

# THE ULTIMATE GUIDE

## - TO CHOOSING A -

# GRAVITY-FED WATER PURIFICATION SYSTEM

**Y**ou are serious about finding an effective gravity-fed water purification system, and committed to conducting a systematic evaluation of your options. But there is a lot of information online, and it can be difficult to determine which brand offers the best solution.

The following guide will help you through the evaluation process.

Here are the steps:

- **Set Goals for Your System**
- **Research Brands / Options**
- **Evaluate Specific Systems**

## Set Goals for Your System

Understanding how you will use the system is the first step.

There are three major use cases for a gravity-fed system: at home, outdoors or on the go and in emergencies. Let's look at each situation, and consider possible concerns / goals:

### AT HOME

- I'd like to drink more water, but my tap water tastes or smells unpleasant.
- I'm concerned about lead and other heavy metals due to aging pipes / infrastructure.
- I'd like to reduce or remove fluoride from my tap water.
- I want to limit / prevent my family from being exposed to PFCs and other potential chemicals.
- I'm concerned about a local factory or plant, and want to reduce or remove potential toxins from my family's water.
- Bottled water is expensive. I'd like a long-lasting, economical and effective alternative.

### OUTDOORS / ON THE GO

- I'm concerned about drinking raw water from a lake or stream while camping.
- I don't want to work hard to set up the system.
- I don't want my group to complain that the system takes too long to produce purified water.
- The system should travel easily, and be simple to stow while not in use.
- I'm concerned about travelling to a foreign country where water conditions may not be optimal.
- I don't want to worry about maintaining the system or filters during my trip.

## EMERGENCIES

- In a natural disaster, I may have to use flood water or another untreated source to provide for my family. I need a system that can easily address this situation without having to worry if it's working or not.
- In a long-term survival situation I will need filters that can be stored for years, and are tough enough to be reprimed after drying out.
- I will need to calculate hourly / daily needs for my family, and purchase a system capable of producing sufficient quantities of purified water.

Use your goals as critical criteria during the evaluation process. For example, if you want to reduce fluoride, make sure the system can *indeed* reduce fluoride over an extended period of time. If you plan to use the system for camping, check test results and instructions with regards to contaminants specific to lakes, rivers and streams.

## FILTER VS. PURIFIER

**Look at your goals. If they focus on taste and smell and you plan to use the system at home, a filter may work well for your needs. If they include concerns about specific contaminants or raw, untreated water sources then you may consider a purifier instead. Keep in mind that purification is the highest standard available.**

You should see language referencing “purification” versus “filtration” when researching your options. However, if you are unsure look specifically for language about what the filtration or purification element (the filter inside the system) reduces or removes. Purifiers (unlike filters) are capable of greatly reducing or removing submicron viruses, bacteria and other potential contaminants.

**Berkey Earth® Elements** are classified as water *filters* because they are [tested](#) to reduce contaminants to a bacterial level. Based on Micro-Filtration Technology, they are the most powerful gravity-fed element in the filtration class. They reduce chemicals, herbicides, pesticides, VOC's, THM's, heavy metals and more to 99.9%. They even reduce some viruses by a small percentage, although not to purification standards. They are ideal for the price-conscious consumer to get started with a highly effective filter system at a more affordable price.

**Black Berkey® Purification Elements** are classified as water *purifiers* because they reduce or remove up to 99.999% (or Log 6) of pathogenic bacteria and up to 99.999% of viruses, which exceeds [the standard for purification](#). They can purify raw untreated water, removing or greatly reducing volatile organic compounds, trihalomethanes, chemicals, herbicides and inorganic minerals. They also remove or greatly reduce contaminants like viruses, bacteria, pesticides, PFCs, pharmaceuticals, heavy metals like lead and even radiologicals.

**Write down your individual goals, understand the level of filtration you need and then start researching systems either online or by asking family and friends for recommendations.**

## Research Brands / Options

Reader beware: Don't fall for hype. Instead, insist on high-quality, product-focused information.

While researching systems online, it is important to look past flashy advertising and focus on the product. Here are a few common distractions you may find while browsing:

- “Too good to be true” deals
- Bait and switch tactics
- Fake reviews and videos
- Misinformation about competing systems
- “New” or “revolutionary” claims with no hard data or testing to back it
- Ads full of emotional appeals with little product information
- Testing data that is less impressive upon closer inspection or looks to be doctored after the fact

The very nature of the Internet allows people to say whatever they want, though doing so does not necessarily make their opinions true. However, neither does such hype *necessarily* mean a product is a poor choice. Simply look closer before making a decision.

Make a list of your options, bookmarking the following information for reference:

- Webpages where you can buy the product
- How-to videos and instructions
- Test results
- Product inserts / instructions
- Extensive Knowledge base / question and answer pages (like <http://berkeywaterkb.com/>)
- Customer testimonials that aren’t all just positive
- Blogger recommendations

**Next, evaluate your options by putting them to the test, evaluating major performance factors.**

## Start by Evaluating Effectiveness

Don’t waste time. Start by evaluating whether you can depend on the system to do what it says it does.

### TEST RESULTS

**Pull up each system’s test results, and answer these questions:**

- **How many independent labs have conducted testing for this system?**
- **What contaminants were tested?**
- **How many samples were taken during each test?**
- **What volumes were tested for each sample?**
- **What does effectiveness look like over time?**

Here’s how you can determine the answer to each question. First, look at the lab report(s) and note who did the testing. There should be a company name clearly stated on each one. Do you see a variety of companies, or just one?

Next, review the specific contaminants listed in the test. If the list is particularly long, look for contaminants from three types of challenge organisms: **Bacteria** (Klebsiella/Raoultella terrigena), **Viruses** (Poliovirus and Rotavirus or MS2 bacteriophage) and **Protozoan Cysts** (Giardia or Cryptosporidium).

**Table 2**  
**Gross Beta Filtered Water Results**

| Parameter Tested | Gravity Block Filter Effluent Water Result | % Reduction |
|------------------|--|-------------|
| 10 gallons       | 2.3 pCi/L                                  | 97.7 %      |
| 20 gallons       | 2.8 pCi/L                                  | 97.2 %      |
| 30 gallons       | 2.8 pCi/L                                  | 97.2 %      |
| 40 gallons       | 3.9 pCi/L                                  | 96.1 %      |
| 50 gallons       | 4.7 pCi/L                                  | 95.3 %      |

Now look closely at filtered water test results tables. You should see a column indicating parameters tested. This will tell you how many samples were taken, and what volumes were tested for each sample. Why does this matter? Because these numbers reveal an element’s effectiveness over time, and that is critical to understanding what you should expect from a system.

If the test results looks like one big list of contaminants, and you do not find any introductory material or columns indicating multiple samples were taken, then it is very likely the lab took one sample.

**Why Berkey® Element Testing Goes Further**

Look closely at the example above. In Radiological tests NMCL took readings in increments of 10 up to 50 gallons because:

- You need to know the rate of “% Reduction” drop-off to determine the lifespan of the element.
- Multiple readings tell you what effectiveness looks like over time for various contaminants.
- Higher volumes in lab tests give you a more accurate picture of performance.

Berkey® systems used several different independent labs, took multiple samples and performed Extreme Testing for Lead and PFC’s in order to review the effectiveness of our Black Berkey® Purification Elements. [These test results are readily available to interested customers.](#) In addition, a non-contracted [third-party lab](#) further confirmed the heavy metal reduction of the Black Berkey® Purification Elements.

NMCL looks at real-life conditions. Consider the following 2 articles from our [blog](#):

- [Newest Berkey® Systems Lead Water Test Now Available](#)
- [Black Berkey® Purification Elements: The Final Barrier against PFOA and Other PFCs in Drinking Water](#)

**ELEMENT LIFESPAN**

**Review advertised information on each system’s filter elements carefully, answering these questions:**

- **What is the GALLON lifespan of each element?**
- **What is the TIME limitation on the lifespan of each element?**
- **Are there any disclaimers that would change your expectations of the lifespan?**
- **How do you properly calculate when to replace your elements?**
- **Did test results include multiple samples, revealing % drop-off in effectiveness over time?**

The first two questions are the most important in determining the lifespan. Many elements make claims such as 5,000 gallons with additional instructions in the fine print that recommend the elements be replaced after 6, 9, or sometimes 12 months. For example, if the advertised life of the filter is 5,000 gallons and the maximum flow rate is 12 gallons per day, and the instructions say to replace the elements after 6 months, then the real maximum life of the filter is 12X183 days= 2,196 gallons rather than the 5,000 gallons claimed.

Moreover, if it is recommended that an element be replaced after a fixed amount of time, let's say 6 months of use, and you use on average 3 gallons per day, then for all practical purposes, the maximum lifespan is only 549 gallons.

Bottom line: Take a close look at the data and understand what is an element's true calculated lifespan when there is a time limitation. Be wary of companies that have conflicting or inconsistent information about an element's lifespan, or do not offer test results that reveal performance over time. Element lifespan should not be about taste or flow rate. It should be clear and calculated.

### **Black® Berkey Purification Elements are Reliable**

A set of Black Berkey® Purification Elements is designed to last for up to 6,000 gallons, and they do not have a TIME limitation. This means they will provide many years of use before needing replacement. Lifespan calculations based on performance data are included with the product insert. The purification elements are also cleanable, eliminating frequent replacements.

## **FLUORIDE REDUCTION**

**If fluoride reduction is a crucial concern, ask yourself the following:**

- **Are the claims for the filter suggesting that is an all-in-one filter that removes contaminants as well as fluoride?**
- **Is there a separate post filter available that has the required media to reliably remove fluoride over the long run?**
- **Are test results available that demonstrate fluoride reduction *over time*?**

Look for test results that include multiple samples for fluoride. Most carbon-based filters will initially reduce fluoride. However, they typically experience a drastic decline in their effectiveness usually within the first 50 gallons or less. In order to ensure long term fluoride reduction, a separate fluoride reduction filter is required that provides the proper amount of media and proper contact time in order for effective long term fluoride reduction to take place.

### **Our Tests Reveal Effectiveness Over Time**

For this reason, Berkey® systems designed a separate, more durable and longer lasting solution for fluoride reduction. [Berkey® Fluoride and Arsenic Reduction elements](#) (optional and sold separately) reliably reduce fluoride contaminants that the Black Berkey® purification elements begin to miss after extended use.

[A more detailed explanation is available at our Knowledge Base.](#)

## **Consider Outdoor or Emergency Use**

Now make sure it's made for the extreme, capable of handling the outdoors and emergency situations.

## **RAW, UNTREATED SOURCES**

**If you plan to use the system for outdoor recreation, or would like an emergency water purification solution, then it's crucial to inspect claims regarding raw, untreated water sources. Ask:**

- **Are there any disclaimers that indicate the system is not appropriate for use with raw, untreated water sources like rivers, lakes and streams?**
- **Did the test results give you confidence the system will effectively perform over time?**

Contaminants like Salmonella, along with bacteria and cysts are known risks to outdoor water sources. Look carefully at all the bottom of web pages, test results or any product documentation you have on hand to see if there are disclaimers that clarify how you ought to use the system. In other words, check the fine print.

Now think back to testing: Which systems impressed you? Did you find testing data and lifespan information that gives you confidence when using the system with raw, untreated sources?

### **Berkey® Systems are Made for the Extreme**

Berkey® systems can easily purify ordinary tap water and well water, yet are powerful enough to efficiently purify raw, untreated water from sources such as remote lakes and streams. While other filter elements on the market state something to the effect: “do not use this product with microbiologically unsafe or questionable water”, The Black Berkey® Purification Elements do not have this limitation. \*\*\*

As a precaution, if using a source of water that you believe might contain *extreme* viral and bacteriological contamination, it is recommended by the CDC, EPA, and other organizations that approximately sixteen drops of plain bleach (sodium hypochlorite) or iodine per gallon be added to treat the source water before purifying. This should kill minute pathogens such as viruses within 30 minutes. If using a Berkey® system, the disinfectant will be removed from the treated water entirely along with any odor or taste.

For more information about disinfecting water, please reference the following links: [cdc.gov](http://cdc.gov) or [water.epa.gov](http://water.epa.gov)

## **AVOID A POTENTIAL PITFALL**

**Don't get caught in an unexpected situation. Examine the following:**

- **Does the filter element require special pampering to remain effective?**
- **Does the company give clear instructions on long-term storage of the filter?**
- **Can you reprime the filter element after it dries out?**

Look at a system's instructions to understand real-life care and maintenance requirements. Specifically, find instructions related to daily care, long-term storage and element priming. Why? Complex storage requirements can easily be overlooked. Imagine packing for a long camping trip, being away from home for a few weeks or finding yourself in an emergency situation. Would you remember to undertake complex storage requirements for your filter elements? Probably not.

Certain filter elements require long-term storage in water, and must be replaced if they dry out completely. If you forget to pamper a high maintenance filter, it could become totally useless, at the very time when you need it the most, and leave you without any ability to purify contaminated water.

### **Berkey® Systems were Made for Real-World Conditions**

A Berkey® purification element arrives and can be stored dry. If you will not use it for a period of 30 days or more, simply re-prime the element and re-install.

## Now Calculate Your Water Needs

Effectiveness is a priority, but getting enough water in the right amount of time is another major factor.

### FLOW RATE AND CAPACITY

Start by calculating how much water you may need per day:

- **Typical Use: (# of people in your group) X (.5 gallons recommended per day per person)**
- **Emergencies: (# of people in your group) X (1 gallon per person)**

A family of four would typically use about 2 gallons per day under normal conditions. However, the same family could require up to 4 gallons or more an hour in an emergency. This is because purified water would be required for drinking, cooking, washing dishes, bathing, hygiene and other needs. Of course, storage is also important, as the more you have on hand, the easier it is to accommodate periods of increased use. Refer to this [handy resource](#) when planning how much water is needed during an emergency.
















Consider these questions:

- **Does the company offer various system sizes to meet group, space or budgetary needs?**
- **Are there options to expand the system if a faster flow rate is required?**

Larger systems, capable of producing ample water per hour are clearly better suited for emergency situations. But how about if you have a trailer or a small home with limited counter space? What if you need a small, portable unit while camping? The system(s) you choose should accommodate the number of people you want to serve, the available space you have on hand as well as the reason for which you will be using the water (drinking only or also for cooking, hygiene, pets, etc).

### Berkey® Systems Fit Your Needs

[Berkey® systems are available in seven different sizes](#), from a 1 quart system to a 6 gallon system. Refer to the chart below to see what size system might work best for your family or group.

| OUTDOOR SYSTEMS   |   |   |   | MULTI-USE SYSTEMS <small>(Not available in CA or IA)</small>                        |   |   |   |
|---|---|---|---|---|---|---|---|
| Sport Berkey® Bottle  | Go Berkey® Kit  | Berkey Light® System  | Travel Berkey® System   | Big Berkey® System  | Royal Berkey® System  | Imperial Berkey® System   | Crown Berkey™ System  |
|            |  |  |  |  |  |  |  |
| sport filter included   |  |  |  |  |  |  |  |
| 22 oz. capacity<br>BPA Free<br>untreated water:<br>~160 refills<br>tap water:<br>~640 refills | 1 quart capacity<br>14" H<br>4" D<br>2.4 lbs<br>max flow rate:<br>1 gal / hr        | 2.75 gal capacity<br>26.5" H<br>9" D<br>6 lbs<br>max flow rate:<br>7 gal / hr       | 1.5 gal capacity<br>18" H<br>7.5" D<br>6.13 lbs<br>max flow rate:<br>2.75 gal / hr  | 2.25 gal capacity<br>19.25" H<br>8.5" D<br>7 lbs<br>max flow rate:<br>7 gal / hr    | 3.25 gal capacity<br>23" H<br>9.5" D<br>8 lbs<br>max flow rate:<br>7 gal / hr         | 4.5 gal capacity<br>26" H<br>10" D<br>10 lbs<br>max flow rate:<br>16.5 gal / hr       | 6 gal capacity<br>30" H<br>11" D<br>12 lbs<br>max flow rate:<br>26 gal / hr           |

*Each system includes 2 Black Berkey® Purification Elements, (Except for the Go Berkey® Kit which comes with one element) providing 6,000 gallons of purification. Each additional set of 2 speeds up the purification process and adds 6,000 gallons in lifespan.*

## Wrap Up Your Evaluation

Is the system effective? Does it meet your major goals? Great! Finish by looking at any additional benefits.

For each finalist, review the following:

- Warranty information
- Shipping and return policies
- Customer testimonials
- Potential system accessories (like the Berkey Sight Glass™ Spigot, Berkey Primer™ or Berkey Base™)
- Instructional materials (assembly or care videos)
- Product materials (durable, rust-resistant, attractive)
- Ease of use and portability
- Customer service and support

## THE BOTTOM LINE

**Make your choice with confidence, based on detailed, high-quality information.**

Berkey® Systems are the top choice for everyone who is considering a gravity-fed system. We hope that demonstrating how to evaluate major performance factors assists you in making a great decision.

### **Berkey® System Benefits**

**Powerful-** Berkey® purifiers remove a broad universe of contaminants, from toxic chemicals and minerals to pathogenic bacteria and virus, while leaving in the healthy minerals your body needs.

**Efficient-** Berkey® purifiers are the fastest-producing gravity fed water purification systems on the market, purifying water up to eight times faster than other available systems.

**Convenient-** The purification elements may be cleaned, eliminating frequent replacements.

**Effortless-** The design replaces slow and exhausting manual pumps with the natural force of gravity. At the same time the system remains simple to use, making it a breeze; whether in the kitchen or deep in the Rocky Mountains.

**Portable-** Berkey® purifiers travel easily and function without electricity or water pressure.

**Durable-** Constructed of highly-polished surgical grade AISI 304 stainless steel, the housing is built to last.

**Economical-** Two Black Berkey® Purification Elements, which come standard with most systems, average 2 cents per gallon of purified water, and last up to 6,000 gallons, or approximately 5-8 years with typical use.



**Proven-** Used by individuals, missionaries, and relief organizations worldwide, Berkey® systems have truly stood the test of time.

## Resources

\*\*\*While the Black Berkey® purification elements can purify raw, untreated water, Berkey® Systems always recommends using the cleanest water available. Not all contaminants will be found in all water sources.

<http://berkeywaterkb.com/berkey-earth-de-elements-test-results/>

<http://berkeywaterkb.com/black-berkey-element-specifications/>

<http://berkeywaterkb.com/black-berkey-purification-elements-test-results/>

[http://www.naturalnews.com/047373\\_Big\\_Berkey\\_water\\_filter\\_ProPur\\_lab\\_tests.html#ixzz3GzudBYKt](http://www.naturalnews.com/047373_Big_Berkey_water_filter_ProPur_lab_tests.html#ixzz3GzudBYKt)

<https://www.berkeywater.com/news/newest-berkey-systems-lead-water-test-now-available/>

<https://www.berkeywater.com/news/black-berkey-purification-elements-the-final-barrier-against-pfoa-and-other-pfcs-in-drinking-water/>

<https://www.berkeywater.com/berkey-pf-2-fluoride-and-arsenic-reduction-elements/>

<http://berkeywaterkb.com/if-nmcls-recent-test-results-show-that-the-black-berkey-purification-elements-reduce-fluoride-then-why-do-i-need-the-berkey-pf-2-post-filter-elements/>

<https://wwwnc.cdc.gov/travel>

<https://www.epa.gov/ground-water-and-drinking-water>

<https://www.youtube.com/watch?v=MPVEDe6hT6U>