



Supportive Environments for Healthy Communities

Issue 21 August 19, 2011 | Focus on Sludge Management

Millions of households rely on latrines for sanitation and when a pit fills up, emptying is often the only viable option. Creating a solution that enables densely populated settlements to efficiently empty sludge and dispose of it at an appropriate location, while remaining affordable, easy to operate and sustainable, is a difficult task. This *Weekly* features a recent WASHplus study in Madagascar, which proposes low-cost options for sludge management. It also includes lessons learned from South Africa, Sri Lanka and a USAID report on septage management issues in the Asian region. Two other studies discuss the potential of using latrine wastes for biogas.

BLOG POSTS/REPORTS

- **Innovative Sanitation as a Business Model: Community Cleaning Services in Nairobi, Kenya**, 2011. M. Pezone, WASHplus. ([Link to Innovation Exchange blog post](#))

Community Cleaning Services (CCS) is an emerging Kenyan nonprofit social enterprise that is improving urban sanitation while creating profitable entrepreneurial opportunities for youth from low-income communities. CCS uses a microfranchise distribution platform to offer an integrated model of awareness creation, training, quality assurance, product supply and marketing support to sanitation service providers (mobile cleaning teams and public toilet operators) who are delivering toilet cleaning services across Nairobi's low-income communities.

- **Low Cost Systems for the Management of Sludge from Toilets and Shower Units Current Techniques and Improved Options in Ambositra and Mahanoro (Madagascar)**, 2011. Practica; WASHplus. ([French](#), [English](#))

This assessment found that although the demand for formal pit emptying services is high, there is a lack of treatment plants and few pit emptiers. The day laborers who are hired to perform this filthy job face serious health hazards, engage in questionable disposal practices, and lack the capacity to improve the quality of their services. This assessment proposes innovative low-cost options for fecal sludge management in three areas: sludge removal/transfer, transportation, and disposal/treatment.

- **The Challenges of Dealing with Full VIP Latrines**, 2010. D. Still. Partners in Development. ([Full-text](#))
This paper looks at the following questions: At what rate does fecal waste accumulate in on-site sanitation systems? What are Water Services Authorities in South Africa doing about the management of fecal waste from on-site sanitation systems, especially VIPs? What technologies are available, in South Africa and elsewhere for the emptying of VIPs?
- **Developing a Synthetic Pit Latrine Sludge and a Process for Its Fluidization**, 2011. J. Radford, University of Cambridge. ([Full-text](#))
A synthetic pit latrine sludge is currently being developed as part of an investigation into the mechanical emptying of pit latrines. The existing state of knowledge of the physical properties of pit latrine sludge is discussed along with the proposed methodology and experimental design of the study.
- **Disposal of Latrine Waste: Is Biogas the Answer? A Review of Literature**, 2010. D. Buxton, Loughborough University. ([Full-text](#))
Emptying pit latrines is a major problem in urban sanitation in low-income countries. Besides the difficulty of taking the partially decomposed faecal matter out of the pit, the sludge has to be disposed of. Rather than treating it as a waste, sludge could be seen as a resource.
- **Pit Latrine Emptying: Technologies, Challenges and Solutions**, 2010. Y. Thye, Imperial College. ([Full-text](#))
Millions of households rely on pit latrines for sanitation and when a pit fills up, emptying is often the only viable option. Creating a solution that enables densely populated settlements to efficiently empty sludge and dispose of it at an appropriate location, while remaining affordable, easy to operate and sustainable, is a difficult task. This paper reviews and evaluates recent pit emptying technologies.
- **Rapid Assessment of Septage Management in Asia: Policies and Practices in India, Indonesia, Malaysia, the Philippines, Sri Lanka, Thailand, and Vietnam**, 2010. USAID. ([Full-text](#))
The management of onsite sanitation remains a neglected component of urban sanitation and wastewater management. Most sanitation programs have focused on toilet installation and sewerage development, viewing onsite sanitation as an informal, temporary form of infrastructure. As a result, septic tanks and latrines in urban areas have become major sources of groundwater and surface water pollution, with significant environmental, public health, and economic impacts.
- **Using Biogas Technology to Solve Pit Latrine Waste Disposal Problems**, 2010. Practical Action. ([Full-text](#))

This technical brief looks at the option of using biogas units to reduce the waste produced by standard pit latrines. Waste is removed from the pit and transported to a biogas system where treatment takes place. Users must empty their latrines and reuse them whenever possible. Solutions for emptying pits have been the subject of much research over the past few years, but what is then done with the emptied waste has received little attention. And little work has been done to see if using mature, partially digested waste from a pit latrine is feasible in producing biogas.

- **What Happens When the Pit is Full? Developments in On-site Faecal Sludge Management, 2011.** Water Information Network, South Africa. ([Full-text](#))

This seminar report discusses some of the latest developments in fecal sludge management in South Africa. It also gives summaries of other sessions on sludge management issues such as pit additives, sludge extraction and treatment methods, etc.

JOURNAL ARTICLES

- **Phosphorus Recovery: New Approaches to Extending the Life Cycle,** *Environ Health Perspect*, July 2011. T. Lougheed. ([Full-text](#))

Peter Morgan, who developed the Blair latrine, has explored a number of simple toilet systems that can be built locally and operated far more reliably than large-scale wastewater treatment plants. A major improvement over the primitive pit latrines that are still commonplace in many developing nations, individual outhouse-style toilets follow a life cycle that will see them become composting pits that are eventually planted with trees. Some variations include a diversion for urine, which can be stored and subsequently deployed as a basic fertilizer.

- **Socio-economic Profile and Profitability of Faecal Sludge Emptying Companies,** *Resources, Conservation and Recycling*, October 2010. M. Mbeguere. ([Abstract](#))

Various strategies, such as on-site sanitation, have been developed to improve and facilitate access of urban dwellers to effective liquid waste management mechanisms. However, this type of sanitation generates huge quantities of faecal sludge to be extracted and treated or conveyed to appropriate disposal sites. These important tasks are carried out by private operators whose organizational and operational structures are not always well understood. Due to their important link to on-site sanitation, the profile and profitability of these companies need to be defined to keep on-site sanitation costs under control.

- **Vertical-flow Constructed Wetlands as an Emerging Solution for Faecal Sludge Dewatering in Developing Countries,** *Journal of Water, Sanitation and Hygiene for Development* 1(1) 2011. M. Kengne. ([Full-text](#))

Yard-scale experiments aiming at assessing the suitability of vertical-flow constructed wetlands to dewater fecal sludge (FS) were conducted in Yaoundé (Cameroon). The

promising findings suggest the system as adequate for further investigation at real scale for FS dewatering in the context of developing countries.

WEBSITE FEATURES

- **Akvo: Human-Powered Emptying and Transport** - ([Link](#))

This web page provides an overview of the various methods and technologies for emptying latrines.

- **WaterAid Gulper**- ([Link](#))

This manually-operated pump is used to empty latrine pits when they become full. The Gulper is basically a hand pump that fits on top of a permanent pipe rising out of a latrine pit. The handle is raised and lowered and, with the help of valves in the pipe, the waste is lifted out of the nozzle and into a container, which can be then taken away and disposed of.

Each *WASHplus Weekly* will highlight topics such as Urban WASH, Indoor Air Quality, Innovation, Household Water Treatment and Storage, Handwashing, Integration and more. If you would like to feature your organization's materials in upcoming issues, please send them to Dan Campbell, WASHplus knowledge resources specialist, at dacampbell@fhi360.org.



About WASHplus - WASHplus, a five-year project funded through USAID's Bureau for Global Health, creates supportive environments for healthy households and communities by delivering high-impact interventions in water, sanitation, hygiene (WASH) and indoor air quality (IAQ). WASHplus uses proven, at-scale interventions to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under five years of age globally. For information, visit www.washplus.org or contact: washplus@fhi360.org.

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