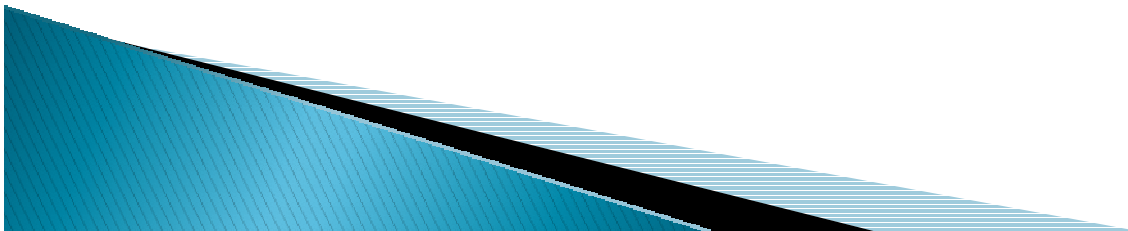


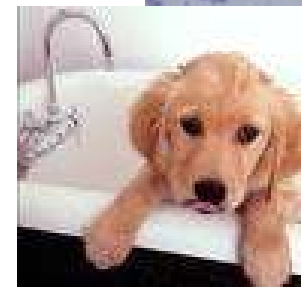
Greywater

An Environmental Health Perspective

Manuel M. Ramirez
City of Berkeley
Environmental Health
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Oakland
Greywater Alliance Meeting



What is going down the drain?



EH Concerns

- ▶ Increased risk of exposure of biological/chemical contaminants to the public and the environment
- ▶ Poorly designed, operated and maintained on-site waste water systems– out of sight out of mind.
- ▶ Increased risk of creating public nuisance conditions (odor, groundwater impact, stormwater runoff, vector conditions).





10/12/2010

Observed problems and how could they have been avoided?

- ▶ Surface Discharge– Public education, proper design and installation
- ▶ Ponding water– Proper design, installation and monitoring
- ▶ Improperly installed system– follow plumbing code and make key components easily to operate and accessible
- ▶ Owner not knowing they have a grey water system– Make permanent record of system and pass it on to future owners and residents



Recommendations and Safety Precautions

- ▶ Design and install simple systems that anyone can maintain
- ▶ Use a reputable contractor
- ▶ Use components that are durable and easily accessible for maintenance
- ▶ Educate the public about proper on-site greywater use and using safe consumer products.
- ▶ Monitor and maintain the system to ensure it is operating correctly, no surface discharge.





Graywater Clothes Washer System: Laundry-to-Landscape

No permit is required for a clothes washing machine, providing all system design and code requirements are met as outlined in Chapter 16A of the 2007 California Plumbing Code (see page 3). Permits are required for systems that include tanks or pumps.

Washing machine systems are the least complicated type of graywater system. They are great for gardens with minimal irrigation needs, are low-cost, easy to install, and require very little maintenance.

Designing a Clothes Washer System:

- Attach washing machine discharge hose to either a 3-way valve to switch between a graywater system and the sewer or a second standpipe. Graywater must be capable of being reconnected to the sewer.
- Graywater then travels out to the garden. A mulch basin with 2" cover is the simplest system for distribution and irrigation (see distribution descriptions & diagrams on page 7).
- Clearly label flow direction to sewer or yard. Once outside the building, the discharge must drain directly to the disposal field by hose or pipe. Piping at five foot increments & at hose connection point is to be permanently labeled: "CAUTION: NONPOTABLE WATER, DO NOT DRINK"
- All graywater must be used the same day it was produced.

For a complete list of clothes washer graywater system code requirements see page 3.

Clothes Washer System Drawings:

Two examples of methods to divert graywater to the garden.

Second Standpipe Method

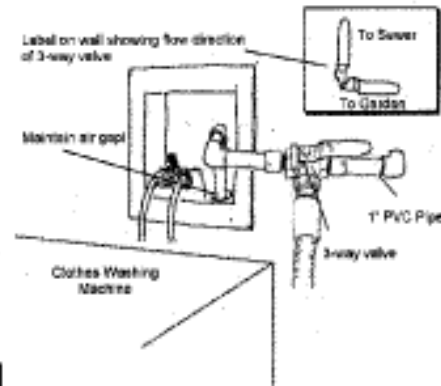


The second standpipe is installed in the wall or through the floor before it goes out to the garden. The clothes washing machine hose is moved by hand from the normal building sewer connection to the irrigation system standpipe.

Graywater Tips for Success

- Shade and acid loving plants don't like graywater.
- Ingredients in washing machine detergents such as bleach, salts or borax may not be good for your garden. Use plant safe alternatives.
- To ensure proper operation, regularly monitor and maintain all pipes and irrigation equipment for clogging, over-flow, ponding, odors and other issues.

Three-Way Valve Method



A three-way valve and piping are assembled to switch between the normal building sewer connection and the irrigation system. A vacuum breaker or backflow device may be required for proper operation depending on site elevations. Consult a plumber or graywater specialist.

Remember: Graywater is not like rainwater, it cannot be stored!

Benefits of a properly installed system?

- ▶ No nuisance complaints or enforcement action
- ▶ No pressure to adopt local ordinance to permit and inspect all systems, small and large
- ▶ A clean and safe environment

