

## ENVIRONMENTAL HEALTH OFFICER – GUIDANCE NOTE

### ***CONSTRUCTION OF PIT TOILETS***

Pit toilets are one of the most basic forms of sewage treatment and disposal. A pit toilet comprises a closet super structure 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 is added to it and then covered with earth. Another pit is dug and the closet superstructure is usually transported above the new pit.

The most common and effective types of pit toilets are the ventilated pit toilets (VIP), which are constructed to include a fly wire covered vent pipe and darkened interior to minimise the presence of insects and odours. "Pit toilet" is a generic term rather than a registered brand name and is also known as a latrine or long-drop.

The definition of a septic tank in the *Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion and Prevention) Regulations* includes pit toilets.

#### **CODE OF PRACTICE FOR SMALL ON-SITE SEWAGE AND SULLAGE TREATMENT SYSTEMS AND THE DISPOSAL OR REUSE OF SEWAGE EFFLUENT**

Clause 10.5.4 of the above Code of Practice details the following prescriptive requirements for the construction of pit toilets:

*A pit toilet, pit latrine, earth closet or privy will generally only be approved when the following legislative provisions regarding closet construction details are satisfied.*

The closet shall not be constructed:

- within 6 metres of any house or water storage tank or within 100 metres of any bore, water supply source, etc
- within 15 metres of a milking shed, milk room or dairy
- unless walls are constructed of stone or brick or cement or other material approved by the Chief Health Officer and the roof is constructed of corrugated iron or other impervious material
- unless there are at least two openings for ventilation
- unless the area of each opening is not less than 322 cm<sup>2</sup>
- unless the openings are on opposite walls and the lower edge of each opening is at least 1.8 m above the level of the floor
- unless the pan stand is constructed of not less than 24 gauge galvanised iron approximately 40 cm in diameter and furnished with a seat hinged aperture cover
- unless the inside of the seat is at least 39cm above the floor
- the closet must be protected from mosquitoes by placing a minimum of 33 gauge brass or bronze wire mesh (minimum 7 meshes to the cm) across each access opening, apart from the pan chute.

## **ENVIRONMENTAL HEALTH STANDARDS FOR REMOTE COMMUNITIES IN THE NORTHERN TERRITORY– JUNE 2001**

Part 3.8.3 of the EH Standards details the following for the provision of pit toilets on Aboriginal Communities:

*Where two toilets are provided, strong arguments must exist for one of the two toilets being non-water-dependant (e.g. pit toilet or similar). A pit toilet can act as a reliable back-up should a septic system fail and provides a means of disposing of items such as disposable nappies that cannot be disposed in a flushing toilet.*

A pit toilet is not permitted in a sewered area. A pit toilet should be considered in remote areas where sewage/effluent disposal is on-site, as there may be a greater chance of the disposal system failing. Power and Water Corporation should be consulted if it is proposed to use pit toilets in an unsewered community with a PWC water supply. Excessive use of pit toilets may impact on the quality of water supply.

If a pit toilet is provided, the following requirements apply:

- The pit toilet must comply with the *Code of Practice for Small On-Site Sewerage and Sullage Treatment Systems and the Disposal or Reuse of Sewerage Effluent*.
- Sufficient artificial lighting shall be provided to allow safe access to and from the pit toilet at night.
- Artificial lighting is not required internally.

### **THE CURRENT SITUATION**

Since pit toilets are considered to be septic tanks then essentially the design should be product approved by EH Policy and installation should be in accordance with the Septic Tank Code Administrative Procedures, i.e. self-certified by a licensed plumber. EH Policy has issued only one product approval for a pit toilet design. This was to Northstate Constructions in 1996 and although this company no longer trades, they submitted a useful design plan for a pit toilet. It is understood that the Centre for Appropriate Technology (CAT) has for many years marketed a pit toilet design for remote areas. In addition, NBC Consultants have their own design that has been used in their remote housing projects.

As of 2006, there are no records of any pit toilet installations recorded on the Health Manager database and it is unlikely that plumbers are regularly involved in their installation, hence the lack of notifications. Notwithstanding, pit toilets are likely to be installed by CDEP workers, builders, or owners in the following situations:

- remote outstations where the supply of water is limited and where they complement an existing flushing toilet;
- bush blocks; and
- major events in remote areas, e.g. Community Festivals

The regulation of pit toilets by Environmental Health Officers is problematic, however EHOs should consider a range of issues if queried about pit toilets. These include:

- pit toilets should not create a public health nuisance, in particular from odours. EHOs are reminded to deal with public health nuisances under the *Public Health (Nuisance Prevention) Regulations*
- pit toilets are not permitted in sewered areas, though this is not stated in any Public Health legislation
- there are no definitive standard designs for pit toilets, though CAT & NBC are worth contacting
- EHO's are welcome to approve individual installations as a Site Specific Design Approval and condition accordingly. However, a common sense approach should be taken if the prescriptive requirements of Clause 10.5.4 of the Code of Practice are applied
- building certification does not apply to pit toilet superstructures in remote areas
- options in lieu of flush toilets include the Gough Hybrid Toilet and composting toilets, e.g. Clivus Multrum & Enviro Loo models. Gough Hybrid Toilets use no water for flushing and produce only small amounts of effluent. Composting toilets use a ventilation system to remove moisture from the waste and disperse odours. Both types of toilet are comparatively expensive and require the removal and disposal of sludge or dried material at regular intervals.

#### **PERFORMANCE CRITERIA**

The following performance criteria can be applied to pit toilet installations:

- The structural design of pit toilets should incorporate the attributes of ventilated improved pit (VIP) toilets, including:
  - a large (typically 200 mm), insect screened, black painted vent pipe to assist ventilation by convection
  - a storage pit of appropriate capacity
  - a pedestal designed to minimise fouling
  - being comparatively darker inside the toilet so that any flies breeding in the pit are attracted to the top of the vent pipe rather than the toilet as an escape route
- the type of toilet pedestal (squat plate, pedestal etc) should reflect community practices
- setbacks shall be in accordance with those in the Code of Practice but essentially the 100 metre setback to a bore or water course is paramount. 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 may need to be assessed for individual cases
- sufficient artificial lighting shall be provided to allow safe access to and from the pit toilet at night
- artificial lighting is not required internally

- the 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 pit 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
- the pit for a raised pit 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 pit toilet shall 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
- EHW and community participation in deciding on the location of each pit toilet is essential
- new pit toilet holes need be prepared when the old holes are filled to within 300 mm of the surface and the existing superstructure relocated over the new hole or a new structure constructed. The old hole should be marked, perhaps by planting a tree to prevent the site from being reused
- 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 the hand washing bowl and water supply forms part of the pit toilet structure, but on rare occasions it may be necessary to locate the hand washing facility on an neighbouring building. The hand washing facility should be located 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 sillage trench
- there may be a need to specify a minimum size for the pit though this is dependent on the size of the structure. Based on an adult producing about 0.065 m<sup>3</sup> per year (including toilet paper) then the size of the pit should be approximately 1500 mm diameter x 2500 mm deep. The OH&S issues of hand digging excavations should not be overlooked
- the reality is also that nobody is tied to a single toilet – there are public toilets, workplace toilets, household toilets and general indiscriminate defecation
- there needs to be mechanisms to check when pits need to be replaced and the costs of replacement and general maintenance need to be factored.

Some of the principles of this Guidance Note may also apply to the use of chemical toilets, particularly the product approval & installation issues and the provision of lighting & hand washing facilities. The main differences are that setback requirements do not apply to chemical toilets and that EHOs should confirm with the proponent the arrangements for disposal of the septage.