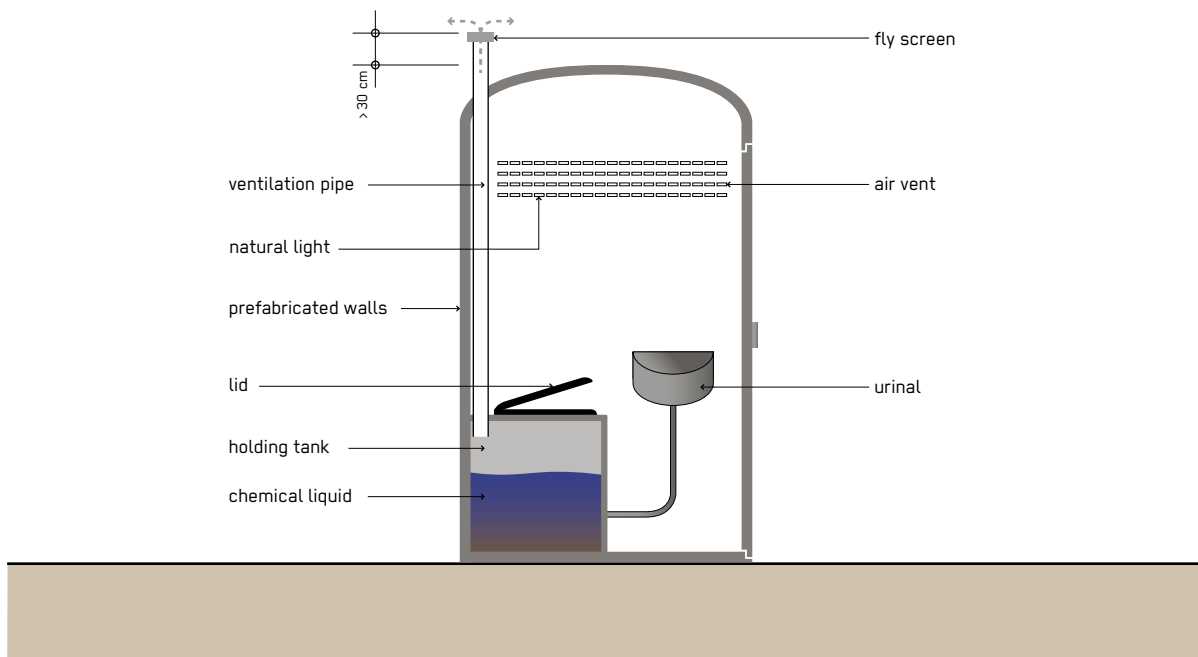


Chemical Toilet

Phase of Emergency	Application Level/ Scale	Management Level	Objectives / Key Features
★★ Acute Response Stabilisation Recovery	Household ★★ Neighbourhood City	Household Shared ★★ Public	Excreta containment, Fast implementation
Space Required	Technical Complexity	Inputs	Outputs
* Little	★★ Medium	● Faeces, ● Excreta, ● Blackwater, ● Chemicals, (+ ● Anal Cleansing Water), (+ ● Dry Cleansing Materials)	● Sludge



The Chemical Toilet, commonly referred to as a 'porta-loo', can be used as an immediate solution in the acute response phase of an emergency. Chemical toilets are generally contained in a single prefabricated plastic portable unit, or cubicle, that collects human excreta in a sealed holding tank which contains chemicals that disinfects excreta and/or decreases odours.

The Chemical Toilet is designed as a complete prefabricated cubicle unit above a holding tank, commonly with 200 L capacity, where a chemical solution is added. A small amount of water and chemicals are mixed to make the flush water. The holding tank collects the excreta, flush water and anal cleansing material. The chemical additives in both the flush water and holding tank reduce odours and partially disinfect excreta.

Design Considerations: One toilet can serve up to 75–100 persons per desludging interval. Standard cubical size is usually about 110 cm square by 210 cm, large enough for one person, and have washable floors, ventilation screens and ventilation pipes. Modifications to the standard design are available on the market with a variety of different user interfaces such as urinals, squatting pans, pedestal toilets and with wheelchair access and hand-washing stations in the cubical. Larger holding tanks (< 200 L) and winterised models with anti-freeze are also available. Toilets must be located in areas that can be accessed by desludging vehicles and motorised emptying vehicles (C.2). The final disposal of sludge is a critical issue and a safe option should be identified before considering Chemical Toilets.

Materials: The Chemical Toilet comes as complete prefabricated plastic unit either available in-country from existing suppliers or can be flown in. The chemical solution

commonly used is glutaraldehyde, formaldehyde or caustic soda (sodium hydroxide). More environmentally friendly enzyme mixes have also been developed. Dry anal cleansing materials and cleaning equipment are required as well as desludging trucks for emptying.

Applicability: Chemical Toilets are appropriate for the acute response phase of an emergency and are particularly suitable for flood prone affected areas, where pit digging is difficult, within urban areas and where low water and non-permanent solutions are required. As excreta is well contained and well isolated with minimal risk of contamination, it is a good solution where there is a risk of cholera. They are shared facilities and never used as household toilets.

Operation and Maintenance: Chemical Toilets come with a basic pump flush that operates using the hand or foot or as dry systems without flush. If 75–100 people are using one toilet per day then they should be emptied daily using a Motorised Emptying and Transport (C.2). The toilets require regular cleaning and checking of water for handwashing and anal cleansing, hygiene items, soap and dry cleansing materials. Where there is a high number of users it is advised to have an attendant to guarantee maintenance and cleaning. It is recommended to have one attendant for every 10 cubicles. Community members can be paid for this job to share the benefits. Some chemicals in the sludge can harm the biological activity in certain treatment facilities such as Anaerobic Baffled Reactors (S.14) or Biogas Reactors (S.16).

Health and Safety: If removal of sludge is delayed or not carried out, the Chemical Toilet can very quickly become a serious health risk. Handwashing Facilities (U.7) should be available and always stocked with soap and water or hand sanitiser. Cubicles need to be situated on flat ground and also anchored to avoid unwanted displacements. Smoking should be prohibited within the cubicles as they are flammable.

Costs: The medium capital costs and high operating costs make Chemical Toilets unsustainable for use beyond the acute response phase. Overall costs will depend on the number of toilets, whether they are being purchased or rented and the duration of the contract.

Social Considerations: The community should be involved from the outset of the implementation process and beneficiaries should be informed of how long the toilets will be available for, and the staging/phasing of excreta disposal provision in the community. In general, the toilets offer a comfortable and safe sanitation facility and are often well accepted. Proper siting of the toilets is important, otherwise strong odours during emptying might negatively affect acceptance of the toilets. Also consider the prevailing wind direction. Other problems can relate to the concept of communal toilet use. Families may not want to share with other cultural groups and may want their own personal toilet. Additionally, it is important to match the user interface that the target group is used to using, e.g. squatting vs. pedestals. Where Muslims are part of the target community, care should be taken regarding the direction the toilets are facing.

Strengths and Weaknesses:

- ⊕ Can be mobilised rapidly
- ⊕ Good in terms of acceptance, dignity and containment of excreta
- ⊕ Can be moved easily if needed
- ⊕ Can be used in areas where digging is impossible, or in urban areas
- ⊖ Expensive (particularly O&M)
- ⊖ Requires daily servicing
- ⊖ Impossible if there is no secured place to dump the sludge nearby
- ⊖ Relatively uncommon outside Europe, North America and some parts of Latin America

→ **References and further reading material for this technology can be found on page 191**