**Comparison of Berkey® Purification to Reverse Osmosis and Distillation**

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* [Water Education](http://berkeywaterkb.com/category/education/)

**Healthfulness of Reverse Osmosis and Distillation**

Based on current research, most health experts are no longer recommending drinking Reverse Osmosis or Distilled water on a long-term basis because these methods strip out all of the beneficial minerals from the water, making the water an acidic “hypotonic” solution. A chemist will tell you that when a hypotonic (de-mineralized) solution comes into contact with a “hypertonic” (mineralized) solution, the minerals within the hypertonic solution will transfer out of hypertonic solution and into the hypotonic solution until equilibrium is achieved. What this simply means is that when one drinks hypotonic water, the minerals in the blood and lymphatic system, which are hypertonic, transfer into the hypotonic Reverse Osmosis or Distilled water that is consumed and the minerals are flushed out of the body upon urination. In an effort to re-mineralize, the blood and lymphatic systems then begin to scavenge for minerals from other parts of the body, such as bones and other organs, and this process repeats itself every time de-mineralized hypotonic water is re-consumed. Several studies suggest that people who drink de-mineralized water (hypotonic) over a long period of time tend to be more prone to degenerative diseases such as osteoporosis. Berkey® Purification systems do not remove all of the beneficial minerals from the water, but they do extract harmful heavy metals such as lead and mercury as well as sedimentary minerals such as iron oxide. Therefore, the TDS reading will not typically change much unless there are a lot of heavy metals or sedimentary minerals within the source water.

**Pathological Removal Capability of a Reverse Osmosis System**

Reverse Osmosis does not remove pathogenic bacteria and that is why it is often necessary to add an additional UV light to the system. However, the UV sometimes does not kill all the bacteria because any turbidity in the water can create shaded spots, preventing some bacteria from being exposed. Typically, the UV is installed before the bladder tank; however it is in the bladder tank that bacteria usually colonize. Therefore, if the bladder tank is not sterilized on a regular basis, it becomes a source for bacteriological contamination that is never exposed to UV. Additionally, the carcasses of the dead bacteria remain within the drinking water with a Reverse Osmosis system, whereas they are removed by the Black Berkey® Purification elements.

**Tankless Reverse Osmosis Systems**

While some newer tankless Reverse Osmosis systems have overcome the issue of bacteria colonizing in the bladder tank, these systems have their own set of inherent issues, including:

* TDS Creep:  without a flush tank, the initial water coming out can taste horrid, due to increased TDS in the water.
* High Failure Rate:  some tankless models have already been removed from the market, due to numerous issues, including high rates of failure.
* Noise: depending on the specific model and features, some units are extremely noisy to operate.
* Excessive Water Waste:  this is a problem with both standard and tankless Reverse Osmosis systems.
* Cost: with multiple membranes being used, the overall cost per gallon, can be even more expensive than older style Reverse Osmosis systems.

**Cost**

Reverse Osmosis systems typically are the most expensive due to the cost of the system and the additional expense to have the system plumbed in. Next in cost would be a Distillation unit. A Berkey® system will typically be the least expensive of the three. With respect to cost per gallon of water, calculated upon the cost per gallon for replacement filters and energy costs, Distillation systems and Reverse Osmosis systems that are properly maintained typically cost between 35-65 cents per gallon. A Berkey®system typically costs about 1.8 cents per gallon.

**Maintenance**

Reverse Osmosis systems can have up to four filter elements, with each needing to be changed at differing intervals from four months up to two years. This requires that the water pressure be shut off and part or all of the system be disassembled for maintenance. Additionally, the bladder tank should be washed with a chlorine solution at six-month intervals to kill any colonizing bacteria. Distillation systems need to be soaked and cleaned with vinegar solution to remove the scale, typically after each gallon or two. All Berkey® systems are easy to disassemble and clean. Typically the lower chamber should be washed in ordinary dishwater once per month.

**Supporting Research**

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