

# Challenge Candidate List – Faecal Sludge Management in Emergencies

This working document is a summary of the key challenges presented in the WASH Problem Exploration Report on Faecal Sludge Management in Emergencies.

Topic	The Challenge	Innovation Needed	Type of intervention	Who will use it?	Existing Work
<b>Reducing the volume and health risk of sludge</b>					
	<b>Reduce the volume and health risk of faecal sludge using additives.</b> Faecal sludge represents a significant health risk to people in camps. There is evidence that suggests that additives could help reduce the risk and volume of sludge prior to collection.	Greater understanding of the effectiveness and appropriate doses for biological and chemical additives to sludge.	Research projects investigating the appropriate uses and methods for additives in emergency contexts.	WASH agents	There has been a large number of studies into different types of bio additives in different contexts, but most of them with conflicting or inconclusive results. Further work on best practice of use and understanding if and how additives can be used in emergency contexts is needed.
	<b>Reduce the volume and health risk of faecal sludge using external treatments.</b> Faecal sludge represents a significant health risk to people in camps. There is evidence that suggests that external treatments could help reduce the risk and volume of sludge prior to collection.	Greater understanding of the effectiveness and appropriate doses of external treatments for sludge (e.g. using black soldier fly larvae).	Research projects investigating the appropriate uses and methods for external treatments.	WASH agents	There have been a number of studies into different types of external treatments such as composting worms and black soldier fly larvae. The work should be extended to understand if and how these treatments could be used in the second stage of emergencies.
<b>Improved Technologies</b>					
	<b>Design and test the effectiveness of portable sewage treatment units.</b> Conventional sewage treatment methods are not appropriate for treatment of sludge from pit latrines. Portable sewage treatment units could be developed that are better able to treat sludge produced during emergency situations.	Development of new portable sewage treatment units that can be safely and quickly transported to emergency situations. These may use anaerobic or aerobic processes.	Development/adaptation and testing of new portable sewage treatment units in the field.	WASH agents and local community	A number of portable sewage treatment units have been designed, however these were not tested in emergency situations.
	<b>New designs for raised pit latrines.</b> Pit latrines are used by 1.7 billion people every day. Innovative designs for their construction could improve their safety, and ease of maintenance.	There is a need for raised pit latrines that allow for dosing of additives, mixing, and easy connection to collection trucks.	New designs and testing of raised pit latrines.	WASH agents and local community	
	<b>Improved access to rapid de-sludging equipment.</b> Local communities often lack access to affordable equipment for de-sludging, making management of excreta challenging.	There is a significant challenge in providing access to rapid de-sludging equipment, that is economically viable.	Development and testing of new de-sludging equipment.	WASH agents and local community	There are existing projects developing new de-sludging equipment, with features including fluidisers and temporary storage.
	<b>Improve the design of portable toilets for emergency situations.</b> Not all emergency contexts are suitable for pit latrines. Current designs for portable latrines often fill rapidly, making it difficult to maintain hygiene standards.	Toilets with a better ability to cope with faecal sludge accumulation, and are easier to empty. Integrated additive mixing features are desirable.	Technological and product development.	Local community	There has been some development of new toilet designs, such as by the WASTE project.
<b>Improved guidelines for sludge treatment</b>					
	<b>Develop guidelines for assessing and improving dumping sites.</b> It is important that faecal sludge is disposed of in an efficient, sustainable and sanitary manner, in all contexts.	A set of guidelines to help assess and improve dumping sites for sludge, and to ensure that people with the correct experience are involved in the process.	Workshop that brings together WASH agents to develop a set of guidelines, including relevant skills needed.	WASH agents	
	<b>Develop standardised guidelines for the safe collection and transport of faecal sludge.</b> The collection and transport of sludge can present significant hygiene risks. Innovation is needed to reduce risk in all emergency contexts.	There is a need to standardise the processes of collection and transportation of faecal sludge. This should include safety standards in the event of an accident.	Field research and collaboration between WASH experts to develop agreed guidelines for different contexts.	WASH agents and local community	There has been some work in this area, including the development of a protocol for the treatment of waste contaminated by Ebola.
	<b>Improve ability to assess and monitor the availability and functionality of existing de-sludging equipment.</b> It is desirable to assess the capability of communities at high risk of emergencies to cope with excreta management in the event of a crisis.	Development of guidelines for the regular assessment of equipment in areas at risk of emergencies.	Development of guidelines on appropriate standards for equipment, and funding for assessment of risk areas according to those guidelines.	WASH agents	