

ENVIRONMENTAL HEALTH FACT SHEET

No. 516

REQUIREMENTS FOR THE INSTALLATION OF VENTILATED IMPROVED PIT (VIP) TOILETS

INTRODUCTION

Except where specifically noted, this fact sheet takes precedence over the design requirements in Section 10.5 of the *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent*. However, the details in this fact sheet will be incorporated in the next update of this Code.

SCOPE

This fact sheet only applies to Ventilated Improved Pit (VIP) toilets which are the only type of pit toilet permitted in the Northern Territory.

BACKGROUND

Pit toilets (latrines) are one of the most basic forms of sewage treatment and disposal. A pit toilet is an onsite wastewater system comprising a closet superstructure located above an earth pit. The pit acts as a receptacle and slowly decomposes the human wastes by naturally drying the waste pile. When the pit becomes full, lime should be added to the pile and then covered with earth. Another pit is then dug and the closet superstructure is usually transported above the new pit.

There are numerous types of pit toilets constructed in a variety of ways from different materials, however the most common and effective types of pit toilets are the VIP toilet, which are constructed with a darkened interior to minimise the presence of flies and odours and a north facing ventilation pipe that allows light to penetrate into the pit. The vent pipe is equipped with a fly trap on top.

For example, the Centre for Appropriate Technology (CAT) style VIP toilets maximise airflow through the system providing for positive ventilation without mechanical fans. They rely on the fact that flies are phototropic (that is they are attracted by light). Flies outside the toilet are not tempted to fly in because the inside of the VIP toilet is darker relative to the outside light. The top of the vent pipe provides a bright light source attracting flies that may germinate in the pit into the fly trap and not back into the toilet itself. Alternatively, traditional style long drop VIP toilets incorporate a solid door and a closed toilet seat lid to reduce the number of flies from entering the pit.

VIP toilets are suitable for intermittent use and changing populations. They are particularly suited to small, remote communities with just one or two houses.

In remote community indigenous housing where two toilets are provided, strong arguments exist for one of the two toilets being non-water-dependent (e.g. pit toilet or similar). A VIP toilet can act as a reliable back-up should a septic tank system fail.

A VIP toilet is not permitted in a sewered area. A VIP toilet should only be considered in remote areas where sewage/effluent disposal is on-site, as there may be a greater risk of the disposal system failing. The liquid waste in a pit toilet is not fully contained, as it leaches from the pit into the surrounding soil. It is therefore important to locate VIP toilets well away from water sources such as wells, bores, creeks, rivers, lakes and dams.

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Power and Water Corporation (PWC) should be consulted in the event that VIP toilets are proposed to be installed in unsewered remote communities where PWC is the service provider for the reticulated public water supply. Excessive use of VIP toilets may impact upon the quality of bores used to supply water.

Unlike septic tanks, VIP toilets cannot be used for the disposal of grey water, i.e. from the shower, kitchen and the laundry. VIP toilets therefore need to be complemented by another wastewater system that services greywater fixtures.

Installers of VIP toilets may include plumbers, builders, community workers, and property owners.

DESIGN CRITERIA FOR VIP TOILETS

- VIP toilets should not create a public health nuisance, in particular from odours.
- VIP toilets shall have a 150 mm diameter insect screened straight vent pipe to a height of 300 mm above the highest point of the pit toilet roof and exposed directly to the sun to assist ventilation by convection.
- A durable pedestal designed to minimise fouling and the pedestal must incorporate a seat for CAT style VIP toilets or a seat and lid for traditional long drop VIP toilets.
- The pit cover slab needs to be large enough so that it rests upon undisturbed soil away from the edges of the pits, and strong enough to hold the weight of a heavy person sitting on the pedestal.
- The hole in the pit cover slab must be no wider than 190 mm to comply with Australian Standards and to protect the safety of children. The pit should have a collar ring placed at the top to prevent the entry of cockroaches.
- The recommended minimum size of the pit should be approximately 1000 mm diameter x 2500 mm deep. A pit of this size may last ten years in a normal household situation. The pit should be capped when the waste is about 500 mm from the natural ground surface.
- The VIP toilet shelter must be designed to meet all normal construction standards including legal requirements for disabled access.
- The long drop VIP toilet shelter may have a solid door, however CAT style VIP toilets may incorporate a mesh door facing the prevailing wind to allow free air flow and assist pressure build up inside the shelter thus forcing air down the pit and out the vent pipe. The door should lock from the inside for privacy and the pit toilet shelter should have no other openings.
- The inside of the VIP toilet shelter should be comparatively darker inside so that any flies are not attracted from the pit through the seat into the structure instead of being attracted to the brighter light source (and fly trap) at the top of the vent. In the CAT style VIP this is achieved by having a spiral entry that forms a light trap rather than a solid door to block out light.
- Sufficient artificial lighting should be provided to allow safe access to and from the pit toilet at night.

HANDWASHING FACILITIES

- Hand washing is an essential aid to the prevention of the spread of many common diseases that rely on faecal/oral routes of transmission and suitable facilities should be included as an integral part of all toilet facilities. Ideally a hand washing bowl and water supply will form part of the pit toilet structure, although it may be necessary to locate the hand washing facility on a nearby neighbouring building.
- The hand washing facility should be located nearby to encourage its use. It is rarely acceptable to dispose of wastewater from the hand washing facilities into the pit toilet because of the potential for mosquito breeding and the collapse of the pit through waterlogging. Separate provision is required for the disposal of this water into a nearby sullage trench incorporating a maximum of 2 metres of plastic arch tunnel or slotted pipe backfilled with gravel.

LOCATION OF VIP TOILETS

- VIP toilets of any type are not permitted in sewered areas.
- Community or householder participation in deciding on the location of each VIP toilet is essential.
- VIP toilets should have easy, all weather access. In areas known to be subject to periodic flooding, pit toilets should be mounded so that the top of the toilet pedestal remains above flood levels.
- In areas of permanent high water table, the VIP toilet floor slab should be raised to ensure at least 500 mm separation between the highest ground water level and the underside of the floor slab. The floor of the pit toilet should not be more than one metre above normal ground level.
- Where the source of drinking water is an aquifer with a high groundwater table, the risk of contamination from pit toilets needs to be considered especially in sandy soils where the linear travel of pollution is governed primarily by the groundwater flow velocity and the viability of the organisms. Therefore the risk of pollution should be assessed for individual cases by the installer.
- The pit for a raised VIP toilet should be dug at the end of the dry season to maximise the available depth of unsaturated soil. Notwithstanding, there is evidence that wet pits take longer to fill since the digestion processes in wet pits are evidently more efficient.
- On sloping land the VIP toilet must be constructed on a levelled site and spoil from the pit used on the high side of the pit toilet to divert stormwater away from the pit.
- New VIP toilet holes need be prepared when the old holes are filled to within 500 mm of the surface and the existing superstructure is either relocated over the new hole or a new structure is constructed. The old hole should be marked, preferably by planting a tree to prevent the site from being reused.

MANAGEMENT OF VIP TOILETS

- In well managed situations, a 20 litre flour drum of lime with a dipper tin alongside the toilet bowl, to be poured into the pit after each use has proved to reduce odours.

SETBACK DISTANCES FOR VIP TOILETS

- Setbacks shall be in accordance with those listed in the *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent* (the Code) but essentially the 100 metre setback from a VIP toilet to a private bore or water course is mandatory.
- A 600 metre setback applies from a VIP toilet to a PWC or community-owned production bore.

NOTIFICATION FOR THE INSTALLATION OF A VIP TOILET

Installers or owners of VIP toilets are required to notify DoH of new installations in accordance with the form *Notification for the Installation of a VIP Toilet*. This form is be completed and submitted by the installer or owner to the local Department of Health (DoH) environmental health office at least 7 days prior to commencement of the works. If the Environmental Health Officer elects to carry out inspection, the installer will be notified within two (2) days of receipt of this notification. An incomplete or illegible submission may negate this notification.

The form can be downloaded from the DoH Environmental Health website: www.nt.gov.au/health/envirohealth > wastewater management.

FURTHER INFORMATION ABOUT THE DESIGN OF CENTRE FOR APPROPRIATE TECHNOLOGY VIP TOILETS

Refer the Centre for Appropriate Technology – Bush Tech #18: Pit toilets

<http://www.icat.org.au/>

FOR FURTHER INFORMATION

CONTACT ENVIRONMENTAL HEALTH ON 1800 095 646 OR YOUR LOCAL OFFICE

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