4 Smart Systems For Reusing Grey Water

In my previous article I explained what's up with grey water recycling: the do's and don'ts when re-using grey water.

Now, let's have a more detailed look at a few types of grey water recycling systems, such as how they work, what you may use them for and some cautions that you should take to ensure that it's safe.

To begin with, if you want to re-use grey water on your homestead on a regular basis, you should contemplate the concept of treating it first.

Why treat it, you may ask? Well, there are a number of reasons for that.

First of all, if you want to use grey water for agricultural purposes such as irrigation, you must remove the potentially harmful substances first, especially if we're talking about edible plants. What you spray on the plants gets into your digestive system later when you eat them; this is not a matter to be treated lightly.

Basically, you should remove any substances that can harm or affect human health. If we take the rationale further, you must cleanse the recycled water of any substances that may pose a threat to the environment or to people. Also, filtering re-used water will help a lot with preventing your grey water system from clogging.

Grey Water Treating Methods

Now, let's take look at the most common methods for treating grey water systems, shall we?

1. Prevention

If you’re using the paradigm “prevention is better than treatment”, you will realize that the best method for treating and filtering grey water is to avoid the need to do so in the first place.

{adinserter backyardliberty}I know it sounds like a Zen riddle or something, but I am very serious about this matter. My point is, you can install a grey water system that doesn’t require treatment. If you remember in my previous article, I stated that not all grey waters are created equal.

If you’re using bio-degradable products in your bathroom and kitchen, you can re-use the respective grey water for irrigating your garden without filtering it. Lots of substances occurring in “organic” grey water are good for plant life; they’re actually nutrients that will help with plant growth. Some potential contaminants can be easily treated just by passing the respective water through a thin layer of soil, in the vicinity of your re-used water system.

This type of approach works mainly for grey water irrigation systems when the main concern is human contact with the water. If you manage to reduce it to a minimum or even eliminate it, you’ll mitigate the health risks associated with grey water systems.

2. Filtration

Moving along with the story, the next solution is the good ole filtration method.

The simplest method for treating your recycled water is to use a filter to prevent lint, hairs, food and what not from getting inside your grey water system.

There are lots of filters and filtering methods and a huge number of models of filters and types of materials used for filtering grey water.

One common(and cheap) method is to filter the grey water using natural materials, like a “natural” basin filled with stones and mulch (you remember my article about mulch, right?) which works as a “melting pot”, digesting and consuming the organic materials in the grey water and also filtering the solid residue. Mulch is obtained from tree bark, leaves and stuff like that.

If mulch is not your cup of tea, you can choose a slow sand filter that is made from layers of stone, gravel and pea gravel, all covered in sand.

The third method involves using a regular water filter, readily available in hardware stores or on Amazon, eBay and Craigslist. There are lots of types of water filters: some of them use cellulose-made cartridges (the cheaper ones) and other “high-end” varieties use ceramic or active charcoal filter cartridges. Generally speaking, these types of filters are meant to provide you with high quality, even potable water. If you’re using them for your grey water system, they can be a pain in terms of maintenance cost.

Sometimes the best way of dealing with the impurities in your grey water system is to use a settling tank, which translates into a treatment system using settlement and flotation.

The settling tank uses gravity for purifying grey water. The impurities that are more dense than water will eventually settle to the bottom of the tank while other substances that are lighter than water, such as oil, gas and other tiny particles will float to the surface of the tank, forming a scum layer.

3. Disinfection

The last method of treating grey water is by disinfection. You can disinfect grey water by using chlorine, ultraviolet rays or ozonation.

Using chlorine is the most popular disinfection method because it’s cheapest, is highly efficient and is relatively easy to perform. All you have to do is put chlorine tablets into your grey water tank and that’s about it.

You can treat grey water with ultraviolet light, but the rate of success depends greatly upon the water quality. Ultraviolet rays are easily blocked by the particulate matter in the water; thus this method doesn’t work very well if the light can’t pass through the water far enough.

Ozonation is seldom used in grey water systems but it works by generating ozone gas inside the water using a special device onsite. Ozone diffusion inside the water kills bacteria and pathogens but it’s kind of expensive.

Bottom line, if there’s no serious risk of human contact with the grey water, you don’t really need to disinfect it prior to using it in your garden for example. Bacteria and various other substances with the potential to harm human health are usually destroyed or removed if they pass through a short layer of unsaturated soil.

Keep in mind that if you’re using a grey water system, it’s not advisable to store the water rather to use it on the spot. Storing grey water maximizes the issues with microorganisms that thrive in it and it also has a foul odor.

The 24 hours storage period after treatment is the general rule of thumb when dealing with grey water. After 24 hours all bets are off so you should never use it past that expiration date. If you plan to store it for more than a day, the grey water must be disinfected or biologically treated.

DIY Systems for Re-using Grey Water

Let’s finish today’s article with a few ideas for home-made smart systems for re-using grey water.

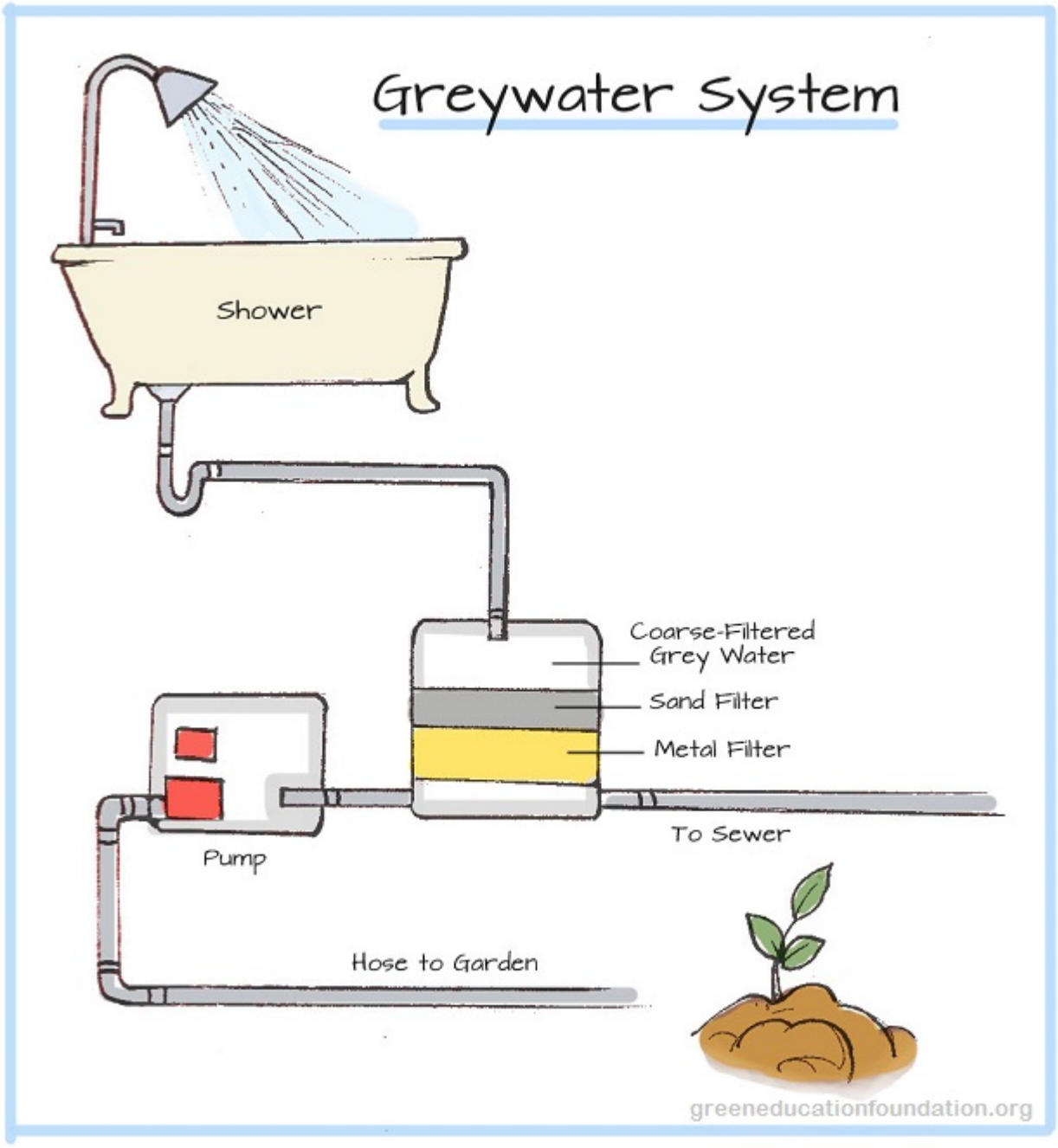
1. Below you can see a DIY water recycler that uses a plastic-made trash bin (wheeled) with the grey water pouring inside on the top of the respective bin through a filter. When the bin fills up to 75%, there's a water level switch that starts the water pump located on the bottom of the trash bin. The water pump empties the treated grey water from the bin until a low-water level switch is triggered and the filling process restarts. KISS in action!

Source: [Instructables]

2. Here's another DIY grey water treatment system that re-uses the water from flushing your toilet. Basically, the water that goes down the sink from your bathroom (the sink, toilet or shower) is captured using two soil pipes located on the side of the residence and pumped into a storage tank. Then it's re-used for flushing the toilet.

Source: [Instructables]

3. A very easy to understand schematic can be found below, where you can see clearly how a basic grey water treatment system works: the water captured from the bathroom passes through a filter (sand/metal etc.) and from there it is pumped via a hose to your garden, lawn or whatever.

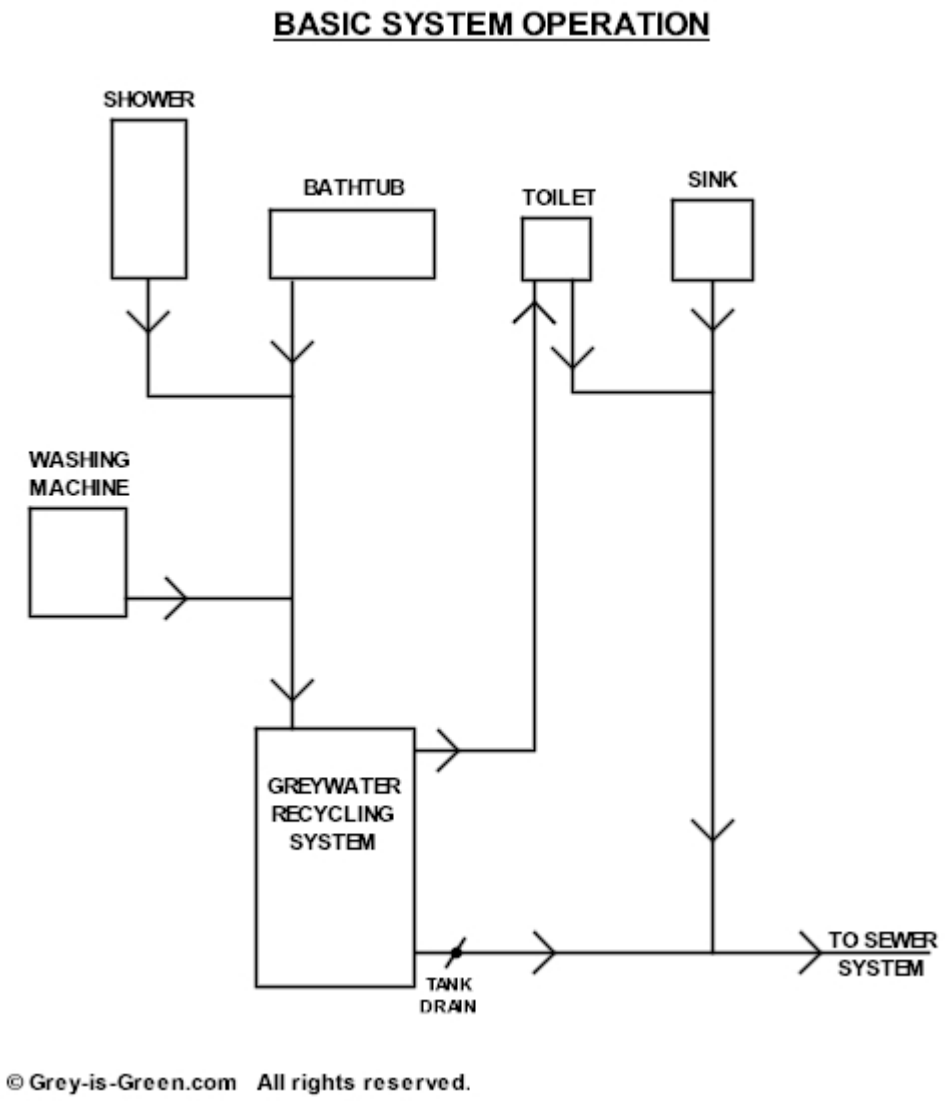


Source: [Green Education Foundation]

4. A very detailed grey water recycling system plan is available in the source link below. This system works very similarly to the ones commercially available, but you can DIY at a fraction of the price.

This smart system is composed of a filtration chamber, a storage/separation tank and the pump featuring various safeguards for preventing underflow/overflow situations, a venting system and a bypass scheme if you need to flush out

the system rapidly for maintenance.



Source: [Grey Is Green]

This high tech water recycling system is connected to the bathtub, shower, your washing machine and the sewage; it captures the relatively clean grey water and filters it before storing it inside the storage/separation tank. Here flotation and settling takes place to further separate the impurities and there's a chemical sterilization option, too.

As you can see, the latter is a combo of the aforementioned treatment systems: first, the grey water is filtered then put inside a settling tank for further purification. After that, it's pumped out to be used for…whatever.

You can DIY this smart system for reusing grey water in a couple of weekends at most, using basic tools, low-level plumbing skills and off-the-shelf parts for a grand total of maybe $350 or less.

Do you use a grey-water collection system? If so, please tell us about it in the comments section below.

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*This article has been written by **Chris Black** for Survivopedia.*