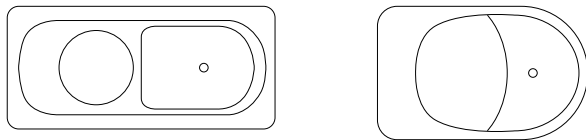


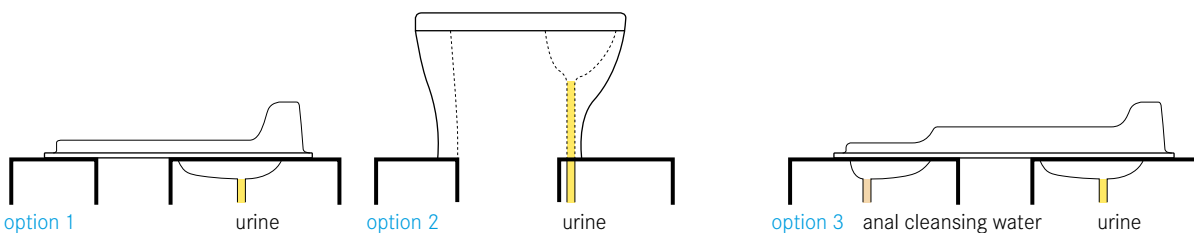
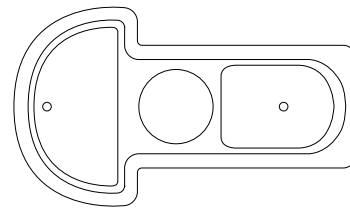
**Inputs:** Faeces (brown square) Urine (yellow square)  
 (light blue square) (light purple square)  
 (light blue square) (light purple square)

**Outputs:** Faeces (+ Dry Cleansing Materials) (brown square + light purple square)  
 Urine (light blue square) (light purple square)

for wipers



for washers



**A urine-diverting dry toilet (UDDT) is a toilet that operates without water and has a divider so that the user, with little effort, can divert the urine away from the faeces.**

The UDDT is built such that urine is collected and drained from the front area of the toilet, while faeces fall through a large chute (hole) in the back. Depending on the Collection and Storage/Treatment technology that follows, drying material such as lime, ash or earth should be added into the same hole after defecating.

**Design Considerations** It is important that the two sections of the toilet are well separated to ensure that a) faeces do not fall into and clog the urine collection area in the front, and that b) urine does not splash down into the dry area of the toilet.

There are also 3-hole separating toilets that allow anal cleansing water to go into a third, dedicated basin separate from the urine drain and faeces collection.

Both a pedestal and a squat slab can be used to separate urine from faeces depending on user preference.

Urine tends to rust most metals; therefore, metals should be avoided in the construction and piping of the

UDDT. To limit scaling, all connections (pipes) to storage tanks should be kept as short as possible; whenever they exist, pipes should be installed with at least a 1% slope, and sharp angles (90°) should be avoided. A pipe diameter of 50 mm is sufficient for steep slopes and where maintenance is easy. Larger diameter pipes (> 75 mm) should be used elsewhere, especially for minimum slopes, and where access is difficult.

To prevent odours from coming back up the pipe, an odour seal should be installed at the urine drain.

**Appropriateness** The UDDT is simple to design and build, using such materials as concrete and wire mesh or plastic. The UDDT design can be altered to suit the needs of specific populations (i.e., smaller for children, people who prefer to squat, etc.).

**Health Aspects/Acceptance** The UDDT is not intuitive or immediately obvious to some users. At first, users may be hesitant about using it, and mistakes made (e.g., faeces in the urine bowl) may deter others from accepting this type of toilet as well. Demonstration projects and training are essential to achieve good acceptance with users. For better acceptance of the

system and to avoid urine in the faeces collection bowl, the toilet can be combined with a Urinal (U.3), allowing men to stand and urinate.

**Operation & Maintenance** A UDDT is slightly more difficult to keep clean compared to other toilets because of both the lack of water and the need to separate the solid faeces and liquid urine. No design will work for everyone and, therefore, some users may have difficulty separating both streams perfectly, which may result in extra cleaning and maintenance. Faeces can be accidentally deposited in the urine section, causing blockages and cleaning problems.

All of the surfaces should be cleaned regularly to prevent odours and to minimize the formation of stains. Water should not be poured in the toilet for cleaning. Instead, a damp cloth may be used to wipe down the seat and the inner bowls. Some toilets are easily removable and can be cleaned more thoroughly. It is important that the faeces remain separate and dry. When the toilet is cleaned with water, care should be taken to ensure that the faeces are not mixed with water.

Because urine is collected separately, calcium- and magnesium-based minerals and salts can precipitate and build up in pipes and on surfaces where urine is constantly present. Washing the bowl with a mild acid (e.g., vinegar) and/or hot water can prevent the build-up of mineral deposits and scaling. Stronger (> 24% acetic) acid or a caustic soda solution (2 parts water to 1 part soda) can be used for removing blockages. However, in some cases manual removal may be required.

An odour seal also requires occasional maintenance. It is critical to regularly check its functioning.

### Pros & Cons

- + Does not require a constant source of water
- + No real problems with flies or odours if used and maintained correctly
- + Can be built and repaired with locally available materials
- + Low capital and operating costs
- + Suitable for all types of users (sitters, squatters, washers, wipers)

- Prefabricated models not available everywhere
- Requires training and acceptance to be used correctly
- Is prone to misuse and clogging with faeces
- The excreta pile is visible
- Men usually require a separate Urinal for optimum collection of urine

### References & Further Reading

- Morgan, P. R. (2007). *Toilets That Make Compost. Low-Cost, Sanitary Toilets That Produce Valuable Compost for Crops in an African Context*. Stockholm Environment Institute, Stockholm, SE.  
Available at: [www.ecosanres.org](http://www.ecosanres.org)  
(Provides step-by step instruction on how to build a UDDT using a plastic bucket and how to construct a urine-diverting squat plate)
- Morgan, P. R. (2009). *Ecological Toilets. Start Simple and Upgrade from Arborloo to VIP*. Stockholm Environment Institute, Stockholm, SE.  
Available at: [www.ecosanres.org](http://www.ecosanres.org)
- von Münch, E. and Winker, M. (2011). *Technology Review of Urine Diversion Components. Overview of Urine Diversion Components Such as Waterless Urinals, Urine Diversion Toilets, Urine Storage and Reuse Systems*. Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, DE.  
Available at: [www.susana.org/library](http://www.susana.org/library)
- NWP (2006). *Smart Sanitation Solutions. Examples of Innovative, Low-Cost Technologies for Toilets, Collection, Transportation, Treatment and Use of Sanitation Products*. Netherlands Water Partnership, The Hague, NL.  
Available at: [www.ircwash.org](http://www.ircwash.org)
- Rieck, C., von Münch, E. and Hoffmann, H. (2012). *Technology Review of Urine-Diverting Dry Toilets (UDDTs). Overview of Design, Operation, Management and Costs*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, DE.  
Available at: [www.susana.org/library](http://www.susana.org/library)
- Winblad, U. and Simpson-Hébert, M. (Eds.) (2004). *Ecological Sanitation. Revised and Enlarged Edition*. Stockholm Environment Institute, Stockholm, SE.  
Available at: [www.ecosanres.org](http://www.ecosanres.org)