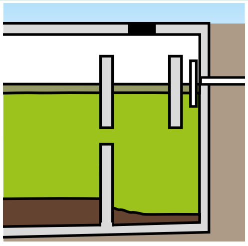
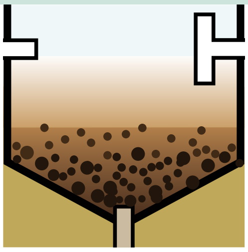
Fact sheet 9

Pour flush or cistern flush toilet





This system is characterized by the use of a household-level containment technology to remove and digest settleable solids from the blackwater, and a sewer system to transport the effluent to a treatment facility.

Inputs to the system can include faeces, urine, flushwater, cleansing water, dry cleansing materials and greywater.

There are two toilet technologies that can be used for this system: a pour flush toilet or a cistern flush toilet. A urinal could additionally be used. This system is comparable to Fact sheet 7 (Flush toilet with septic tank, sewerage and offsite treatment of faecal sludge and effluent) except that the management of the effluent generated during containment of the blackwater is different: the effluent from septic tanks, anaerobic baffled reactors or anaerobic filters is transported to a treatment facility via a solids-free sewer.

The containment technologies serve as "interceptor tanks" and allow for the use of small-diameter sewers, as the effluent is free from settleable solids.

The sewer system transports effluent to a treatment facility where it is treated and will produce both sludge and effluent, which may require further treatment prior to end use or disposal.

A

Suitability: This system is especially appropriate for urban settlements where the soil is not suitable for the infiltration of effluent. Since the sewer network is shallow and (ideally) watertight, it is also applicable for areas with high groundwater tables. This system can be used as a way of upgrading existing, under-performing containment technologies (e.g., septic tanks) by providing improved treatment.

There must be a constant supply of water to ensure that the sewers do not become blocked.

Cost: For the user, the capital investment for this system is considerable (excavation and installation of an interceptor tank), but several households can share the costs if the system is designed for a larger number of users. The maintenance costs may be considerable, depending on the frequency and method of tank emptying.

With the sewer-based transport of effluent to a treatment facility, the capital investment is considerable. However, the design and installation of solids-free sewers will be considerably less expensive than a conventional gravity sewer network.

The capital cost of the treatment plant may also be considerable, while the treatment plant maintenance costs will depend on the technology chosen and the energy required to operate it.

Overall, this system is most appropriate when there is a high willingness and ability to pay for the capital investment and maintenance costs and where there is an appropriate treatment facility.

D

Toilet: The toilet should be made from concrete, fibreglass, porcelain or stainless steel for ease of cleaning and designed to prevent stormwater from infiltrating or entering the tank.

Containment: This water-based system is suitable for cleansing water inputs, and, since the solids are settled and digested onsite, easily degradable dry cleansing materials can be used. However, rigid or non-degradable materials (e.g., leaves, rags) could clog the system and cause problems with emptying and should not be used. In cases when dry cleansing materials are separately collected from the flush toilets, they should be collected with solid waste and safely disposed of, for example through burial or incineration.

End use/disposal: Options for the end use and/or disposal of the treated effluent include irrigation, fish ponds, floating plant ponds or discharge to a surface water body or to groundwater [2].

Treated sludge can be used in agriculture as soil conditioner, as a solid fuel, or as an additive to construction materials.

Toilet and containment: The user is responsible for the construction of the toilet and interceptor tank, but they

Treatment and end use/disposal: If correctly designed, constructed and operated, treatment technologies can be combined to reduce the pathogen hazard within the effluent or sludge by removal, reduction or inactivation to a level appropriate for the intended end use and/or disposal practice. For example, sludges require dewatering and drying followed by co-composting with organics before use as a compost-type soil conditioner, but for use as a solid fuel or building material additive, they only require dewatering and drying. Effluent will require stabilization and pathogen inactivation in a series of ponds or wetlands before use as crop irrigation water [2, 5, 6].

In order to reduce the risk of exposure of the local community, all treatment plants must be securely fenced to prevent people entering the site; and to safeguard workers' health when operating the plant and carrying out maintenance to tools and equipment, all treatment plant workers must wear appropriate protective equipment and follow standard operating procedures [4].

The text for this fact sheet is based on Tilley, et al. [1] unless otherwise stated.

1. Tilley E, Ulrich L, Lüthi C, Reymond P, Schertenleib R, and Zurbrügg C (20deymond P2A (t)-c -0.npe2 C e(b)]TJ0.002 Tc -0.043 Tw 0 -1.2ySBDyrexea-4.2 n3 Td[e, 6 (a)0.2.4 (d e)4 (io.00.83n-4