Well
 - Rain tank
 - City water
 - A river (This is the least desirable choice.)
 - Water Quality:
 - Is the water potable (safe to drink as delivered)?

- Is the water protected from contamination with human waste (i.e. nearby latrine, source can be flooded with rainfall runoff)?
 - Have you reviewed the relevant section of the CDC website for your area?
 - Have you looked for country-specific information?
 - Have you asked a friend in the area if they are aware of potential risks?
- **Based on your analysis, your water is:**
 - **Potable.** This water is already safe. If there are taste or odor issues, an activated charcoal filter can easily fix that. Look for something you will be able to maintain and find replacement filters for in your city.
 - **In a protected well or spring.** This may not need much treatment; *however*, if it's possible to test this water, do so. Bacteria can infiltrate a well, which would require treatment. You can shock a well, but if this is a recurring problem, consider filters that remove bacteria. Filtration is likely sufficient if the well or spring is safe from human contamination, which comes when these sources are close to a latrine, downstream from a community dumping site, or flooded by rain runoff from a populated area.
 - **In a rain tank.** Rainwater is very pure; *however*, your roof and rain tank are likely to contaminate it. Filters that remove bacteria are usually sufficient in these cases, but it is also important to regularly maintain your tank by emptying and cleaning it with a bleach solution.
 - **In an unprotected well or unsafe/non-potable community water source or river or is of unknown quality.** Use a purification system that will remove viruses, bacteria, and protozoa.

If you have any questions about water treatment, reach out to CompassionLink at info@compassionlink.org, and we will be happy to answer them.

Sources:

- <https://www.wqa.org/learn-about-water/common-contaminants/bacteria-viruses>
 - <https://msrgear.com/blog/water-filter-vs-water-purifier>
 - <https://nsf.org/testing/water/onsite-wastewater-systems/wastewater-protocols>
 - <https://wwwnc.cdc.gov/travel/page/food-water-safety#drinks>
-

Available Systems

Good for Potable Water Systems

- **Pur (\$25) *top choice for potable water filters***
 - *Filter life:* 40 gal
 - Removes chlorine taste, cysts (from parasite), and lead
 - *Storage:* Varies by model
 - Tap attachments and pitchers available
- **Brita (\$25)**
 - *Filter life:* 100 gal
 - Removes chlorine taste
 - *Storage:* Varies by model
 - Tap attachments and pitchers available

Good for Rain Tanks, Protected Wells, and Areas Without Risk of Human Fecal Contamination

- **Sawyer (\$30)**
 - *Filter life:* Indefinite (10+ years; is backflushed regularly)
 - Removes bacteria and protozoa

- Storage: N/A. It does not come with pre- or post-filter storage, so it would be installed in a bucket and filtered into the container for use. (Note: Ensure safe storage for water after it is filtered. Storage should be covered and clean, and hands or cups should not be dipped into clean water. Adding a lid and tap to your storage is best.)
- <https://sawyer.com/products/mini-filter/>
- **LifeStraw Home (\$45)**
 - *Filter life:* Carbon filter, 150L; mechanical filter, 1000L
 - Removes bacteria, protozoa, chemicals, heavy metals
 - *Storage:* 1.7–2.4L
 - It removes many heavy metals and contaminants, and filters will need to be changed often.
 - <https://www.lifestraw.com/products/lifestraw-home>
- **Katadyn Ceradyn (\$320)**
 - *Filter life:* 150,000 gal; six-month warranty
 - Removes bacteria, protozoa, *some* viruses
 - *Storage:* 10L (filter rate: 4L/hr)
 - Filters last a long time and can be cleaned by washing and scrubbing as necessary.
 - <https://www.katadyn.com/us/us/166-2110070-katadyn-drip-ceradyn>

Good for Water Sources With Unknown Quality and Those at Risk of Human Fecal Contamination

- **Big Berkey (\$300)**
 - *Filter life:* 6,000 gal; two-year warranty
 - Removes bacteria, protozoa, viruses, chemicals, heavy metals
 - *Storage:* 8.5L (filter rate: 8.5L/hr)
 - Removes many chemicals and allows important minerals through; includes add-ons for removal of arsenic and other heavy metals
 - <https://theberkey.com/pages/test-result>
- **LifeStraw Community (\$400)**
 - *Filter life:* 18,000L
 - Removes bacteria, protozoa, viruses
 - *Storage:* 25L
 - <https://www.lifestraw.com/products/lifestraw-community>

If you have any questions about a treatment that isn't listed, reach out to CompassionLink at info@compassionlink.org, and we will be happy to review the system and help you choose.