Treating Waste Water at times of Cholera

Haiti 2010-2012

Presentation Sanitation Workshop DELFT 15 June 2012

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MEDECINS SANS FRONTIERES

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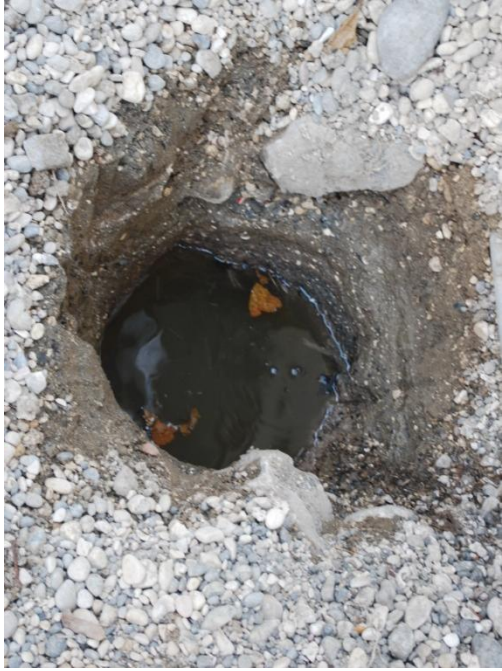
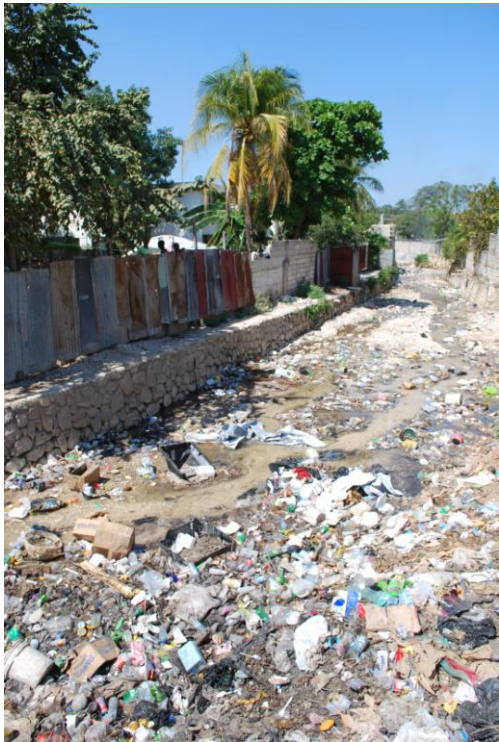
Why?

- Situations when waste water cannot be treated with conventional treatment (latrines, septic tanks, soakaway/infiltration trenches)
- No off site treatment, national regulations or ground conditions
- Risks of contamination and pollution

Reasons in Haiti

- Lack of space (urban area)
- High water table
- Proximity to river or sea
- No off site treatment/disposal site
- Security





Objective and philosophy of treatment

- Remove Vibrio Cholera
- Remove organic matter

  = efficient waste water treatment
- Simple + rapid + easy to put in place
- Easy to manage
- Demonstrate feasibility at scale and document the whole process

2 fundamentally different treatment methods

- Vibrio survival = pH 5 – 9.6

Method A

⇒High pH > 11.4

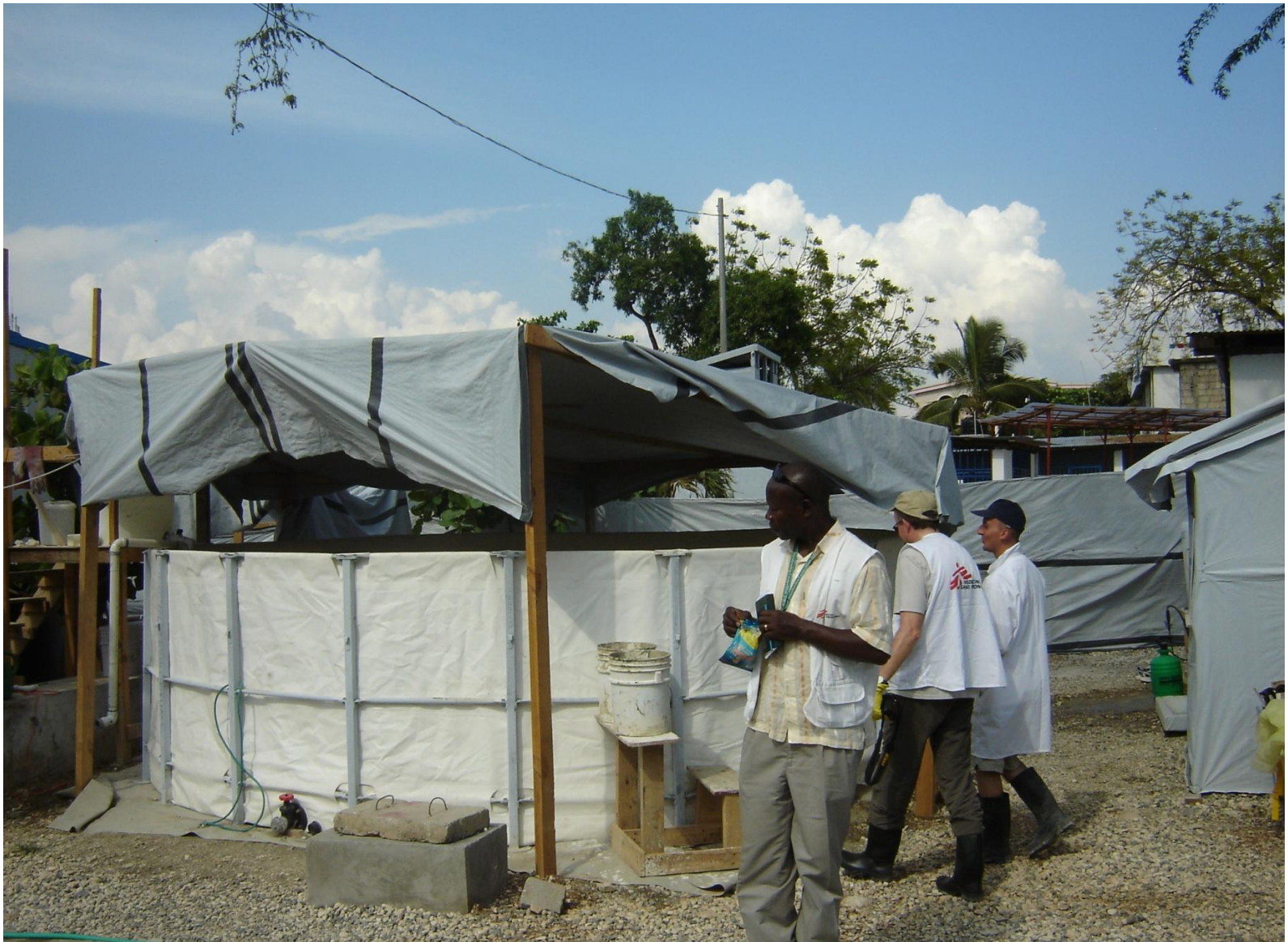
- Lime alone (A)
- Lime + magnesium (A +)

Method B

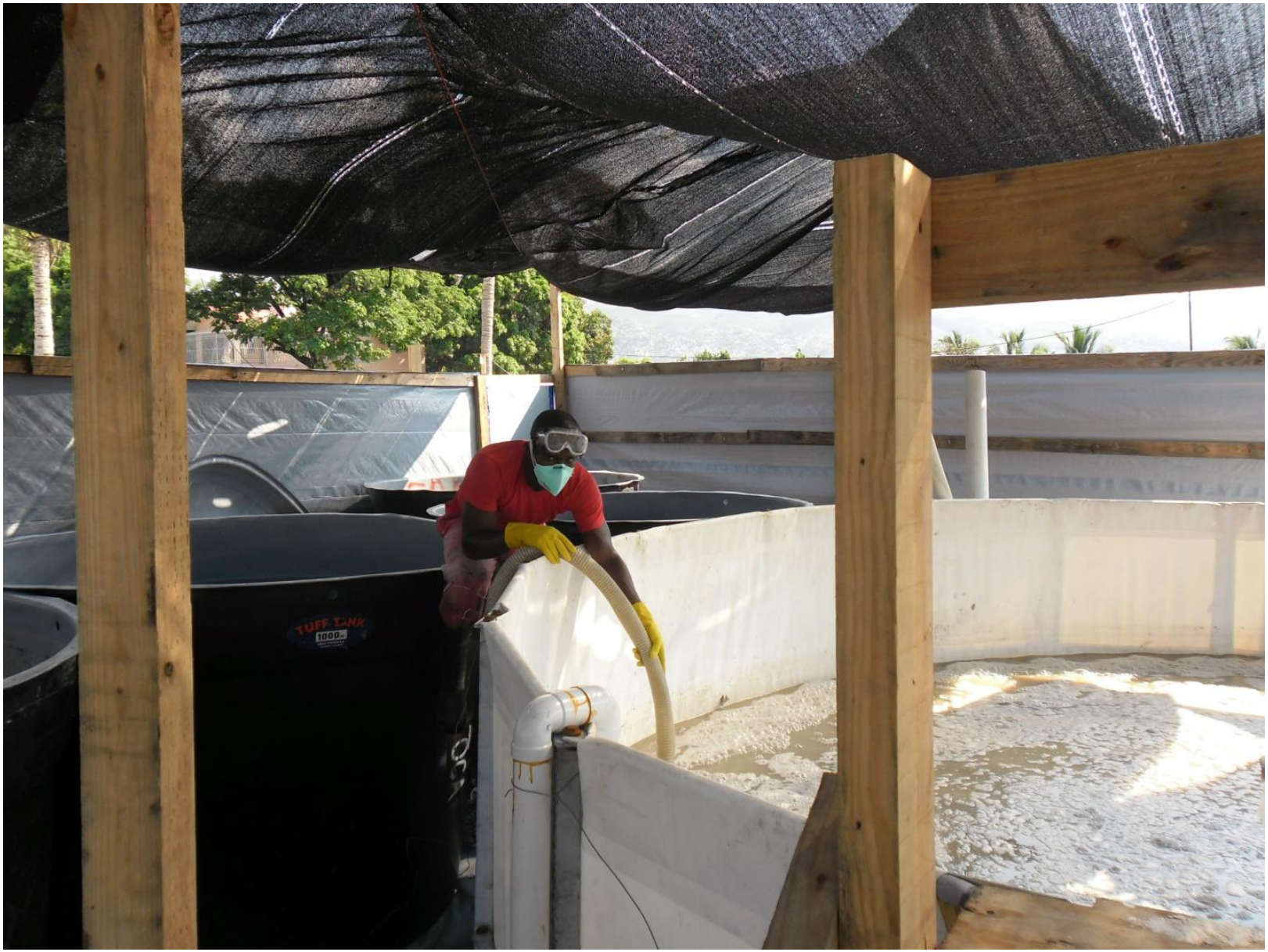
⇒Low pH < 4

Acid + coagulant (B)

Standard emergency equipment




TUFF TANK
1000L
HONDA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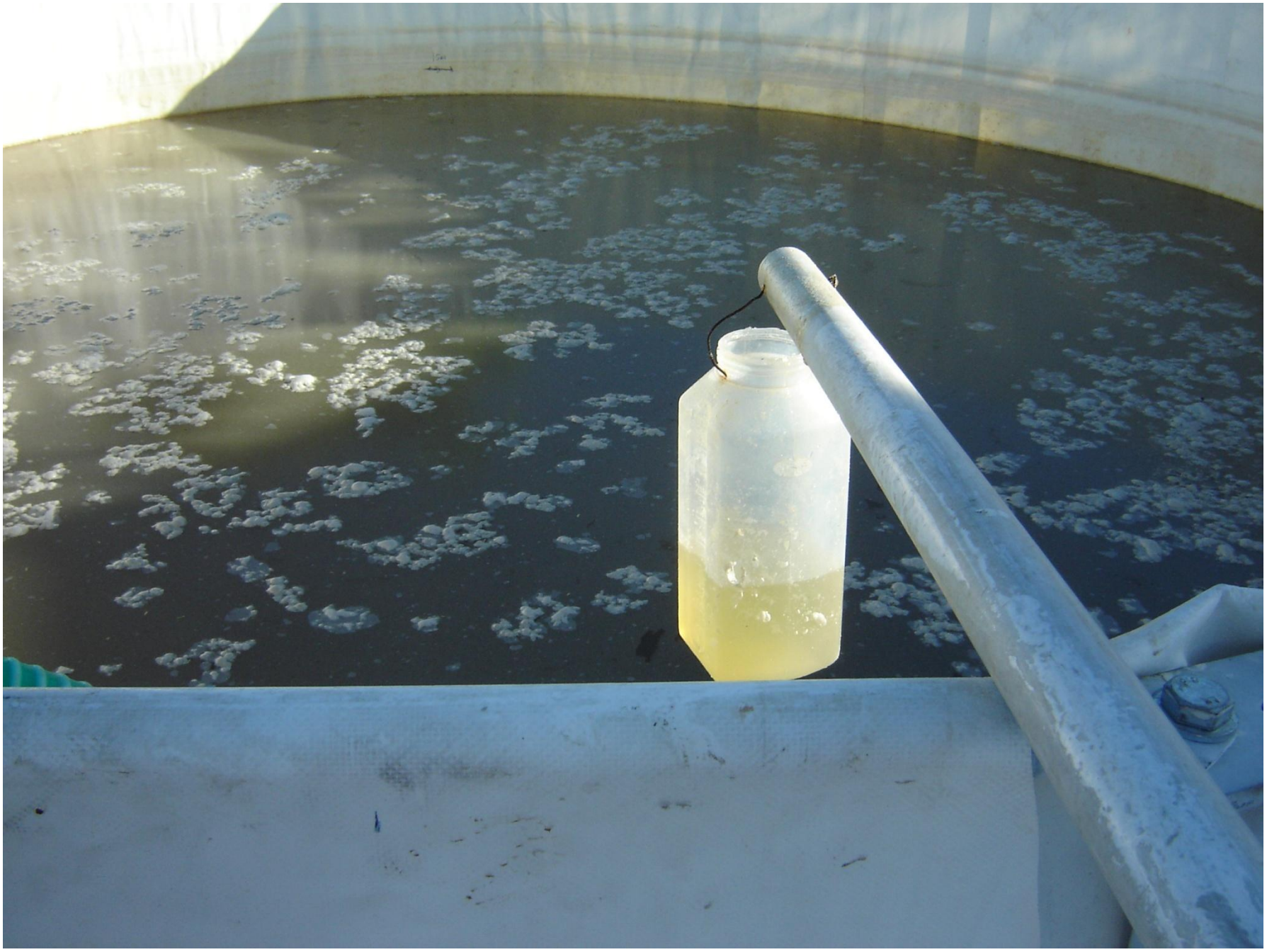


What ever the method

- It will produce sludge

Quantity?

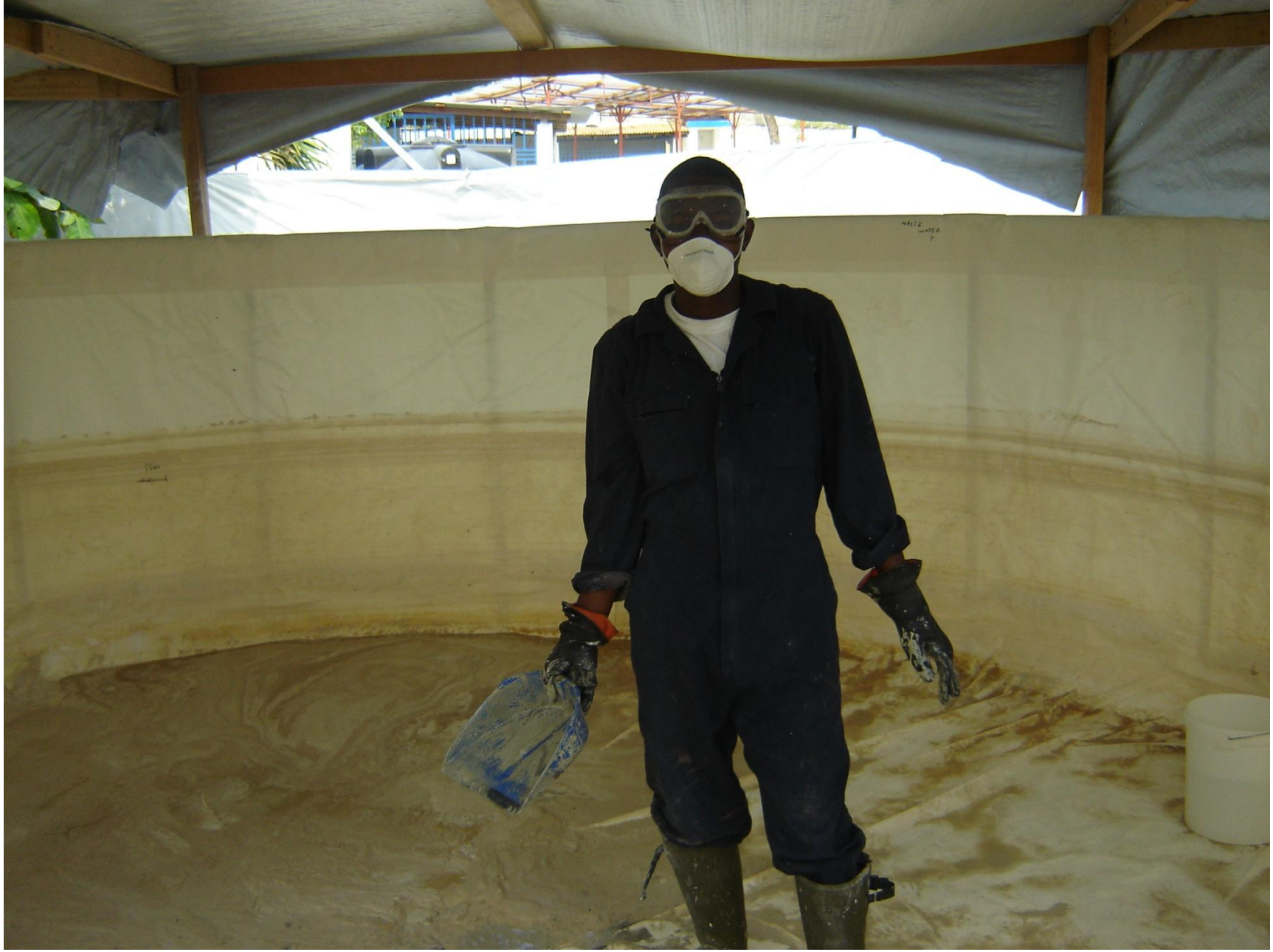
- Around 6% wet sludge
- We treated 450 m3 of waste water so around 30 m3 of wet sludge

Treatment method with lime (A)

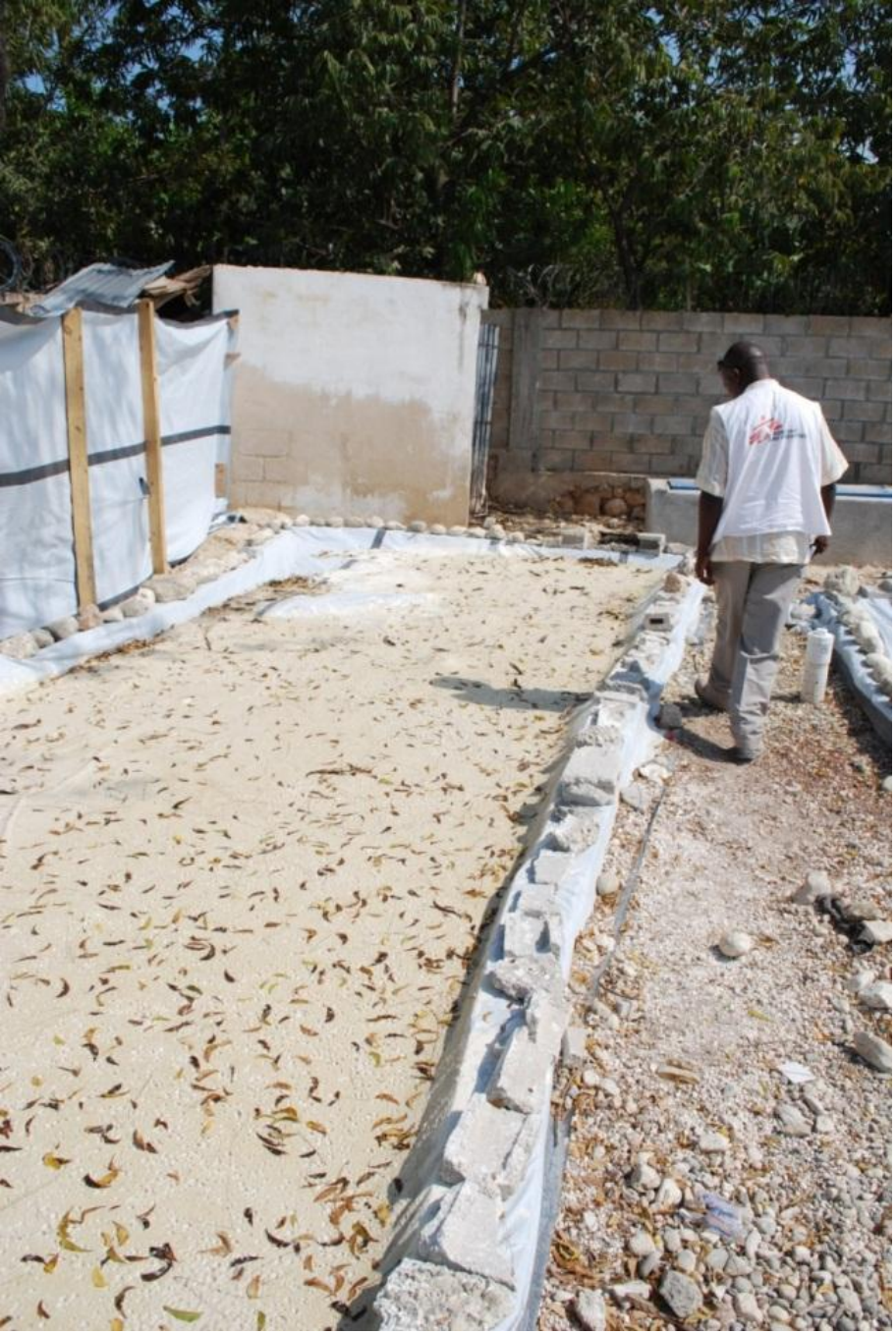
- Sludge pH > 11
- Storing sludge for 3 more days to increase disinfection
- Desiccation

Treatment method without lime (B)

- Sludge pH around 7
- Storing sludge
- Desiccation in small batches to control odor



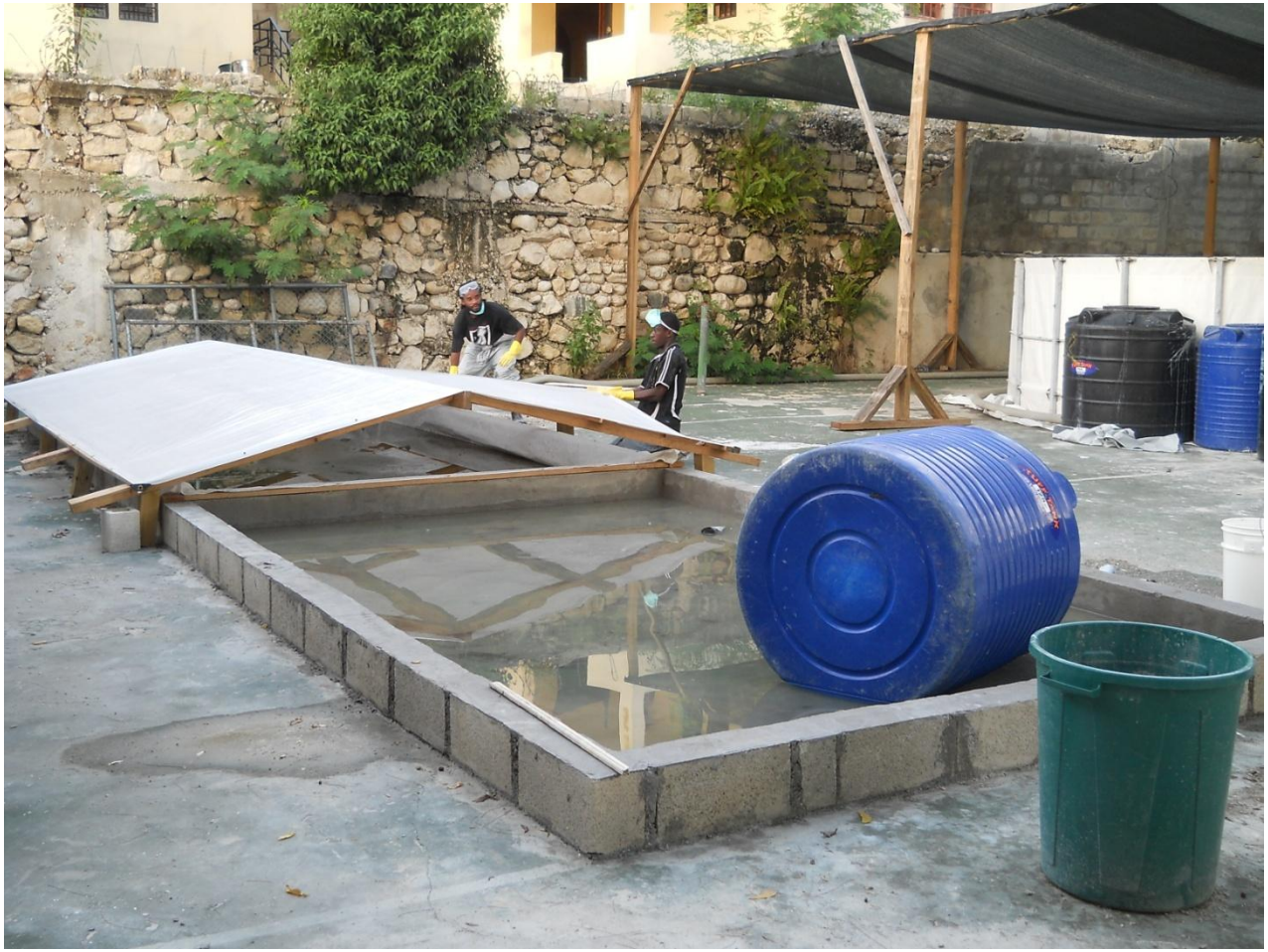
Storage



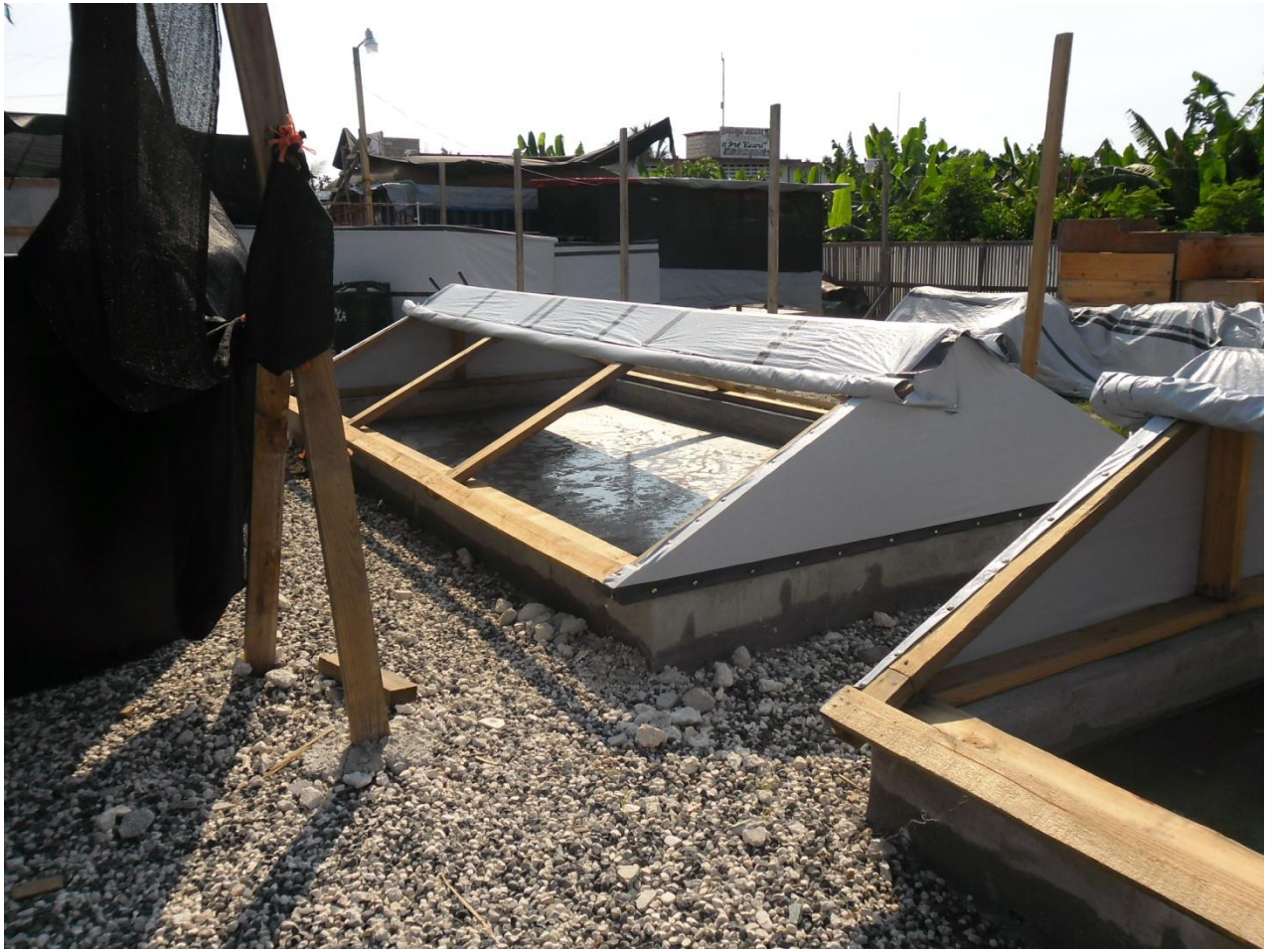
Drying beds

1st Prototype…

Improved drying beds

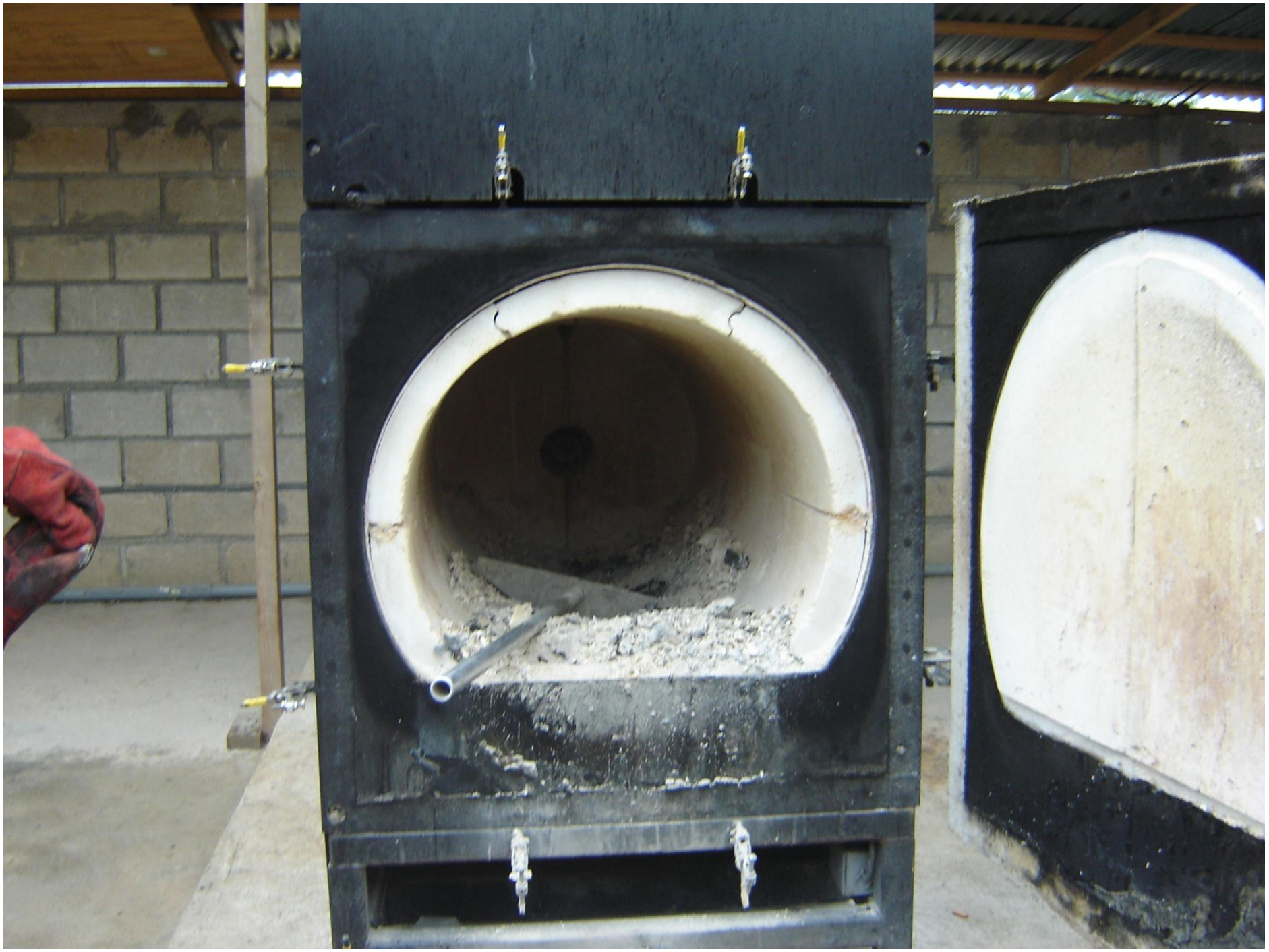


2012 model



Final disposal

- Incineration
  - Existing equipment for medical waste
  - Tried to re-cycle lime, but temperature not high enough
- Waste Pits
- Possible re-use, but did not even consider that option in Haiti.



Thank you for your attention