

35th WEDC International Conference, Loughborough, UK, 2011

THE FUTURE OF WATER, SANITATION AND HYGIENE:
INNOVATION, ADAPTATION AND ENGAGEMENT IN A CHANGING WORLD

**Adapting alternative sanitation systems for emergencies:
teaching old dogs new tricks?**

E. Shaylor & S. Coates, UK

BRIEFING PAPER 1237

As emergency scenarios increase in number and complexity, standard sanitation solutions are not always able to meet the demand of populations or environmental situations. Alternative sanitation systems provide a viable way forward yet many of these technologies, such as urine diversion, are being resisted by humanitarian engineers who typically cite the inability of users to adapt behaviours. This paper reports research in to this situation, drawing on experiences from the 2010 Haiti earthquake.

Introduction

A number of alternative sanitation systems, including Urine Diversion (UD) already provide sanitation solutions in the context of development (WIN-SA, 2006). These technologies are proving useful in areas with water shortages, food insecurities and where environmental conditions demand an alternative.

Based on lessons learned the humanitarian community is beginning to show interest in applying similar solutions to emergency contexts, where increasingly standard responses are failing. Unlike the behaviour and social change approaches used in development, emergency sanitation is often introduced quickly at community level with minimum user participation. Typically these systems attempt to reflect what a community is familiar with, to ensure better usage and prevent misuse of facilities; though for some communities it will be the first time they have used latrines. As alternative systems are generally more user-intensive it is commonly believed that people in emergency situations will fail to adapt to – or accept ‘unknown’ technologies and operation and maintenance, especially whilst living in emergency aftermath.

This paper calls for humanitarian engineers be open minded about the potential application of alternative sanitation systems in complex environments. It highlights a prevailing resistance to alternatives, the absence of effective promotion and demonstrates how alternative systems can indeed be adapted to meet specific emergency situations.

Alternative sanitation systems and emergencies

A top priority in an emergency is prevention of the spread of disease and loss of life by containing and controlling excreta which contains disease causing pathogens. Favoured sanitation systems including trench latrines, bucket latrines, VIP and pit latrines (most commonly used) are quick to install, able to withstand heavy usage and are relatively easy to operate and maintain (Harvey, 2007:68). However, emergencies are increasingly occurring in flooded areas, urban locations and where space is limited. In such circumstances with difficult ground conditions and where it is necessary to extend the capacity of pits that fill up quickly, standard emergency sanitation systems are tending to fail. Mortality due to diarrhoeal disease is significant in situations of protracted humanitarian crisis and diarrhoea remains a leading cause of death and disability among children under five. This situation is exacerbated by pit latrines that are contaminating flood waters, disease outbreaks including cholera and shigellosis; and a reluctance on the part of communities to use provided facilities with many preferring to defecate in plastic bags (IFRC, 2010). These factors alone suggest a need to look at the choice and sustainability of sanitation interventions in challenging emergency settings.

In development contexts alternative sanitation systems - the arborloo, composting, aquaculture and UD systems have largely evolved due to the demands of changing environmental situations and increased limitations on physical resources, such as water and space. While some believe that combined composting is more effective as a system, the potential to expand pit capacity through separation of urine and faeces will have economic, health and social benefits in emergency situations. UD is also sustainable beyond the initial emergency response thus, improving users' sanitation situations in the longer term (Munch et al, 2006) and assisting to bridge the gap between emergency, relief and development – especially given the long periods that people can be displaced. Separating urine before it mixes with faeces has other benefits including reducing odour, dryer excrement (which is beneficial when emptying pits) and mitigating the risk of fly breeding (Morgan, 2004:2). This process is usually done with a specially designed squatting plate or toilet seat and a piping system to allow urine to soak away or to be collected. This practice can massively reduce the volume of waste to be treated and increase the life of the latrine; as stated this is key in emergency situations (SuSanA, 2009:7).

Views and perceptions of technology-choice decision makers

Engineers, field-based technicians and non-technical staff responsible for emergency sanitation planning, management and implementation were asked about their knowledge of UD and its application in emergencies (Shaylor, 2010).

Most respondents were able to identify the potential advantages of UD as part of an emergency response (for example, increasing the pit capacity, sustainability beyond relief programmes and the ability to meet the demands of difficult environmental conditions) yet a general negativity prevailed about actually implementing the technology in an emergency. Reasons for this included anecdotal reports about complicated operation and maintenance, cost of construction and an unsubstantiated belief that UD is too complex a system for populations in crisis to adapt to. It also became clear that most people interviewed had not heard about positive UD experiences in either development or emergencies, for example that of the Bangladesh cyclone (Box 1).

Box 1. Dispelling the myths

A study into the socio cultural issues relating to urine diversion toilets installed in response to cyclone Sidr in Bangladesh in 2007 found that the UD toilets reduced odour and flies. Most had also withstood further cyclone activity. Investigations into the so called 'faecophobic culture' of people adjusting to a completely new type of system, discovered that it took only 4 days for users to adapt and feel comfortable using the system.

(Mazeau and Delepière, 2009:6)

Respondents also said that the behavioural change and social change needed by users render the technology prohibitive, not least because it demands additional 'software support' (for example, community animators, hygiene promoters and communication specialists) in situations where experienced WASH-skilled human resources are usually limited.

Further investigation revealed how practitioners are reaching conclusions about UD and alternative systems. Against a background of negativity, practitioners source additional technical knowledge via the other colleagues or the internet. Even though positive examples of UD exist, the majority of those asked focused on reported problems and challenges, so creating a vicious circle that is contributing further to the lack of willingness to explore alternative solutions. This position is propagated largely through internet based reporting rather than considered debate of the issues. The absence of knowledge sharing forums and reliable evidence based sources prevents solution-focused thinking and ultimately the adaptation of these technologies in specific emergency situations. Interestingly very few respondents could cite any user views of UD or similar alternative systems in development situations; though many said that user choice and resistance to behaviour change is the major prohibiting factor for introducing alternative systems.

Box 2. UD in Haiti

The NGO Sustainable Organic Integrated Livelihoods (SOIL) has been developing UD and other Ecosan options with communities in Haiti since 2006. After the 2010 earthquake, which left an estimated 1.5 million people without safe means of defecation (IFRC 2010), SOIL partnered with Oxfam GB to provide alternative sanitation solutions for the Internally Displaced People (IDP) living in 32 of the 330 or so IDP camps (SOIL 2010). The intervention provided the opportunity to explore alternative sanitation systems in both urban and long term displacement situations, as well as the chance rebuild to a higher standard.

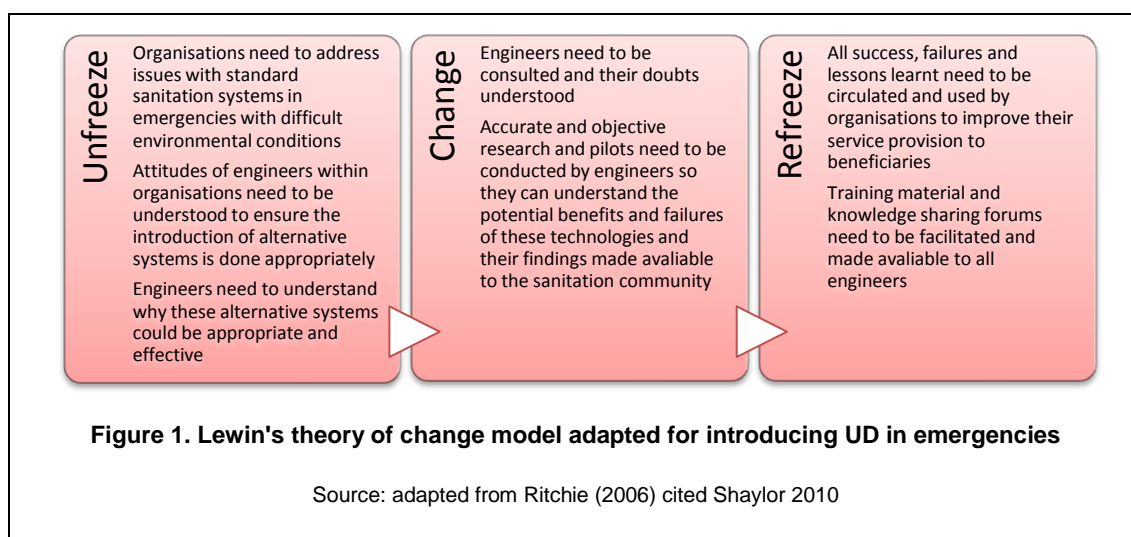
SOIL installed 100 pedestal UD toilets as well as male urinals. As each toilet was constructed SOIL organised an inauguration ceremony with the community. These events included the whole community and aimed to improve acceptance and understanding of the UD system. Ongoing monitoring and evaluation was conducted by camp committees assuming a monitoring role to see how the system is being accepted by users.

SOIL's experience showed that users who were not familiar with UD systems were readily able to adapt despite the trauma and chaos around them. This positive intervention has raised the profile of UD as a viable solution in emergency settings and it has the potential to influence other organisations whilst providing practical guidance. The interest this experience is generating among the humanitarian community in Haiti is beginning to challenge mindsets with promises of an 'Ecosan Working Group' being established in order to develop a more structured and formalised ecosan strategy and national ecosan standards (Shaylor, 2010). As time progresses it will be interesting to observe how the risks taken by a relatively small organisation, with the prior knowledge and experience, impact upon the practices of other, often more established agencies.

Unfreezing mindsets

Although UD is still limited by its scale of intervention some organisations are taking the risk using their existing development experience to adapt alternative sanitation systems to emergency contexts (Box 2). However, whilst professionals 'fixate' on the negatives, the benefits of adaptation are not reaching populations. Although there is indication that attitudes may change – as is currently the case in Haiti, overall this situation mirrors the resistance to change experienced by reforming organisations. Here a 'freezing' of mindsets prevents openness to new ideas by reinforcing the notion of *'this is how we do things around here and therefore everything is Okay'*. Figure 1 explains what factors need to be considered in unfreezing mindsets before change and 'refreeze' can happen (Shaylor, 2010).

For experienced emergency engineers it is important to embrace the lessons of hard earned experience, whilst finding ways to expose the profession to alternatives. People – in any walk of life, are often most resistant to change when challenged about current practices. An emotional response is evoked that generates uncertainty, frustration and fear, resulting in defensive stances and viewpoints (Mullins, 2010).



Conclusions

So where does this leave UD and other alternative sanitation systems for emergencies? In many respects it is too soon to draw conclusions, because trials of UD systems remain at an early stage of development and growth. Certainly the experiences in Haiti are encouraging, though much work remains to be done. Meanwhile the emergency sanitation sector is being forced – like it or not, to at least be open to doing things differently due to the sheer increase in humanitarian crisis and the changing environmental conditions now found in emergency locations. Knowledge management brokerage is required to bring together the best of what is known about alternative sanitation systems with those who have expertise in emergency response. Challenging the status quo also requires an understanding of the process of change. If addressed sympathetically, engineers will be better equipped to respond and tackle the emergency-development paradigm.

References

- Harvey, P. A. (2007) *Excreta Disposal in Emergencies: A field Manual* WEDC, Loughborough University Loughborough: UK.
- IFRC (2010) *Haiti, From Sustaining living to sustainable solutions: the challenge of sanitation, special report, six months on* [Online] available from <[http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilename/FERB-876J48-full_report.pdf/\\$File/full_report.pdf](http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilename/FERB-876J48-full_report.pdf/$File/full_report.pdf)> [September 2010].
- Mazeau, A and Delepière, A (2009) *Introducing Ecological Sanitation in Emergencies: Some Lessons Learned from a Pilot Project Bangladesh* [Online] available from <http://www.huussi.net/tapahtumat/DT2009/pdf/Antoine_Delepiere.pdf> [December 2009].
- Morgan, P (2004) *an ecological approach to sanitation in Africa – a compilation of experiences* CD-Rom.
- Münch, E., Amy, G., and Fesselet, J. (2006^a) *Ecosan Can Provide Sustainable Sanitation in Emergency Situations with Benefits for the Millennium Development Goals* [Online] available from <<http://www.iwaponline.com/wpt/001/0037/0010037.pdf>> [April 2009].
- Mullins, L (2010) *Management and Organisational Behaviour, 9th edition*, Financial Times Pitman Publishing, Essex: UK.
- Ritchie, B (2006) *Lewin's Change Management Model – Understanding the Three Stages of Change* [Online] available from <<http://www.consultpivotal.com/lewin's.htm>> [October 2010]
- SOIL (2010) *Case Study Summary*, Unpublished.
- Shaylor, E (2010) *Investigating the Attitudes of Engineers to Implementing New Sanitation Technologies in Emergencies; Using Urine Diversion (UD) as a case study*, MSc project, WEDC, Loughborough University: UK.
- SuSanA (2009) *Sustainable Sanitation for Emergencies and Reconstruction Situations- fact sheet* (version 1.2) [Online] available from <<http://www.susana.org/images/documents/05-working-groups/wg08/en-susana-factsheet-wg08-emergencies-version-3.pdf>> [December 2009].
- WIN-SA (2006) *eThekwini's water & sanitation programmes: Lessons series – issue 2* [Online] available from <<http://www.dwaf.gov.za/events/SanitationWeek/2006/documents/WINSAlesson2.pdf>> [April 2010].

Contact details

Esther Shaylor
Email: esther@shaylor.co.uk

Sue Coates
Email: s.coates@lboro.ac.uk
