

No 7: Greywater Reuse

What is greywater?

Greywater is the water generated from the use of the shower, bathtub, spa bath, hand basin, laundry tub, clothes washing machine, kitchen sink and dishwasher. Greywater does not contain wastewater from the toilet, urinal, or a bidet.

Is greywater different from wastewater?

Yes. Household wastewater, also known as sewage, is composed of two distinct sources:

- 'blackwater' is wastewater contaminated by faeces or urine, and includes wastewater arising from a toilet, urinal or bidet; and
- 'greywater' is the remaining wastewater coming from the laundry, bathroom and kitchen.

Why should I reuse greywater?

Greywater is a significant water resource, provided it is managed in an environmentally responsible manner, and public health and the health of the household are protected.

By capturing greywater and using it in an appropriate manner as an alternative to the town water supply, you can reduce your water consumption. Your water account will reflect this reduction in water use and there will also be positive environmental outcomes.

Is it safe to reuse greywater?

Yes, if used in an appropriate way. Greywater can contain disease-causing micro-organisms such as bacteria, protozoa, viruses and parasites.

It may also contain fats, oils, detergents, soaps, salt, nutrients, food and hair derived from household and personal cleaning activities. These constituents can pose both health and environmental risks.

However, the public health risks associated with onsite reuse of domestic greywater are considered low, as the source of the contamination would be from the immediate family. Other sources of transfer of pathogens around the immediate family would be considered a higher risk, such as direct physical contact or sharing of food and utensils. Similarly the risk of environmental damage from the careful use of greywater is low.

How can I reduce the risks associated with greywater reuse?

The following measures will reduce the health and environmental risks associated with use of greywater:

- do not use sprinklers to distribute greywater;
- use subsurface irrigation systems;
- do not put greywater on food plants;
- do not put greywater on lawns where children are likely to play;
- do not allow greywater to leave your block;
- do not irrigate with greywater during periods of wet weather;
- do not allow greywater to enter the stormwater system; and
- make sure greywater does not create a nuisance, for example through odours or ponding.



My neighbour is reusing greywater, is my property still safe?

Appropriate reuse of greywater is not considered to be a health threat to neighbouring properties.

Are there any regulations about greywater reuse?

The *Public Health Act 1997* can be used to control actions that would impact on the health of your neighbours. If greywater flows on to your neighbour's property, or you create an aerosol or odour problem, this Act could regulate your activities.

The *Environment Protection Act 1997* can be used to control actions that would cause environmental impact. For example, if you allow greywater to flow off your block or to contaminate groundwater or soil this Act could regulate your activities.

The *Water and Sewerage Act 2000* and the *Water and Sewerage Regulations 2001* require that any modification of the drainage of waste from sinks, baths or showers be conducted by a licensed plumber. Plumbing and drainage work associated with the installation of a greywater diversion valve or treatment system must be carried out by a licensed plumber. The licensed plumber must notify ACT Planning and Land Authority of their activities, the same as they would with any other plumbing installation.

The ACT plumbing legislation does not apply to the installation of a hose to carry greywater directly to an irrigation area, or a fitting used for the operation of a greywater diverter.

After 1 September 2004, plumbers will be required to meet the requirements of the *Construction Occupations (Licensing) Act 2004*.

What are the environmental risks associated with reusing greywater?

Soil or plants can process many of the contaminants in greywater if the system is not overloaded, including organic material, nutrients, salt and sediment. Nutrients can even be beneficial in moderate concentrations, for example, on lawns but not on native plants.

Some greywater contaminants are not capable of being treated or degraded in the soil. Principal among these is salt, which can comprise up to 30 per cent of some laundry detergents and can cause soil degradation. Excess salt can cause damage to the soil structure.

How much greywater do households generate?

The amount of greywater generated by a household will vary greatly depending on the number of occupants, their age and their water usage patterns.

As a general rule of thumb, the average detached household in Canberra generates approximately 110,000 litres of greywater per year from the bathroom and laundry. This is equivalent to 300 litres of water per day.

How can I improve greywater quality by using different types of soaps, detergents etc?

The choice of cleaning products can reduce the environmental impact of greywater. Common washing powders contain sodium salts as bulking agents that produces a saline (salty) greywater. Some detergents and powder cleansers contain boron that can be toxic to plants in high concentrations. It is recommended that for clothes washing you select products low in sodium; either liquid concentrates or powdered products that use potassium salts. There are websites that list the sodium content of a range of laundry products.



Can greywater from all parts of the house be reused?

Kitchen

Kitchen wastewater can be heavily polluted with food particles, oils, fats, and other wastes. It can also contain high concentrations of micro-organisms. It is often polluted with detergents and cleaning agents, particularly those from dishwashers, which are very alkaline and may be harmful to soils and plants by altering their characteristics in the longer term.

For these reasons kitchen greywater is not recommended for reuse.

Bathroom

Chemical constituents of bathroom greywater include soap, shampoo, hair dyes, toothpaste and cleaning chemicals. Greywater from hand basins is more polluted than bath or shower greywater, but is much lower in volume. Some of these contaminants act as plant nutrients and can be beneficial in the garden, but others can adversely affect plants or soil structure.

Concern is often expressed about people urinating in showers and baths and the associated health aspects of using this greywater in the garden. However, urine in a healthy person is sterile. While some bladder infections may pass micro-organisms in urine, the potential for these organisms to survive and cause infection is considered remote.

Greywater from the bathroom is suitable for reuse.

Laundry

Greywater from the laundry improves in quality from wash water to first rinse water to second rinse water. Bacterial loads in laundry greywater are not usually high, except when nappies are washed. Chemical contaminants of the wash cycle water are soap, salt, sediment and organic material.

If used for garden watering, the wash cycle water can damage plants and soils and create bad odours.

Rinse water contains a much lower pollutant load and the use of this water poses a much lower threat to the environment and to public health. Domestic pets, which are washed in the laundry tub, can be a further source of contamination for greywater.

Greywater from the laundry, particularly rinse water is suitable for reuse.

Can I store greywater on my property before I use it?

Untreated greywater that is stored for a number of days can give rise to offensive odours. If this greywater is then used for surface irrigation, it will produce extremely offensive odours, and may provide conditions conducive to disease transmission and attract insects and rodents.

For these reasons it is recommended that untreated greywater is not stored for more than 24 hours. When the immediate reuse of greywater is not practical, for instance during periods of wet weather, greywater should be directed to the sewer system.

What is a greywater treatment system?

A treatment system will remove the bacterial load and chemical pollutants from greywater so that it can be stored. However, satisfactory treatment tends to be neither simple nor cheap. Treatment processes can include filtering, settling of solids, anaerobic or aerobic digestion, chemical removal of pollutants and disinfection.

Before installing a treatment system you will need to seek advice from ACT Planning and Land Authority and from ACT Health (see contact details below).



Are there any treatment systems approved for use in the ACT?

There is currently no requirement for greywater treatment systems in the ACT to be approved.

When designing or building any greywater recycling or treatment system, all the products and materials used should comply with AS/NZS 3500 Parts 1 and 2 Section 2 Materials and Products.

Materials used in plumbing for greywater treatment and diversion systems must comply with AS/NZS AS3500. Complying products are marked with 'Australian Standard Mark' "5 ticks", "W" for the watermark or "T" for type test.

The requirements of ACT plumbing legislation and Australian Standard 3500 must be met.

How can I get Government approval for my treatment system?

The ACT Government does not formally approve greywater treatment systems. However, ACT Health will provide advice relating to the effluent guidelines it recommends for treatment systems.

Even if a system has been demonstrated to achieve the recommended effluent guidelines, the *Public Health Act 1997* or *Environment Protection Act 1997* may still be invoked if it is thought that a greywater system has been operated in such a way as to create an offence under these Acts.

Are there rebates for the installation of greywater systems?

No, and none are foreshadowed.

Do I need a plumber?

If your greywater system requires connection to the sewage system, i.e. to the pipes below your sinks, shower or bath, this work must be done by a licensed plumber.

If you intend to intercept greywater before it enters the sewage system, i.e. before it enters the drain hole of a sink, you can do this yourself. This may be a simple setup in which you bucket water from a sink or direct the water from your washing machine to your garden.

More information on greywater reuse

Environment ACT Helpline

12 Wattle Street, Lyneham
(02) 6207 9777
email: EnvironmentACT@act.gov.au
website: www.environment.act.gov.au

ACT Planning and Land Authority

Building and plumbing enquiries:
16 Challis Street, Dickson
(02) 6207 6261
website: www.actpla.act.gov.au

ACT Health

Health Protection Service
255 Canberra Avenue, Fyshwick
(02) 6205 1700
email: hps@act.gov.au
website: www.health.act.gov.au/hps