



MECHANICAL PROPERTIES OF FAECAL SLUDGE FROM ON-SITE SANITATION FACILITIES

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The Bill and Melinda Gates Foundation (BMGF) has contracted the Pollution Research Group (PRG) at the University of KwaZulu-Natal to carry out a study into the properties of faecal sludge from different types of on-site sanitation facilities. The data generated will inform the design and sizing of mechanical pit-emptying devices, transportation and processing systems for the excavated sludge, and the design of future on-site sanitation facilities.

Characteristics of faecal sludge vary greatly between different locations and types of facilities. To assess the range of properties that may be encountered, faecal sludge samples from a range of on-site sanitation facilities will be analysed, including household ventilated improved pit (VIP) latrines, household urine diversion toilets, community ablution block facilities and school toilet blocks. Chemical, mechanical, rheological and thermal properties will be measured. The data will be analysed to establish correlations (if any) between the quality and quantity of sludge and level of facility use. The data sets produced will be made available to sanitation practitioners globally.

This project will interface closely with other projects from the BMGF which address different aspects of on-site sanitation. eThekweni Water and Sanitation are active partners in the project. The Water Research Commission of South Africa is funding parallel initiatives with the Pollution Research Group (PRG). It will extend the knowledge generated by staff and research students with the PRG. A sludge classification system will be derived which will enable municipalities to describe the sludges in their area and to provide data for designers and operators to provide enhanced sanitation services. Analysis will be made of the implications of the data for the practical applications listed above, integrating with other projects being carried out by the Pollution Research Group.



Faecal sludge from different levels of a pit latrine



Non-homogeneity of pit latrine contents