

ENVIRONMENTAL HEALTH FACT SHEET

No. 503

PERMANENT GREYWATER REUSE IN SINGLE DOMESTIC PREMISES

The disposal and reuse of greywater has received a great deal of national attention during recent years particularly with increased interest in water conservation. The perception is that greywater is harmless and that recycling is safe. This perception has led to some people adopting informal recycling such as using buckets, hose systems or diversion devices to water parts of their garden with grey water. It has also led to a call for greater use of greywater. Notwithstanding, there is a community expectation in sewered areas that wastewater is drained to a sewer to promote sanitation and hygiene in the home.

While being a potentially valuable renewable resource, greywater can also contain high levels of pathogenic microorganisms and therefore a level of caution is required in its use. Concentrations of microbial and chemical hazards in greywater vary over a wide range. In the worst cases, concentrations of faecal microorganisms are almost as high as those found in sewage. The reason for this variation is that both microbial and chemical quality depends on human behaviour and individual control of materials discharged into greywater.

Microbial quality depends on the amount of faecal material that enters greywater from activities such as washing of nappies. Chemical quality depends on the nature of detergents, shampoos, soaps and household cleansers used, and on products that might be inappropriately discharged into greywater, such as oil, grease, garden chemicals & solvents.

Useful information about Laundry Products research can be sourced from the Lanfax Laboratories' website > <http://www.lanfaxlabs.com.au/>

Domestic greywater from single sewered premises has the potential to be reused onsite for ornamental garden and lawn watering, toilet flushing and laundry use depending on the type of greywater and its level of treatment.

It is necessary to install suitable equipment and land application systems in order to minimise runoff, surface ponding and waterlogging of greywater. Therefore, there will be a cost to homeowners to design, install and maintain greywater reuse systems that protect public health and are ecologically sustainable. Such costs may be better directed to items such as water conservation techniques and rainwater harvesting for garden irrigation. These items have less environmental and public health impacts compared to greywater reuse and should be the first option considered by individuals.

SCOPE

This fact sheet provides advice about the issues and approval processes for permanent greywater reuse in single domestic premises in the Northern Territory. It does not apply to manual bucketing & temporary diversions of greywater (refer to Fact Sheet - *Manual Bucketing & Temporary Diversion of Greywater in Single Domestic Premises*); reuse of industrial or commercial wastewater nor does it consider detailed design requirements.

PUBLIC HEALTH REGULATIONS

The Chief Health Officer has the responsibility for authorising product approval of permanent greywater systems under the Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations. Under these regulations, greywater (also referred to as 'sullage') consists of all non-toilet wastewater. It includes wastewater from showers, baths, swimming pools, spas, hand basins, washing machines, laundry troughs, dishwashers and kitchen sinks.

fact
sheet

The priority of the Department of Health and Families (DHF) is to safeguard public health and it subsequently acts to control and minimise the public health risks associated with greywater reuse. DHF in consultation with the Power and Water Corporation (which has funded and trialled a number of greywater systems across the Territory) have combined to address the issue of greywater reuse in the Northern Territory.

GENERAL PRINCIPLES OF GREYwater REUSE

The following principles are used by DHF in relation to greywater reuse:

- the concept of treated and disinfected greywater reuse is potentially a valuable renewable resource, specifically in areas where potable water is a scarce commodity. Greywater reuse is recognised as providing a significant means of lowering waste discharges to treatment plants and reducing the demand for potable water
- users should be aware that the initial set up costs associated with permanent greywater reuse systems may be high
- greywater can be as polluted as blackwater (toilet wastewater) and as such is liable to form a public health risk. Greywater from domestic premises can significantly differ from greywater produced in commercial and industrial premises because of the quality and quantity of additions to the greywater stream, particularly solids, detergents and metals.

DOMESTIC GREYwater REUSE OPTIONS

Various permanent greywater systems exist in the market place and approaches are often made to DHF from prospective manufacturers to market these systems in the Northern Territory. To date, the most commonly used permanent greywater systems in the Northern Territory are greywater diversion devices (GDD) that divert greywater (excluding kitchen wastewater) to a land application system without storage or treatment. GDDs utilise either gravity or pump diversion.

Greywater Treatment Systems (GTS) are an alternative to GDDs and are available in the Northern Territory.

Gravity Diversion Devices (GDD)

A gravity diversion device incorporates a hand activated valve, switch or tap which is fitted to the outlet of the waste pipe of one plumbing fixture or a collection of plumbing fixtures (excluding the kitchen sink). The plumbing diversion device can be switched by the householder to divert greywater from the plumbing fixtures by gravity directly to the diversion line and the dedicated land application system instead of the sewer or septic tank. Greywater should not be stored.

Pump diversion devices

A pump diversion device incorporates a surge tank to cope with sudden influxes of greywater for distribution by a pump to a sub-surface land application system. The surge tank must not operate as a storage tank. Kitchen greywater is unsuitable for collection in a pump diversion device because it will clog the device with fats, oils, and food particles. Residues in the device also cause foul odours and provide attraction for vermin. The greywater should be screened as it enters a surge tank for distribution by a pump to the sub-surface land application system. The coarse screens must be cleaned regularly and the surge tank flushed periodically.

A GDD must be designed and installed according to the following criteria:

- each installation must be for a single domestic dwelling only
- only direct re-use of greywater will be permitted
- minimum maintenance requirements must be specified

- excludes kitchen wastewater
- it must meet relevant public health and plumbing requirements
- only sub-surface irrigation is permitted (no spray irrigation)
- overflow connection to sewer or septic tank must be maintained.

Greywater Treatment Systems

A greywater treatment system (GTS) collects, stores, treats and may disinfect greywater to a high standard.

APPROVAL PROCESS

Manufacturer

DHF Environmental Health administers the approval process for all permanent greywater systems in accordance with Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations. All permanent greywater systems are considered to be a "septic tank" and therefore the Manufacturer/Agent must lodge a completed *Application for product approval on an on-site wastewater system* with DHF Environmental Health.

Product approval is not an installation approval, as it only provides authorisation for the sale or use of pre-manufactured products anywhere in the Northern Territory. All product approved permanent greywater systems are permitted for use in sewered and unsewered areas.

Product approval requires that:

- GDD must be evaluated to the Australian Technical Specification ATS 5200.460-2005 and display a WaterMark licence.
- GTS must have Product Certification under the Standardsmark Quality Assurance Program or equivalent.

Homeowner

Environmental Health and the Department of Planning and Infrastructure have administrative responsibility for the installation of permanent greywater systems, which is governed by whether the permanent greywater system is installed within or outside a Building Control Area. Local Government Authorities in the Northern Territory have no jurisdiction over the approval or installation of permanent greywater systems.

The Department of Planning and Infrastructure - Building Advisory Services administer the installation process of permanent greywater systems within Building Control Areas, in accordance with the *Building Act*.

Environmental Health administers the installation process of permanent greywater systems within outside Building Control Areas, in accordance with Public Health Regulations

Building Control Areas are declared under the Building Act and generally comprise urban areas and land within 500 metres of each side of the road reserve of nominated highways and roads of the Northern Territory. Further information about the Building Act Requirements and the extent of Building Control Areas is available from Building Advisory Services (BAS) at the Department of Planning and Infrastructure.

Website: <http://www.nt.gov.au/lands/building/>

Installation of permanent greywater systems within building control areas

GDD – no permit or installation approval is required however the GDD must be installed and certified by a self-certifying plumber in accordance with the provisions of the *Building Act*.

GTS - The Manufacturer/Agent must submit to the relevant Environmental Health Office, a *Notification for the Installation of a Product Approved Alternative Septic Tank System* for a single residential dwelling in a Building Control Area. The GTS must be installed and certified by a self-certifying plumber in accordance with the provisions of the *Building Act*.

Installation of permanent greywater systems outside building control areas

GDD – no permit or installation approval is required however the GDD must be installed and certified by a licensed plumber in accordance with the provisions of the Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations.

GTS - The Manufacturer/Agent must submit to the relevant Environmental Health Office, an *Application for Site-Specific Design Approval of an Alternative Septic Tank System*. The GTS must be installed and certified by a licensed plumber in accordance with the provisions of the Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations.

Cautionary Note: Homeowners should ensure that the plumber carries out a site and soil evaluation of the site to determine whether an on-site greywater system is sustainable. Particular consideration needs to be given to boundary setbacks, available area, and the long-term impact of high water tables on subsurface irrigation areas in the Top End.

REGISTER OF PRODUCT APPROVED PERMANENT GREYWATER SYSTEMS

The DHF register of product approved GDDs & GTS is available at http://www.nt.gov.au/health/healthdev/enviro_health/wastewater.shtml

CONTACTS FOR ENVIRONMENTAL HEALTH

Email: envirohealth@nt.gov.au

	Darwin Urban	Darwin Rural	Katherine	Katherine West Health Board
Ph.	8922 7377	8922 7481	8973 9062	8971 9315
		8922 7483	8973 9061	
Fax.	8922 7036	8922 7036	8973 9063	8972 1233
	East Arnhem	Barkly	Alice Springs	Tiwi Islands
Ph.	8987 0440	8962 4302	8955 6122	8922 8198
	8987 0441			
Fax.	8987 0444	8962 4420	8952 5927	8922 7979