Evaluation of the pour flush toilets in schools and households

JUNE 2017

The Water Research Commission (WRC) appointed Hlathi Development Services to conduct an independent evaluation of the demonstration programme of pour flush toilets implemented by the WRC in selected schools and households in the Eastern Cape, KwaZulu-Natal and Limpopo. The evaluation was initiated to assess user acceptance and user perceptions of the pour flush sanitation technology in order to determine the best implementation approaches for making this sanitation technology sustainable in South Africa.

About the technology

The South African pour flush toilet design emanated from a WRC study, and is designed for human wastes to be flushed with small quantities of water which is poured into the pedestal pan by hand. The human waste is pushed to a leach pit which is connected to the toilet block. The technology requires as little as one litre of water for flushing.

The leach pit is small and does not require deep excavation. This makes it each to access and empty sludge when the pit is full. The adapted toilet has a pedestal which is similar to that of a conventional waterborne toilet, but it does not have a bowl. This technology is being put forward to meet the needs of households who aspire to have a flush toilet without the cost of full water reticulation, septic tanks, or connection to an off-site sewerage system and wastewater treatment works.

The primary improvement of a pour flush latrine over dry sanitation systems is that it introduces a water seal between the water bowl and the faecal matter, with the result that bad smells and flies can be eliminated from the user interface. Since the water used for flushing is so low, a simple leach pit is able to disperse the water content.

The use of twin leach pits allows for alternate filling and emptying of the accumulated sludge. Because of this seal, the toilets can be built closer to the dwelling or even inside the dwelling. Greywater can also be used as an alternative water source for flushing.

The installed pour flush toilets.

User survey

The evaluation focused on user acceptance, user perception, impacts of ten pilot pour flush toilets on the quality of life for beneficiaries and assessment of the long-term sustainability of the pour flush sanitation technology in rural schools and households. The research methods used included primary and secondary data collection methods.

The primary data collection methods included survey questionnaires, interviews and on-site inspections of pilot pour flush toilets.

The key conclusions made from this evaluation are:

- The pilot pour flush toilets have been shown to work well in households and schools.
- That this sanitation technology was accepted by all surveyed users in schools and households because the toilets are convenient, hygienic, free from bad smells and flies.
- The pour flush toilet had a positive impact on the quality of life of the users; it contributed to the improvement in health, hygienic practice and reduced absenteeism for adolescent girls because they had access to sanitary toilets that offered privacy.

- The pilot pour flush toilets were more likely to be sustainable in the primary schools and households in the long term because most of the sustainable indicators were in place.
- The pour flush toilet blocks implemented in Limpopo schools made provision for a toilet cubicle which was adapted to meet the special sanitation needs of physically disabled learners and teachers.
- The implementing agents took most of the indicators of sustainable sanitation services into consideration during the planning and construction of the pilot pour flush toilets, such as stakeholder engagement, user education, creation of employment for local labour and ensuring water availability for flushing the toilets.

What did not work?

The survey also highlighted some challenges during the piloting of the pour flush toilets. In the Limpopo schools the unforeseen failure of a borehole led to the failure of pour flush toilets in one school, while in others the use of inappropriate anal cleansing materials and dumping of rubbish into the toilets led to blockages.

Failure of school management to allocate a dedicated budget for toilet paper, soap, cleaning materials and other operation and maintenance costs led to blocked dysfunctional pour flush toilets in two Limpopo schools. Lack of access to skilled plumbers and suppliers of spare parts to fix the broken toilets led to the abandonment of these toilets.

Recommendations

Effective school governance is crucial for ensuring that the school management take responsibility for providing learners and teachers with clean and safe sanitation facilities. This requires allocation of a dedicated budget for water supply, toilet paper, cleaning materials and other operation and maintenance costs.

Technical support must be provided to rural schools to make sure that dysfunctional pour flush toilets are fixed so that learners can continue to make sure that dysfunctional pour flush toilets are fixed so that learners can continue to have access to clean and hygienic toilets.

Proper assessment of the reliability of water supply must be undertake and alternative sources of water, such as rainwater harvesting tanks should be considered in areas that are vulnerable to droughts to ensure that the pour flush toilets can continue to function as they were intended.

Ongoing health and hygiene education must be provided to the learners so that they can learn to appreciate the importance of clean, hygienic toilets to the improvement of their health and well-being.

More innovative, alternative sanitation technologies must be developed and piloted in rural areas in South Africa.

Further reading:

Evaluation of the pour flush toilets in schools and households (**Report No. KV 361/16**). To order the report contact Publications at Tel: (012) 761-9300; Email: orders@wrc.org.za or Visit: www.wrc.org.za