Greywater Basics

What Is Greywater?

Greywater is residential wastewater from bathtubs, showers, bathroom sinks, and laundry - any source except toilets. Greywater accounts for around 60% of a typical family's waste stream.

What Can Be Done With Greywater?

Greywater can be reclaimed for landscape irrigation. This involves diverting the greywater before it joins with toilet water (blackwater) and is sent to sewage treatment plants or septic systems.

Why Use Greywater?

The benefits are many:

- Reduced consumption of freshwater
  The entire Southwestern United States is currently suffering a 3-year drought that threatens to permanently change our ecosystem as reservoirs dry up and water tables are lowered, potentially creating devastating dust-bowl effects throughout the region. Last year the Governor proclaimed a state of emergency; since then things have gotten worse.
- Reduced load on sewage infrastructure
  Using greywater before it enters the waste stream prevents it from undergoing costly sewage treatment, generally in municipal plants – meaning higher treatment effectiveness and lower costs.
- A flourishing garden
  Greywater irrigation can be used to create rich, beautiful landscaping and delicious fruits. It is ideal for shade trees, fruit trees, ornamental plantings, or (with some care) kitchen gardens and food crops.
- Reduced greenhouse gas emissions
  Los Angeles tap water represents the final step of an ecologically costly and energy-intensive process. 88% of our water originates at either the Colorado or Sacramento Rivers and is pumped hundreds of miles before extensive multi-phase filtration and chemical/UV disinfection. Reduced water use means a lower carbon footprint.
- Replenishing local groundwater
  Putting water back into the soil around your home recharges the local water table, keeping underground streams flowing and trees growing.
- Saves Money
  They typical Los Angeles home can save around $300 per year in reduced water costs, at today's DWP rates.

Is Greywater Safe?

Absolutely. There is not a single documented case of an illness in the developed world caused through greywater. The following basic measures should be met:

- Avoid storing greywater – after 24 hours greywater starts to turn septic.
- Greywater discharge should be covered with gravel, soil or mulch to avoid contact with humans or pets.
- Avoid irrigating root crops such as potatoes or carrots.
- Avoid using greywater from washing diapers or if someone in the household has a communicable disease such as hepatitis.

Is Greywater Legal?

In August 2009 the California Building Standards Commission passed state bill 1258, allowing simple residential greywater systems to be legally installed. Laundry diverters and single-fixture systems do not even require a building permit. The City of Los Angeles adopted a nearly identical resolution in their building code on October 28, 2009.

Soap and Detergent Considerations

Greywater users will have to pay some attention to what they put down the drain. There are many

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new hair and cleaning products that are fine for greywater use. In general:

- Look for the word "biodegradable" or even better, "biocompatible" on the package.
- Use soaps rather than detergents when possible because soaps have less sodium compounds.
- Avoid laundry bleach and detergents with boric acid, such as Borax.
- Avoid unnecessary perfumes and chemical additives.

Note that all greywater systems are designed with a diverter valve to allow the user to easily direct waste flow to either the sewer or the greywater system – so if you are doing a load of laundry with bleach, simply switch to the sewer for that load.

Components of a Typical Greywater System

There are many types of greywater irrigation system, ranging from the simple to the complex. Each has three elements: Collection, Distribution, and Receiving.

Greywater Collection

The collection component is similar for all systems: each fixture (bathtub, sink, or washing machine) is intercepted at the source, before it joins the blackwater plumbing. The sewer plumbing is left intact and a parallel system of greywater plumbing is installed. At the intercept point a diverter valve is inserted to control the flow of water: either to the greywater system or to the sewer. The greywater plumbing drains by gravity to either a surge tank (usually a 55-gallon drum), a purification system, or directly to the landscape.

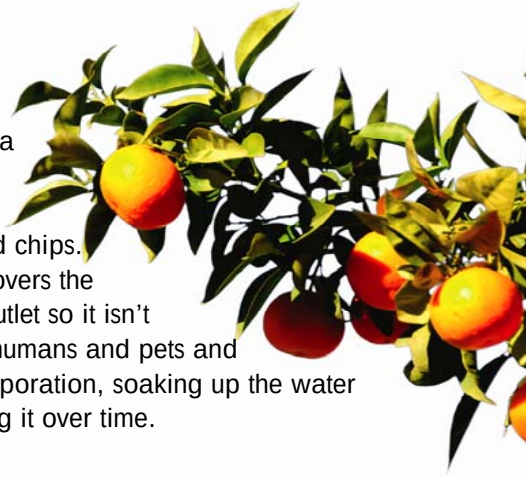
Greywater Distribution

Distribution is ideally achieved through gravity flow; if necessary a pump can be used to move water uphill. In our experience filters are bothersome to change, tend to clog, and cause more problems than they are worth; it's better to use no filter and install a high-quality effluent pump.

Water distribution can be achieved in several ways. It can be as basic as a pipe leading to a single discharge point ("Drain Out Back".) Another simple system is the "Movable Drain", where a garden hose is connected to the surge tank; every day or two the hose is moved to a new irrigation location. A "Branched Drain" consists of a series of flow-splitting fixtures in pipes laid in the soil; in this way the greywater flow can be progressively branched to as many as 16 discharge points.

Greywater Receiving

Typically a greywater system discharges into a Mulch Basin surrounding a tree or close group of plants. A mulch basin is just what it sounds: a depression surrounding a tree, filled with mulch – usually wood chips. The mulch covers the greywater outlet so it isn't exposed to humans and pets and prevents evaporation, soaking up the water and releasing it over time.



Greywater is not ideally suited for lawns or drip irrigation due to low water pressure and relatively high solids content. Simply put, small irrigation holes quickly clog up. There are systems available that can accommodate a lawn but they tend to be expensive and complicated, involving pumps, filters, and a network of subsoil irrigation cones.

Sources of Further Information:

http://greywater.net
http://greywatercorps.com
http://greywateraction.org
"Create an Oasis with Greywater" Art Ludwig, Oasis Design
"Dam Nation: Dispatches from the Water Underground" Woelfle-Erskine, Cole, Allen, and Danger, Soft Skull Press
California State Bill 1258: "Greywater Standards"

If you separate your recyclable garbage, you should separate your greywater!

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