

# Urine-Diverting Dry Toilet in Emergency Settings

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**OXFAM**

# What we know

In Bangladesh the most common disaster is flooding

- In many areas due to high water table and/or frequent flooding it is not possible to dig pit latrines.
- Flooding of existing pits or insufficiently raised latrine is an enormous public health risk
- When latrines are destroyed people revert to open defecation
- Frequent desludging of latrines is a time consuming messy business



# Comparative study of 3 Flood resistant & response toilet options used in Bangladesh

9 sites – 3 Organizations, Oxfam, JADE (Japan Association of Drainage and Environment) & Practical Action Bangladesh

1. Emergency mobile urine diversion toilet
2. Raised permanent urine-diverting dry toilet (UDDT)
3. Floating Latrines
4. Traditional Pit Latrine



# Portable Emergency UDDT



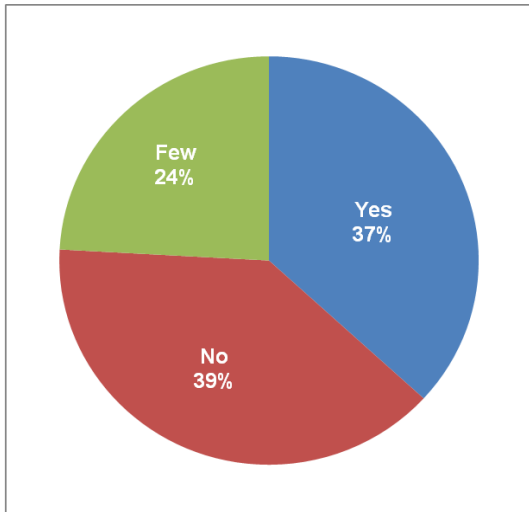
# UDDT as resilient option



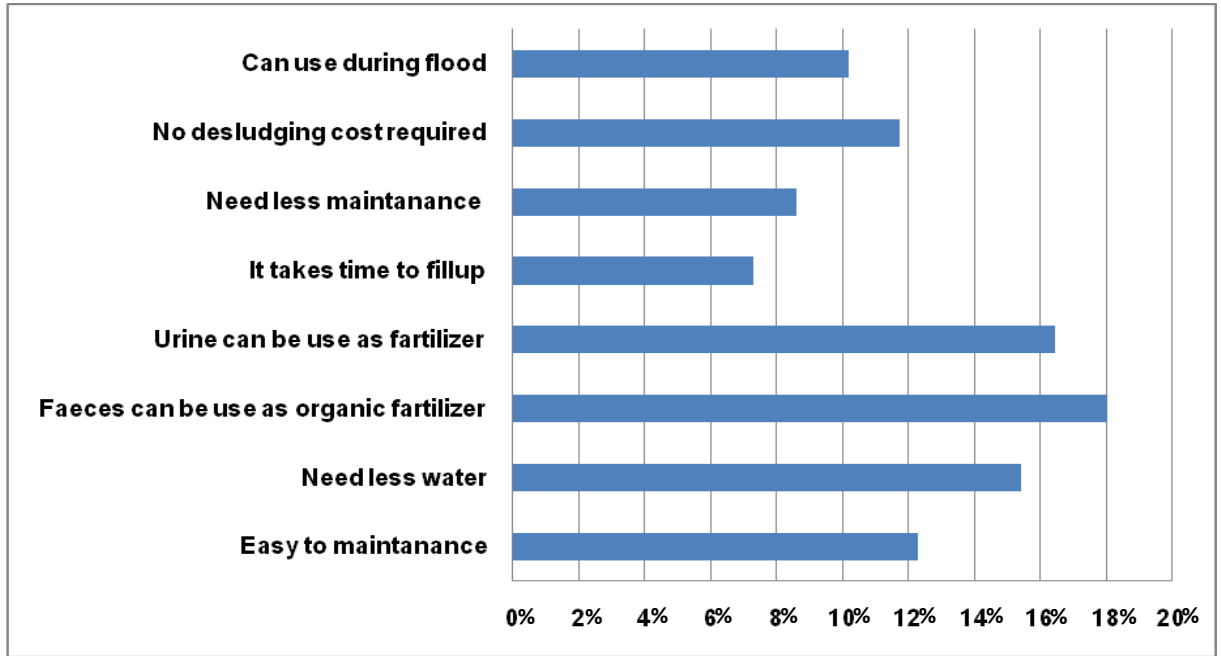
# Emergency Floating Toilet



# Study findings UDDT

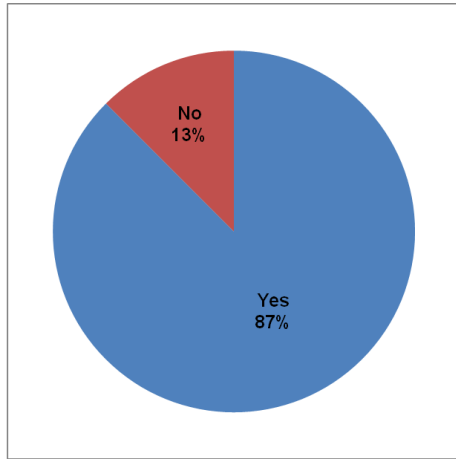


Cultural barriers

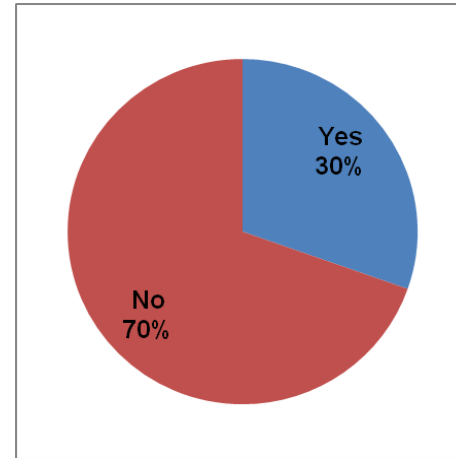


User comments

# Environmental and health aspect

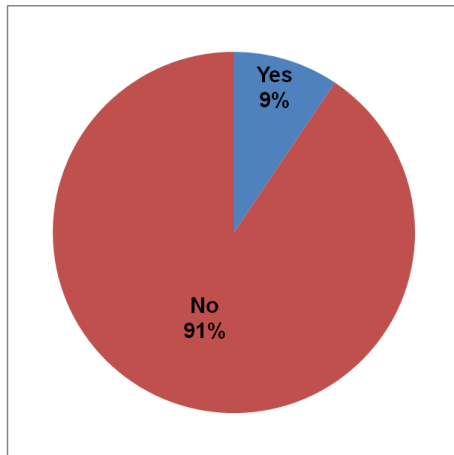


UDDT

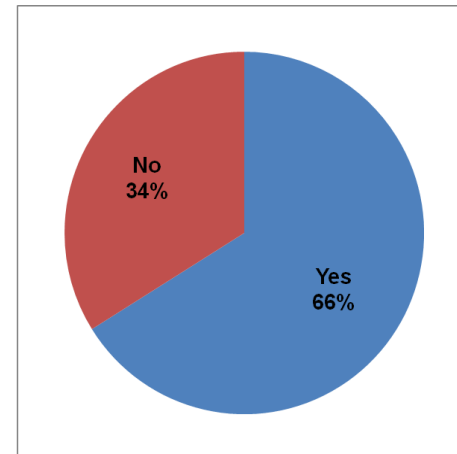


Traditional Pit Toilet

## Remain functional during disaster



UDDT



Traditional Pit Toilet

## Inundated during flood

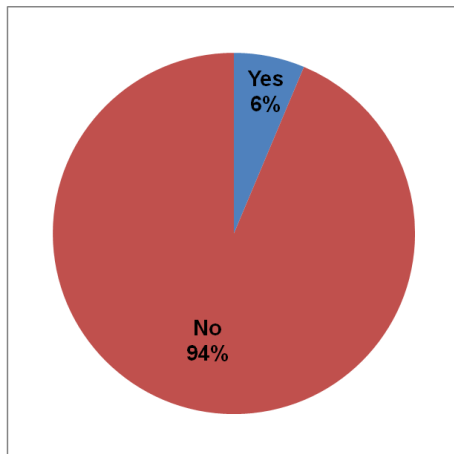




# Surrounding water contamination

Grade	No. Coli form count	Risk	Frequency	Percentage
A	0	No risk, WHO guideline value, no action required	34	34
B	01 – 10	Low risk, need action and follow-up	42	42
C	11 - <50	Intermediate risk, highly polluted, immediate action needed	22	22
D	>50	High risk, gross/highly polluted and not acceptable, suspend the source	3	3

Source: *Oxfam*



User comments

**Surface and subsurface water pollute by UDDT**



Table 4.14: Comparison of presence bacteria, parasitic protozoa, helminths in the different faeces sample of different organization

Pathogen	Symptoms		
<b>Bacteria</b>		Oxfam (one sample)	JADE (four sample)
<i>Aeromonas spp</i>	Enteritis		
<i>Campylobacter jejuni/coli</i>	Diarrhoea, cramping, abdominal pain, fever, nausea, joint pain, Guillain-Barré syndrome		
<i>Escherichia coli</i> (EIEC, EPEC, ETEC, EHEC)	Enteritis		Absent (three months observation)
<i>Plesiomonas shigelloides</i>	Enteritis		
<i>Salmonella typhi/paratyphi</i>	Fever - headache, malaise, anorexia, slow pulse, enlarged spleen, cough		
<i>Salmonella spp.</i>	Diarrhoea, fever, abdominal cramps	Absent / 10 g	Absent (three months observation)
<i>Shigella spp.</i>	Dysentery (bloody diarrhoea), vomiting, cramps, fever	Absent / 10 g	Absent (three months observation)
<i>Vibrio cholera</i>	Cholera - watery diarrhoea, lethal if severe and untreated	Absent / 10 g	Absent (three months observation)
<i>Yersinia spp.</i>	Fever, abdominal pain, diarrhoea, joint pains, rash		
<i>Clostridium perfringens</i>		Absent / g	



Pathogen	Symptoms		
<b>Bacteria</b>		Oxfam (one sample)	JADE (four sample)
Total coliform		43 MPN/g	
<b>Parasitic protozoa</b>			
<i>Cryptosporidium parvum/hominis</i>	Watery diarrhoea, abdominal cramps and pain	0 (Count/gm)	
<i>Cyclospora cayetanensis</i>	Often asymptomatic, diarrhoea, abdominal pain	0 (Count/gm)	
<i>Entamoeba histolytica</i>	Often asymptomatic, dysentery, abdominal discomfort, fever, chills	720 (Count/gm)	3000max 2200min (1 <sup>st</sup> month) 300max 0min(2 <sup>nd</sup> month) 0 max –0min (3 <sup>rd</sup> month)
<i>Giardia intestinalis</i>	Diarrhoea, abdominal cramps, malaise, weight loss	0 (Count/gm)	5300max 3300min (1 <sup>st</sup> month) 300max 100min(2 <sup>nd</sup> month) 0 max –min (3 <sup>rd</sup> month)
<i>Toxocara SPP.</i>			0max 0min (1 <sup>st</sup> month) 0max 0min(2 <sup>nd</sup> month) 0 max 0min (3 <sup>rd</sup> month)
<b>Helminths</b>			
<i>Ascaris lumbricoides</i>	Generally no or few symptoms, wheezing, coughing, fever, enteritis, pulmonary eosinophilia	160 (Count/gm)	700max 300min (1 <sup>st</sup> month) 0max 0min(2 <sup>nd</sup> month) 0 max 0min (3 <sup>rd</sup> month)



# Challenges:

## Portable Emergency UDDT

- It is unstable in high wind area.
- Salty ground (rust) cause damage to any iron made structure.
- Secondary treatment/ composting

## Floating Toilet

- Higher cost than normal latrine
- New technology for users
- Desludging

## Permanent UUDT option

- Need more space than traditional latrines
- Need to be careful about not letting water into feces chamber
- Poor families are unable to invest such an amount of initial cost for the latrine
- Construction is more complicated than pit latrine
- In some cases, the user feels uneasy using this latrine rather than ring slab latrine





**Any Question ?**

