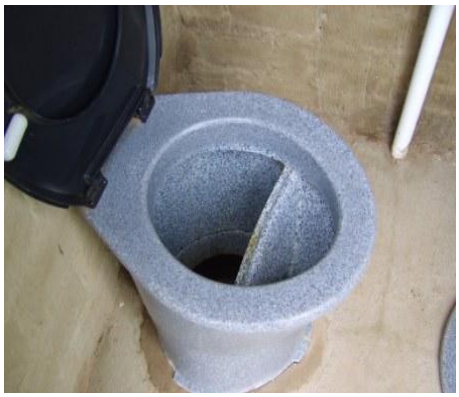
Innovations in emergency sanitation

2 day workshop, 11-13 February 2009, Stoutenburg, The Netherlands



Urine diverting pedestal
Photo: Duncan Mara.

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Green Oxfam latrine
slabs. Photo: RedR

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Organised by: Oxfam GB, IWA, GTZ, WASTE
Minutes by: Cecilia Ruberto, WASTE and Åse Johannessen, IWA

Participants

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Andy Bastable	Head of water and sanitation	Oxfam	UK
Gert de Bruijne	Eco San Expert	WASTE	NL
Niels Lenderink	Adviser	WASTE	NL
Arne Panesar		GTZ	Germany
Libertad Gonzalez	Watsan Unit	IFRC	Switzerland
Vincent Taillandier	Water & Sanitation Adviser	ACF	France
Karine Deniel	Water & Sanitation Adviser	ACH	Spain
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Ase Johannessen	Development Programme Officer	IWA	NL
Paul Shanahan	Emergency WASH sector specialist	CARE	Australia
Brian Mathew	Watsan consultant	Independent	UK
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Contents

Day 1 Thursday 12/02/2009

Day 2 Friday 13/02/2009

SUMMARY

The workshop in Stoutenberg was an interesting meeting between the sanitation/development community and the emergency/relief community. The aim of the workshop was to come up with useful ideas to improve sanitation practices in terms of sustainability, however still be suitable for emergency situations.

The two groups presented challenging environments during emergencies that needed most attention including: high groundwater tables and flooding, unstable soils and urban density populations with the understanding that solutions were required in both in situ and displaced situations (the latter can include dense/urban and scattered contexts). These issues were discussed in groups and presented in plenary to provide a problem statement to start thinking of solutions from.

Different types of latrines were presented from the rapid latrine to more long term and sustainable solutions. Aspects of gender, disability and children were presented, as well as issues of consultation, training, accountability and maintenance. It was clear from this and the discussions that a sanitation technology that was successful in one situation could prove to be useless without proper 'software' i.e. training and follow up.

Other presentations included WASTE's decision support tool, wash cluster emergency training, and opportunities for interaction with other sectors for innovation.

The discussions were lively concerning the relevance of Ecosan in emergencies. The general conclusion was that Ecosan is not relevant for the immediate phase of emergency. However there was no agreement on when is a good time. Some argued there is room for thinking about immediate application of Urine Diversion from day 1 and onwards, as this would also mean a longer life of the latrine (and starting the composting process of the fecal matter) but there were converging views about this and someone did not see it as an option in camps with 30,000 people. Others (Oxfam) thought keeping urine away from the pit latrine could mean a huge change, and wanted to pilot this more. However, many thought there was need to explore the idea of a transition to more sustainable solutions after some time and providing for this transition in the beginning of the emergency as most funding was only available in the immediate term until agencies are withdrawing, perhaps after 6 months. Another issue that was discussed but requiring an even longer view was agriculture, but the emergency community were not really finding it relevant in the current discussions.

Finally, the group decided on an action plan, with different workshop participants assigned as leads. The group agreed there should be a follow up arranged by the workshop organizers, but that the group should not have a formal structure.

0. INTRODUCTION

There has been a growing realisation with emergency agencies that their current sanitation practices in emergency situations are not always working efficiently and that there are needs for new developments. Emergency agencies have designed their own processes to develop sanitation agenda, e.g. meetings and working groups on sanitation, but still there are needs for input and that has triggered them to be open minded to alternatives to conventional sanitation technologies, and to getting input from organisations advocating those. This workshop was a result of an exchange of such realisations and ideas between WASTE and Oxfam a year back in 2008.

The meeting in Stoutenburg was set up to outline the problems occurring in emergencies relevant for sanitation and discuss strategies to address those problems and find alternatives to current practices and see how emergency sanitation could be improved.

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1. INDIVIDUAL EXPECTATIONS

The workshop started with the participants sharing their expectations from the workshop. For many *emergency agency representatives* this was to find out more about new and innovative sanitation options suitable for emergencies, to get some new ideas and inspiration. Could there be a design that would solve some of their problems?

The sanitation (development) community was looking forward to sharing some of the alternative sanitation technologies that could contribute to more sustainable solutions during the emergency, especially since many of the camps exist for a long time, even up to several years. It would also facilitate the uptake of new technologies when the emergency situation is over and moving into a development phase, where emergencies represent an opportunity to introduce new technologies to communities

For many, the expectation for the meeting was to come up with a statement of the problems and a strategy to solve them. This would include catering for different groups e.g. handicapped and children. After the meeting the expectation was also that the two groups would continue working together.

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2. PRESENTATIONS

2.1 "The Toilet Challenge"

Andy Bastable, Head of Water and Sanitation Oxfam, UK

Andy presented the different challenges in an emergency situation and the main obstacles to progress. He also presented different issues affecting sanitation during emergencies (physical, cultural, social). This gave a good understanding of the context from which he hoped this workshop could contribute to develop some additional ideas for sustainable sanitation during emergencies.

Often wash clusters know of different sanitation options (e.g. the Myanmar cluster that even produced a compendium with aggregated technical information) but what is needed information about what sanitation options can be recommended in specific situations.

Different causes of the disaster…
Many different disasters can cause emergencies: floods, earthquakes, storms, conflicts, droughts, (with consequent urban migration)

…and added social and physical factors
But there can also be added challenges that worsen the disaster such as social and physical factors. Often poor people have fragile health making them as displaced under emergencies even more vulnerable. Physical properties of the place such as unstable soil (Unstable soils provide great challenges: in Ethiopia, Kenya, Somalia) which means that lining of pits is necessary, but trying to do that is virtually undoable.

Different displacement of people
Emergency agencies distinguish between two main ways in which people are displaced during emergencies 1) in situ and 2) displaced. These categories are relevant for how to keep communal latrines clean and who you hold accountable for the sanitation (e.g. individual families are completely responsible in 'in situ' situations).

1. "In situ" – people are spread out and centralised sanitation systems are not possible. (eg in flood situations in Asia where people don't want to leave their home, or they want to get back to their houses as soon as possible. People are still in their house even though it may still be surrounded by water. In many places where ownership rights are not clear there is a total reluctance to leave. Relating this to sanitation means that communal latrines are possible. It is possible to construct many small latrines which are spread out. This means that more hygiene promotion is needed and that this situation enables self built latrines.

2. "Displaced populations" - e.g. in camps, schools, mosques where agencies construct a block for water and sanitation here and a block there, which is easier. Agencies come in, build and clean latrines. Later, they move on to family latrines where the displaced people manage them. When they go home, they dig their own latrine, because they now know how to do it. (Often people are prevented from growing their own food in displaced situations.) In addition these people can be an organised community or not (social cohesion), and be there temporarily or for the long term.

The group agreed after some discussion to divide this category into:

a) Dense (urban) context
b) Scattered context

The sanitation community mainly distinguishes between the rural (scattered) and urban (dense) context, where peri-urban areas can be emergency situations. E.g. people come from drought struck areas and need to go to the city.

Different designs of sanitation systems

The Time factor – a high priority
Excreta need to be contained in the quickest time possible. The excreta manual refers to defecation fields as an instant measure but Andy says he thinks only a few countries would accept this method. The least you do is to put up plastic sheeting around as cubicles and build a small shallow trench. It is desirable with a minimal level of consultation about sighting and construction. Consultation during emergencies is possible - more than people think.

Challenges of design…
In constructing latrines during an emergency situation the following problems need solutions (and that this workshop will focus on):

- 1) unstable soils
- 2) high water tables and flooding
- 3) high density populations
- 4) need for rapid latrines

…and some more challenges:

- 5) previous or current practices
- 6) appreciation of risk
- 7) participation
- 8) anal cleansing (needs)
- 9) cleaning and repair mechanisms
- 10) materials, money etc.
- 11) Desludging
- 12) Final disposal
- 13) Infiltration systems
- 14) Septic tanks

An example of the magnitude of the problem is that there are 2 million displaced people in Darfur and Chad – (1,600,000m3 yr 584,000m3 liquid – [*error in the numbers as volume for liquids should be higher?]*)

Challenges of design:

1) Unstable soils

All pits do not need lining but some get the full monty lining with corrugated iron especially in sandy soils/grounds with termite infestation. The issue is with lining that it is difficult to move from provision to do it yourself. (Showing picture of lining made out of sand-filled bags from food hand-outs. Perhaps an idea would be to put an instruction on hand out bags on how to build a latrine?)

2) Urban systems

Andy shows a modern system that was bought in Jakarta and put in to cater for a densely populated area which needed a collective system in Aceh, Indonesia (which looks like more or less a permanent solution). But the agency gave in and gave everybody individual systems (Andy says: in hindsight we should not have given in as for the long term it meant contamination risks).

Some lessons learned:

- Important to get the experts in from the beginning to give a good technical view
- Differencing views/battle of wills is not desirable
- Available expertise may not always be the expertise
- Agencies become construction companies, but they do not have the capacity for that – they are normal NGOs
- During emergencies many improvement agencies that have funding often go off and do their own thing. You don't have to join in with the wash cluster coordinators, but it is good if you do.

3) High water table

Contamination of groundwater

Lateral contamination

With high water table the movement of water (and the contamination) is very slow (depends on the rainfall). All pathogens have been destroyed if there is more than 10 days travel through the soil; however the nitrogen is still there. (They recently found a Roman latrine in Britain in saturated soil where the content is still nitrogenous).

Need to produce more evidence base and documentation on contamination of groundwater, which is clear and easily digested by emergency people.

Other problems include:

- Leaking septic tanks, badly constructed latrines
- Soil characteristics: eg Goma: classic nightmare – digging away a pit takes ages in the hard rock and then layers of softer material/ cracks where contamination can travel a long way (eg DRC)

Vertical contamination

The Oxfam research has been more preoccupied about vertical contamination – ie vertical transmission of excreta around wells from rainfall getting into the wells.

Lessons learned:

- Good to invest in the superstructure from the beginning – an issue of dignity as after 3 month the plastic sheltering the pit is ripped and then the agency is gone which turns many latrines into disuse
- Need to move on to local materials
- Need to get the water authorities enthusiastic and active (governments take it on as a campaign (Pakistan vs India)
- Lot of scope for development for rapid septic tank in high water areas
- Oxfam and IFRC are sharing info on design of toilets which helps

Weakening of embankments

Picture from Bihar: building latrines during floods on the rim of the embankment, which weakens the embankment for the next flood. People don't use latrine on stilts (but do open defecation). High water table means the need to build latrines on raised land, weakening the land.

Other issues discussed:

- **Color of the slab:** There are a few examples of interagency product development – MSF experimented with the color of the slab. Blue attracts flies, so now the model is terra cotta coloured.
- **Gender aspects - Women's washroom:** Working in a strict Islamic environment it is extra important that women can feel safe, as well as the toilet is an opportunity to get together to talk with other women
- **What is in a name?** The name for the VIP latrine has made a disservice (as if it were the cream of latrines). Often there are outdated views in government bodies, which are unaware of new technologies.
- **Importance of local champions:** The sanitation situation of schools in Malawi is horrible, apart from one great exception where the headmistress had a vision of how she wanted her kids to do sanitation.

2.2 "Emergency Sanitation"

Libertad Gonzalez, IFRC

Libertad explained the structure of the IFRC emergency response units (ERU) including one on W&S, which includes a module on sanitation & hygiene promotion. She then described the development and main components of a rapid latrine that has been adopted by the IFRC .

The rapid latrine

The rapid latrine is built to cater for the first 1-4 weeks (which includes pit latrines with plastic slab, and a superstructure with wooden frame and plastic sheathing). The plastic often gets ripped and in terms of dignity and security the IFRC was not happy and instead moved to a prefabricated superstructure that can be shipped and easily erected over the latrines on site.

Design principles for the rapid latrine:

- Easy ACT assemble, clean and transport
- Rapid assemble (20-25 superstructures per day)
- Light weight
- Durable for 3-6 months and stable
- Cheap

3 years ago IFRC started to ask for tenders and got a response from suppliers. The UK Red Cross showed a high commitment and a very good support .
The options offered were 1) corrugated plastic 2) plywood 3) foam board

Libertad outlined the different good and bad qualities of the different materials, for example corrugated plastic is very durable, light and easy to assemble, but is very expensive due to twin wall material (oil price influenced?). These models have been deployed in Pakistan and Zimbabwe.

Technical queries on rapid latrine: william.carter@ifrc.org
Hygiene promotion box: libertad.gonzales@ifrc.org

Plenary discussion:
can be stolen, roof (when it rains & hard wind), if someone falls down, reuse of structure, environmental pollution, can be built everywhere? (no)

2.3 "Disability and Sanitation"

Vincent Taillandier, ACF F

Vincent outlined challenges of disability and sanitation during emergencies. This is a group not always catered for although 1 out of 5 people can be considered disabled in an emergency.

How can toilets be adapted to disabled? For wheelchairs a bigger (Nag magic) slab can be produced, equipped with accessories (grips), which could be coupled with needs for children, another forgotten group. Accessories would need to be protected from the sun (Zimbabwe example) where they go pear shaped after a week under exposure. Now the production is in the development phase, looking for funding.

Issues of manufacturing
The group discussed how manufacturing could be improved and Gert argued there must be a benefit in bringing in private sector as they have a lot of knowledge, and could solve problems (eg in Zim) Andy responded that they have tried doing this, but it is a long process and difficult to find a plastic manufacturer and once you do, the supply can be unreliable.

Suggested reading: *Water and sanitation for disabled people and Other Vulnerable Group*By Hazel Jones & Bob Reed

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2.4 "Children sanitation in emergencies"
Karine Deniel, ACF E

Karine outlined the challenges and solutions associated with children's excreta during emergencies. Overall there is a lack of attention to this issue and there is a need for implementing suitable accessories and trying these out in pilots.

Age factor
Children need different excreta disposal facilities depending with age (Curtis et al 1995) (ADAAG 2002)

- Under 12 months (cannot control defecation)
- 12 month-3yrs (can start to walk)
- 3-12 yrs (can control but have no privacy or gender issues as adults)

Challenges:

- There is a need to prioritize excreta disposal of children in the first phase of emergency (more hazardous contents of children's excreta)
- No data for child morbidity for below 5 yrs in emergencies.
- In general there is a lack of guidelines and documents → need guidelines
- Lack of programme setup – childrens' excreta should be included in the assessment and monitoring part of all project cycles → need assessment & training
- There is no systematic approach in emergencies context → need systematic approach
- Waste management very important as nappies pollute (Kosovo) → Hygiene promotion definitely more important than just giving out nappies
- Non disposable – problem of washing, when you don't have water to wash – same issue with hygiene pads for women

Issues with sanitation & children:

- Fear of falling in the pit (> small drop hole / potty, handle), darkness (> no roof, no door, attractive and bright construction), snakes and other animals,
- The smell and dirtiness is an issue (> cleaning). No latrine - no school
- Kids not using nappies control their defecation more. The mother needs to take care of the excreta, but training is needed so it is mostly a problem of software
- Many examples, but not documented and evaluated or put in practice

Sanitation systems designed for children

- A lot of research on school sanitation in UK
- Design hand washing facilities for smaller sized people
- Trench latrine for children, putting children between legs of the mothers
- Use of chili – then you know when the children will go to the toilet

- Just provide the slab and no superstructure. No roof and no door is good for kids – just a slab is needed (WEDC example)
- Put the toilet near the female (Bolivia)
- Adult latrine with accessories adapting it to children (staircase, potty) or childrens' latrine next to the adult one

Recommendation
The recommendation is to implement pilot projects in 2009 with a systematic approach

Future ideas: Do CLTS with children, Fast CHAST, Develop a framework for age, emergency phase and type of emergency

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2.5 "Decision Support Tool"

Gert de Bruijne, WASTE

Gert presented a decision support tool (developed mostly by David Castellano) that would help select an appropriate sanitation system. The aim of the tool is to help in the big screening to try to avoid the biggest mistakes. Pictures help people at local level to understand the sanitation systems presented in the tool.

The tool encompasses an entire system from 'cradle to grave' of different functional groups from 1) user interface, 2) storage, 3) emptying & transport, 4) treatment, 5) reuse, 6) disposal. It also considers the difference flows: black water, grey water, faeces, urine and storm water. For each sanitation option it outlines its technical properties, its system assemblage, cost evaluation and sustainability.

Gert wants to develop it to a training tool (game) in the virtual world, which could be suitable for engineers. The plan is to get it in Spanish and test it in Latin America

One idea is that the decision support tool could be launched on the sanitation Wikipedia at www.akvo.org and professionals would to update and extend the content continuously.

Andy thought the tool has a lot of potential. In order to make it useful for emergency situations, the time factor should be included in one way or another.

2.6 "Eco San for emergencies"

Brian Mathew, independent consultant

Brian outlined some important ecosan options that could be suitable for emergency sanitation. The main benefit of ecosan is the addition in terms of organic content of the soil, which increases the ability of growing fruit and vegetables, that in turn decreases dependency in a camp situation. It also decreases the amount of liquids (and therefore the volume) in the pit which is important for sustainability (long life) for the pit, and UD toilets enhance the die-off of pathogens.

Key issue – when is a good time to implement ecosan:
- Ecosan is not relevant for the immediate phase of emergency, but when is a good time? When does productivity become important?

- Some argued there is room for thinking about immediate application of UD from day 1 and onwards, but there were converging views about this and someone did not see it as an option in camps with 30,000 people,
- The issue is also that if you start UD after 6 months, there is very little funding available (you get all the funding at the beginning of the emergency) What happens after? We got to take on that challenge (Andy).

Challenges of ecosan

- Instruction is needed for ecosan toilets, which could be combined with health education.
- Hardware is needed
- Cultural acceptance is important
- If you don't need so much agricultural production – ecosan is not so useful
- Not direct application on vegetables recommended. Thor Axel Stenström: It is ok to use urine on crops but not on tomatoes, strawberries etc
- Takes up some space (arbor loo), which is not available in a crammed camp

Different types of technologies

- Arbor loo
- Childrens loo (no superstructure)
- Fossa alterna – add soil and leafs and grass – everything gets in – full – seal and move slab = second pit
- etc

Ecosan influences agricultural result

- Improved organic content of soil has an impact on moisture content of soil and plants do not wilt during dry periods.
- The yields are much higher and creates extra months of food (3-4 a' 50 kg bags of maize per family)

Who is ecosan suitable for?

- Ecosan is a household option, but also suitable for school & slums
- Arbor loo is great for children and people in general see the benefits with Arbor loo.
- UD good for household-domestic situation, but both need careful education. It is important not to oversimplify.

Issues with latrines vs ecosan

- Latrines stink → ecosan less so
- Latrines fill up quicker than UD toilets (Half an oil drum is often used (100 litres) - elevate or digging in the barrels - How quickly does that get filled up?)
- Latrines also cause problems with groundwater pollution (example from camp where they had to truck in water after 1 week) → capturing the excreta this would not have happened
- Andy: health risk in the handling of excreta in ecosan is quite significant
- Ecosan toilets help with food provision. People need to grow their food and we need to provide systems for that. How many emergencies camps are there and how many are more or less permanent?

Plenary discussion

- **The emergency challenge:** The following plenary discussion was interesting, where emergency reps stressed that during the first phase agriculture is not an issue, and there are much more pressing priorities. Also, doing simple things (throwing ash or sawdust into the toilet) is merely impossible.

- **Planning**: If installing ecosan, planning of how to organise the camp has to be done in the camp beforehand of where to position them as they need some space.
- **Communal vs household:** There was a converging view that ecosan was a household option or not communal and if so more suitable for a school.
- **Time:** There was also a diverging view of how long it would take to build an ecosan toilet – Gert argued that it would take the same time to build as a normal latrine.
- **Funding:** On the issue of when ecosan should become an option Andy said that often after 6 months the money is not there anymore to change the pit latrine to another type of toilet.
- **The concluding question**: What kind of toilet systems can we deliver from the beginning that they can work as a latrine in the beginning and then we can turn it into an ecosan facility after a while and implement a more sustainable sanitation system.

2.7 "Ecosan in Emergency and Reconstruction"

Daudi Bikaba, Oxfam UK

Daudi presented on the topic of ecosan in emergencies, and gave a few examples of projects done by Oxfam. The main questions he posed were:

- How soon can be build ecosan?
- How can we scale up and how many can we build? (time and costs)
- How much can be done at household level?
- Cultural issues (acceptance)

Key points

- Skills, and materials are needed to build ecosan
- Household level works with ownership; at the community level you will need someone to take them on and maintain it.
- Ecosan is suitable if there are floods every year and where people get displaced every year to the same camp, where you cannot have a pit latrine every year. There you could reconstruct the elevated latrine into ecosan.

Daudi presented some **case studies**, some of which they would like evaluate:

- In one instance UD was initially successful but when people in the market knew that the tomatoes had been grown with urine, people stopped buying. However for the crops and the yields from the trees it was evident that ecosan had made a difference.
- In Zimbabwe the ecosan project got acceptance from the authorities as Oxfam presented it as a way to produce fertilize and improve agriculture, a well needed issue there. It helped if it looked like the Blair toilet, that people already were familiar with.
- In Bolivia they installed elevated latrines but did not train people properly – they had high level water tables – but no capacity to deal with ecosan.
- Raised latrines were introduced after a flood [in Bolivia]
- UD – the urine was channeled via a tube to jerry cans – but Oxfam had to go back to replace the cans with soakaways as the jerry cans were too useful and they disappeared. (Here some argued that it was the urine that they stole.)
- Example from Cote d'Ivoire

Comments:

Gert thought that an ecosan toilet could be built it in a very simple way, and that we should look into that. Peter suggested that for this some of the packaging could be used, already distributed during emergencies, however Daudi made his reservations against that.

2.8 "EcoSan Accessories – Emergency workshop"

Ron Sawyer, SARAR

Greywater management - How to divert, treat and reuse greywater.

Explanation of different types of treatment of excreta:

1a. composting hot (compost heap) > killing all pathogens
1b. composting cold (arbor loo) > killing not all pathogens
2. dehydration

Different applications of urine

- Household use of urine
- Experience from public urinals, sports fields, carnival
- Example from Municipal compost center (Adding urine to wood chippings to enhance the process of the composting)

Health issues

- Prolong storage is not necessary if urine is applied within the family compound and/or on crop which would be consumed within the family, since within households there is already relative risks of exposure to related pathogens in a family group anyway. But certain guidelines apply if exporting urine or urine fertilized products outside of the household.
- Closing the loop also means human waste ends up as fertilizer eg Pharmaceuticals. Is there any risk for contamination of food? Difficult for the plant to take it up and soil also filters it. Pharmaceuticals are more harmful ending up in the water ecosystems.

Examples

- Example Chiapas, Nov 2007 flooding in 55 municipalities Caritas San Cristobal
- Eg Rainwater harvesting
- Eg Bolivia – ecosan in emergencies
- Unicef, & Fundacion Sumaj Huasi
- Saneamiento in situ
- Brasil,.Bolivia, Colombia, Ecuador, Guyana, Peru, Surinam, Venezuela

Sawdust against flies

- Mix sawdust with something else otherwise flies
- However flies go down deeper - they can burrow 10 cm in soil. Flies come before you have managed to cover it.
- Adding large quantities of Ash to the toilet can stop the composting process. Also adding sawdust and/or dry earth is a method, but these are too complicated to implement during emergencies

Adding materials to excreta (which is difficult in emergencies):

	Reducing smell	Drying	Raising pH	Killing bacteria	Displeasing insects	Adding carbon
Ash	Yes	Yes	Yes	Yes > no agric. use	Yes	Yes
Sawdust	Yes	Yes	No	No > agricultural use	No	Yes

Adding materials is difficult / impossible to organize in emergencies. Diarrhoea, often occurring in emergencies, makes dry UD toilets less of an option anyway.

Eco Sanitation during emergencies

- A Solution during emergencies could be Urine diversion and carrying away fecal matter. With a certain amount of land this could be a good solution. Example in urban India: where plastic drums of excreta are removed every day.
- **Ron** says that we need to recognise that urban agriculture exist, but Victor (Vincent?) says that in an emergency situations most people don't have access to the land to cultivate.
- **Hygiene education is important.** How do you introduce it during the early stages of the emergency?

Urinals making a difference:

Reducing the liquid in the toilet is important for prolonging the life of a latrine and start the composting process of fecal matter. Agencies don't do urinals very much and Andy poses the question how much difference a urinal could make. Ron says it makes a big difference and it could extend the life of the pit latrine. For example, when humans only urinate there is more liquid coming out than otherwise. Andy thinks that if we can keep out urine from the pit latrine this could be a huge change.

The difficulty would be to contain the faeces. Provision of better bathing areas would be important to reduce water in latrines from anal cleansing, till it will be difficult to make sure people don't do washing and anal cleansing in the latrine (which will fill the latrine with liquid). It would be good to find out how much difference would (UD) make in the life of a composting toilet?

Lessons learnt

- Importance of accountability – some control the use of the toilet with a lock – which limits the use to certain groups of families, which has worked, they understood and protected the toilet
- Following through is key – in Dominican Republic people do not want to do it; they wait for a donation
- Importance of monitoring, controlling and giving training - Need to monitor if barrel gets too full. Unicef used the same design in the same country as successful case study and it was a disaster - after 1 week the toilet was full and nobody wanted to empty it. Had to empty with truck and pump (no plastic bag was used) then it was emptied in the field in the camp.
- Logistics and Handling is very important - Examples from Burma where a big truck was taking away the excreta and leaving trails of waste through the camp (not very hygienic).
- Urine is very corrosive in metal and feces in over time - Oxfam experience of urine getting into the barrel and corroding the barrel so that the bottom fell out.
- Waste can be used as a resource - in Mexico everyone cooks with liquid gas

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2.9 "Linking relief, rehabilitation and development – a role for urban agriculture?"

Femke Hoekstra, RUAF / ETC

Femke's presentation had the message: Let's think of agriculture in refugees camps, there could be a lot of potential

Plenary discussion:

According to Care and Oxfam there is always some kind of agricultural activity of growing vegetables in the camps (Andy, Paul, Toby). Vincent (ACF) had some different experiences he shared where people cannot do this as the situation is too unstable and people move around a lot or must pay to cultivate the earth. In any case, when people do grow they do it where it is possible,

even though governments don't want people to. Doing agriculture is thus an important way to reduce dependency in an emergency situation.

Some felt uncomfortable promoting ecosan in camps (Vincent). Some felt that food security should be explored in the right place in the right time, but that there was room for improvement (Toby). Gert thought it to be an interesting issue to look at for the future, but that the agricultural sector should be more interested than it is currently.

Reference: www.ruaf.org UA Magazine

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3. VIEWING OF: "THE HUMAN EXCRETA"

Info: http://www.thehumanexcretaindex.com/

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4. ORGANIZATION AND DIVISION IN WORKING GROUPS

The group divided itself in three working groups that worked for 20 minutes, and then presented their results in plenary.

The working groups:

- High density (urban areas, camps)
- Flooding and high groundwater tables
- Unsuitable soils (rocky and unstable soils)

Each group looked at…

- Challenges
- Specifications
- Software approach

…and taking into account three cross-cutting issues:

- disabled
- children
- gender

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5. WORKING GROUP PRESENTATIONS

5.1 High density group

(Slides in the workshop CD)
Reported by: Gert de Bruijne

Challenges:

- space
- construct new facilities
- how reuse them, and give them longer life
- social cohesion
- involvement of private sector

There should be a better effort on understanding disaster in urban areas.

Countries and cities are not prepared for disasters including plans or institutional arrangements.

Recommendation/solutions:

- Accessibility: providing potties for children
- Longer life, with urinals
- Pushing hygiene promotion in the first initial phase
- Implement contingency plans
- More training in disaster in urban areas, and with all the already existing entities

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5.2 Soil: "unsuitable soils"

Reported by: Paul Shanahan

Challenges:

Identified problems	**Existing solutions**	**New solutions**
Caving Liquids (urine, washwater, infiltration, liquid faeces); high transmissivity / high groundwater table Dry sandy soils	Recycled food bags, sand filled Local materials (e.g. bamboo) Masonry (concrete rings) Stone, mud bricks Recycled oil drums Prefabricated liners	MSF works on stackable (transportable weight and size) prefabricated PE liners, bolted alternately upright and upside down (see picture below) L shaped stackable concrete lining Elevated, shallow + broad instead of deep and narrow constructions UD helps stability and reuse, but does not guarantee dry contents
Difficult excavation (rocks, boulders)	Fissures Reuse old excavations Manual efforts Raised profile Desludging (diaphragm mud pump, supernatant water pump)	
Heavily vegetated / rooted	Not discussed	
Expansive soils	Not discussed	
Slopes	Not discussed	

Recommendation/solutions:

Pre fabricated liner, criteria to be checked:

- Transport: weight, volume (stacking), size (pallets 1200*1000 or 1000*800)
- Strength (to resist pressures)
- Access for digging
- Costs
- Assembling
- Connecting (to nag slab)

5.3 Floods and high water

Reported by: Toby Gould

Challenges: containment of excreta in limited area surrounded by water (transmission of pathogens)

- Limited space
- Access
- High water table
- Digging into embankments

Time considered 3 weeks-3month → temporary situation

Components:

- UD-slab / seat
- Impregnated card board box can be moved away
- Optional frame to support the slab
- Urine to soak –away pit
- Bin with soil, leave, grass

Training package:

- Demonstration exercise
- Prepared visual aids materials
- IEC materials (user instruction leaflet)

In which to take into account:

- Rapid adaptation to the context
- Build on what is used in the community

Recommendation/solutions:

- Risk tree: visible routes of contamination
- Able to adapt response to risk
- Better capacity to reduce risk
- Separate grey water + urine→ slab
- Promotion materials prepared before

Plenary discussion:

Problems foreseen for the card box, were: moving and storing; need to get ideas from companies

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6. DISCUSSION ON INNOVATION WITH PETER VAN LUTTERVELT

Peter posed to the group the idea to have private sector expertise come in and 'think outside the box' to develop new innovative solutions. This could for example be in the form of a workshop?

The response from the group was sceptical and the proposal was turned down. Andy said that bringing in others from the outside has been tried on in the past where most solutions were provided by the emergency agencies anyway, after spending a lot of time 'educating ' the others on emergency sanitation. Also, from MSF there was a lot of bad experience with being associated with certain companies, although their expertise in innovation is well documented.

Emergency agencies are also interested in keeping experiences and lessons learnt and products in the public domain, where there is an issue of property rights that needs to be clarified involving private companies.

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7. LAST PRESENTATIONS AND FOLLOW UP DISUSSION

7.1 "Emergency-reconstruction"

Arne Panesar

Arne gave an introduction to Ecosan and explained that it is not just a concept, it is a philosophy. When people describe it as a toilet this is distracting from the main idea namely that you have to look at the entire system. The SuSanA project (Sustainable Sanitation Alliance) is dealing with different aspects of sustainable sanitation and works through different working groups – one (WG8) is on emergencies. SuSanA is collecting data, and produces technical data sheets for different components of ecosan. There are a lot of experiences that are not on emergencies, but can possibly be applied to those. For that we would need experience of what you can do what you cannot do. Could an emergency be a sort of opportunity to introduce ecosan?
In all the places where we now have installed functioning ecosan toilets we could learn from how people handled disasters if they would occur there.

7.2 " Wash cluster emergency technical training"

Toby Gould

Photos can be found in the "picture folder" in the workshop CD

Toby explains about the training RedR performs about 1-1,5 days training of excreta disposal resp short term disposal flood situation. The next phase will be to do training for urban contexts.
Toby presented some ideas for the outline of a course in emergency sanitation providing basic information (including cross cutting issues of gender, HIV/AIDS, age, disability); targeting primarily local government and local NGOs, then in a second round targeting national and international staff of INGOs There is a need to provide more info on urban sanitation for agency staff.

Examples of contents of the course:
Short term displacement (Nepal) of people vs long term displacement (Kenya, Somalia, Indonesia)
Short term:

- assessments
- immediate solutions
- constructions
- case studies

Long term:

- Cluster
- Assessments
- medium term solutions
- case studies
- Institutional issues
- What really happens in floods – high water tables – not just at basic level

- Urban sanitation introduction to sewerage
- Local regulations, clear examples of best practice (e.g. privacy /dignity)

The plenary discussion listed some ideas for further content of a course such as:

- Ecocan crash course for total sanitation trainers (scope: build / reconstruction of UD)
- differences of urine/faeces in terms of nutrient and hazardous content
- urine disposal
- fossa alternas/arbor loos as a medium term sanitation alternative
- mapping of drivers in medium term
- risks
- logistics / transport / disposal in high density areas
- decision tree (UD – pit)
- Hygiene Promotion materials / mobilisation
- operation and maintenance

7.3 Follow up

Åse Johannessen, IWA

During the workshop Åse had been collecting action points and was now wanting to put an action plan for each of them and assigning people to lead on each. The list below headlines some issues and in brackets are names for people taking these issues forward as action points. Finally some of the ways the group would coordinate in the future was discussed as well as a quick immediate evaluation of the course.

Urban/camp situations

Introduce hygiene promotion [for children?] to the wash cluster **(Libertad)**

Technologies (general) (Gert)

Create a working group on Urinals or UD/multifunctional slabs (urban context, accommodate cross cutting issues) in order to:

- 1) prolong the life of the latrine
- 2) combine with urinal
- 3) accommodate reuse concept

Find alternatives during first phase emergencies

- Alternatives and additions in first phase emergencies, toilet bags etc → Present state of use and products in development – collate alternatives **(Oxfam)**
- Pilot to see if potty-system is working **(Karine)**
- (BASF outcome for biodegradable toilet)
- Get packaging industry (Van Leer) involved **(Gert)**

Lining in unsuitable soils

- Problem statement and solidify criteria for lining in unstable soils… send to manufacturers/ private sector and see what happens **(Paul)**
- Send to manufacturers (tbc)

Understand urban context better for disasters (Karine)

- Guidance of working better with urban sector and the government
- Scenarios disaster plans
- (Susana wg6 on cities)

Flooding risk tree

- Decision making (context, behavior) flooding deserves extra attention
- Action for Wash cluster (**Andy** peer group flooding wash project)

Decision support tool

- Tool to save time in making decisions about what technology **(Gert)**
- Next steps → comment on the tool (all)

Recommend pilots and documentation

- Recommend documentation of already existing case studies of best practice **(Ase)**
- Document **(various agencies and consultants?)**
- Update of manual at some point (talking about: Excreta disposal in emergencies?)
- To what extent can we promote new technologies such as ecosan (UD) in emergency situations? (to be linked to technologies (above)?)
- Piloting of take up of new technologies in emergencies (to be linked to technologies (above))

Mapping of all contexts

- Matrix of what works where (water scarce conditions etc…)? Alternatives vs aspects – huge task, needs updated, some bits already done (capacity mapping)
- Case studies SuSanA
- Action –> see Yellow pages (below)

Yellow pages (online)

- Useful as a lookup in emergency situations **(Arne)**
- Needs an effort and funding e.g.

Ecosan crash course 1 ½ day (Toby & Niels?)

- Difference between urine & faeces
- Available methodologies
- Build/reconstruct UDDTs, Arborloo
- Identify (unpack) what extra work/effort (benefits) it means to implement in community
- Mapping of risk & drivers in medium term (LSHTM)
- Urban/institutional sanitation
- Transport/logistics
- Decision support tool/tree
- Hygiene promotion materials
- Flies - Transmission routes (LSHTM)
- O+M
- Case studies
- Providers eg: India (Arne), Central America (Ron)

How to innovate and protect new ideas (Peter, please develop exact action points)

- Need to develop new ideas
- Middle step often takes time and ideas often end up being same as agencies own anyway
- Good experience to work directly with the supplier
- Need to find a way to get designed materials owned by Public domain
- Access innovators where that (owned by public domain) is guaranteed
- Need external engineers to help out & where there is trust

Future coordination – how?

- The members of this group should continue communicating via email and meet up when it seemed necessaryif there is a communal purpose.(WASTE follow-up. Link with SuSanA via Ase)
- No formalization of the group should take place (IWA & WASTE to ensure some way of continuing and communication)
- Avoid duplication with the 'Floods and urban wash clusters'
- Demand input from Susana & IWA (IWA has a Specialist Group on resource oriented sanitation)
- Action→ principle keep it small → link with WG8 group and other relevant experts with this group →report to Susana (Andy, Ase, Gert)

Immediate feedback about the workshop

- Good - Meeting of communities
- Good – there is resistance to change and need conversations about UD
- Need to sink in – different thinking: system vs technique
- A lot of opportunities to connect the communities and the thinking
- The rest of the comments on the course were requested via email to Gert/Niels (but none received)

Please provide feedback to these minutes to ase.johannessen@iwahq.org