

Lesson Plan 20: Emptying Latrines and Transporting Sludge



50 minutes total

Lesson Description



Participants learn about manual and motorized methods to empty latrines and transport sludge. Focus is placed on protecting the health and safety of pit emptiers and the broader community when emptying latrines. This lesson plan presents several optional activities that can be used depending on time limitations and participant needs.

Learning Outcomes



At the end of this session participants will be able to:

1. Discuss factors for designing latrines that will be emptied.
2. Discuss the advantages and limitations of manual and motorized latrine emptying.
3. Identify health and safety measures to reduce personal and community risk when emptying latrines.

Materials



- Flipchart paper
- Tape
- Markers
- Sanitation System Design Workbook

Optional:

- Large bucket filled with dirty water
- Video: Emptying Pits: A Serious Business (9:09 minutes, available at: www.youtube.com/watch?v=r578JtJklyA)
- Video: Understanding Small Scale Providers of Sanitation Services (9:40 minutes, available at: www.youtube.com/watch?v=chGq3Q_momM)
- PowerPoint: Latrine Emptying Transporting Sludge
- Computer, projector and speakers

Preparation



- Review topic in Technical Brief Sanitation System: Emptying Latrines and Transporting Sludge
- Optional: Write the learning outcomes on flipchart paper
- Option B: Introduction: Fill a large bucket with water and mix in dirt

- Option B: Video: Write the following questions on flipchart paper with space to record responses below each one:
 - *What dangers do workers face when emptying latrines?*
 - *What dangers does a community face when latrines are emptied?*
 - *What are the pit emptiers doing to protect themselves?*
 - *What more could the pit emptiers do to protect themselves and the community?*
 - *What could the community do to protect themselves and the pit emptiers?*
- Option B: Video
 - Cue video on your computer so it is ready to go
 - Check that the projector and speakers are working
- Option C: PowerPoint: Latrine Emptying Transporting Sludge
 - Review the PowerPoint presentation
 - Print the speaker's notes
 - Check that the projector is working
 - Cue the PowerPoint on the computer

Introduction**10 minutes****Option A:**

1. Ask the participants to think of the most dangerous thing that they have ever done.
2. In pairs, ask the participants to mime their dangerous act to each other.
3. Ask the participants “How would you compare emptying a latrine to the most dangerous thing that you have done?” Share some answers as a large group.
4. Present the lesson description or learning outcomes.

Option B:

1. Put a bucket of water mixed with dirt in the middle of the room. Ask the participants to form a circle around the bucket. Tell the participants that they have to transport the bucket from one participant to the other, all the way around the circle, without spilling any. Tell them they need to do it as fast as possible.
 2. After the activity, discuss if any of the water was spilled.
 3. Ask the participants “How would you feel if that bucket was full of fecal sludge?”
 - *Disgusted, like my health is in danger*
 4. Present the lesson description or learning outcomes.
-

Emptying Latrines and Transporting Sludge
30 minutes**Option A: Role Play**

1. Divide participants into pairs. Line the pairs up facing each other. If there is an odd number of participants, create a group of 3.
2. Ask the participants to decide which partner will be the latrine owner, and which will be the latrine emptier.
3. Tell the owners that they have a pit latrine. Ask the latrine owners “How can you tell if your pit is full?”
 - *You can see the excreta near the top of the pit. The pit is full when the contents are 0.5 m from the top.*
 - *If you can't see into the pit (like an offset pit or septic tank) there should be a hatch or cover you can remove to look inside the pit, tank or chamber.*
4. Ask the latrines owners “What are your options now that your latrine is full?”
 - *Relocate the latrine. Dig a new pit and move the superstructure and slab. Close the old pit by filling it with soil and covering it.*
 - *Empty the pit and reuse it. Emptying can be done manually or mechanically.*





5. Explain that there is no space to dig another pit. The latrine owner can empty the pit themselves or hire a pit emptying service. The pit can be emptied manually (by using a bucket or hand pump) or using motorized equipment (like a pump or vacuum truck).

There is often a social stigma attached to manual emptying. People willing to do this kind of work are often the very poor and disadvantaged as a way to earn an income. Manual emptying can be very unpleasant work, and it can pose a number of serious health and safety risks if it is not managed carefully.



6. Ask the participants “What measures can you take to ensure that your pit is safe to empty manually?”
 - *The pit should be fully lined so that it won't collapse.*
 - *The pit should not be more than 1.5 metres deep*
 - *If there are pump machines available and they will empty the pit, the pit should only be 2-3 metres deep due to the maximum suction of the machine.*
7. Tell the latrine owners they have found someone to empty their pit (their partner). Give them 1 minute to negotiate a price.
8. Tell the participants that the pit emptier has removed the slab. Ask the participants “What do you think its like when you first remove the slab?”
 - *Bad smells and gases are released.*
9. Explain that at least part of the slab or cover will have to be removed to allow access and improve air circulation. The pit should be allowed to vent for a while after removing the slab and before anyone enters the pit or begins work. This is done to let fumes and gases escape and fresh air to enter.

10. Ask the pit emptiers “What other kinds of hazards do you face by emptying this pit manually?”
- *Health risk due to contact with fecal pathogens found in sludge*
 - *Being buried by latrine walls collapsing in unlined pits*
 - *Injury from garbage disposed in the pit, tank or chamber*
11. Ask the pit emptiers “What do you need to do to ensure that you are safe?”
- *Wear protective gear such as gloves, boots, masks*
 - *Wash hands and body with soap after emptying pit*
 - *Wash clothing, boots and gloves after emptying pit*
 - *Remove protective gear when not emptying pit*
 - *Use shovels instead of hands to empty sludge*
 - *Put sludge into covered containers for transport*
 - *Dispose sludge safely and do not dump it locally*
 - *Keep work area clean*
 - *Remove slab early and allow time for the pit, tank or chamber to vent*
 - *Do not enter an unlined pit*
 - *Wear safety rope and harness when entering pit more than waist deep*
 - *Always work with a partner who can pull you out if the pit walls collapse or if you are overcome by fumes*
12. Explain that pit emptiers have finished emptying the latrine. Ask the pit emptiers “How are you going to transport the sludge?”
- *The sludge should be put into covered containers to reduce the risk of spills when it is transported*
 - *Can use human or animal power to transport the sludge, for example a wheelbarrow, wagon, cart, rickshaw*
13. Ask all of the participants “By a show of hands, how many of you included transport costs in your price negotiation?”
14. Ask the latrine owners “What do you think the emptiers are going to do with the sludge after transporting it?”
- *Dump it near the latrine, dump it into the street or nearby canal, dump it in a river or lake, dispose it in a sewer, compost it, dry it, take it somewhere far away and put it in a fenced-off location so people can't touch it, bury it near the latrine pit and grow a tree in it*
15. Explain that due to the challenges of transporting sludge more than 500 metres, a common practice is to dump or bury the sludge near the latrine, in the street or in nearby water sources. However, moving the sludge just a few meters away from where it was collected does not provide a sustainable or hygienic solution for sludge disposal. Explain that sludge treatment, use and disposal options will be discussed later in the workshop.

-  16. Discuss how emptying latrines and transporting sludge is an essential service that is often neglected in latrine design and implementation. Emphasize that latrines should be emptied in a safe and hygienic manner by well-equipped and protected sanitation workers who can transport the sludge to a treatment, use or disposal site.
-  17. Discuss how fecal sludge management can be a way to involve local government. You can consult with them on finding a safe location to treat the sludge, get support for helping a small pit emptying business set up in the community, ask for promotional support, or ask permission for pit emptiers to dispose of their sludge in the municipal sewer system.

Option B: Video



1. Show the participants the questions written on flipchart in advance of the video. Ask the participants to consider the questions as they are watching the video.
2. Show the Video: Emptying Pits: A Serious Business or Video: Understanding Small Providers of Sanitation Services.
3. Ask the participants “What dangers do workers face when emptying latrines?” Record responses on flipchart.



- *Health risk due to contact with fecal pathogens found in sludge*
- *Being buried by latrine walls collapsing in unlined pits*
- *Injury from garbage disposed in the pit, tank or chamber*
- *Exposure to fumes and gases in the latrine pit, tank or chamber*



4. Ask the participants “What dangers does a community face when latrines are emptied?”
 - *Sludge can spill out of open buckets, boots track feces through the community, sludge put into the stream. Pit emptiers often dump or bury the sludge near the latrine, in the street or in nearby water sources.*
5. Ask the participants “What are the pit emptiers doing to protect themselves?”



6. Ask the participants “What more could the pit emptiers do to protect themselves and the community?”
 - *Wash hands and body with soap after emptying pit*
 - *Wash clothing, boots and gloves after emptying pit*
 - *Remove protective gear when not emptying pit*
 - *Use shovels instead of hands to empty sludge*
 - *Put sludge into covered containers for transport*
 - *Dispose sludge safely and do not dump it locally*
 - *Keep work area clean*
 - *Remove slab early and allow time for the pit, tank or chamber to vent*
 - *Do not enter an unlined pit*

- *Wear safety rope and harness when entering pit more than waist deep*
 - *Always work with a partner who can pull you out if the pit walls collapse or if you are overcome by fumes*
7. Ask the participants “What could the community do to protect themselves and the pit emptiers?”
- *Line their pits to reduce the risk of collapse, build two pits to allow one to sit and decompose so it is safer to empty, build latrines aboveground with an access door to the excreta*
8. Discuss other options for emptying latrines and the benefits and challenges.
- *Some portable, manually operated pumps have been developed to improve the efficiency of manual emptying and better protect the health and safety of workers.*
 - *Motorized emptying using vacuum truck or other vehicle equipped with a motorized pump and storage tank.*
9. Ask the participants “What is available in your community for latrine emptying?”
10. Discuss how emptying latrines and transporting sludge is an essential service that is often neglected in latrine design and implementation. Emphasize that latrines should be emptied in a safe and hygienic manner by well-equipped and protected sanitation workers who can transport the sludge to a treatment, use or disposal site.
11. Discuss how fecal sludge management can be a way to involve local government. You can consult with them on finding a safe location to treat the sludge, get support for helping a small pit emptying business set up in the community, ask for promotional support, or ask permission for pit emptiers to dispose of their sludge in the municipal sewer system.

Option C: PowerPoint

1. Ask the participants “How can you tell if your pit is full?”
- *You can see the excreta near the top of the pit. The pit is full when the contents are 0.5 m from the top.*
 - *If you can't see into the pit (like an offset pit or septic tank) there should be a hatch or cover you can remove to look inside the pit, tank or chamber.*
2. Ask the participants “What are your options when your latrine is full?”
- *Relocate the latrine. Dig a new pit and move the superstructure and slab. Close the old pit by filling it with soil and covering it.*
 - *Empty the pit and reuse it. Emptying can be done manually or mechanically.*
3. Ask the participants “How can latrines be emptied?”
- *Manually (by using a bucket or hand pump) or using motorized equipment (like a pump or vacuum truck).*
4. Use PowerPoint: Latrine Emptying Transporting Sludge to discuss manual and motorized emptying, and sludge transportation.



5. Ask the participants “What measures can you take to ensure that your pit is safe to empty manually?”
- *The pit should be fully lined so that it won't collapse.*
 - *The pit should not be more than 1.5 metres deep*
 - *If there are pump machines available and they will empty the pit, the pit should only be 2-3 metres deep due to the maximum suction of the machine.*

Optional: Review of Health and Safety Precautions

15 minutes



1. Explain that the participants are going to review the health and safety concerns of manual emptying. They will work in groups. Each group will get a piece of flipchart paper that they should divide into two columns. One column is labeled health and safety concerns and the other is solution. Remind participants that they should take into account the entire process, including emptying and transport for the emptier as well as the broader community.



2. Divide the participants into groups of 4 or 5 people. Provide each group with flipchart paper and markers. Give them 10 minutes to complete the activity.
3. Ask the groups to take turns presenting one health or safety concern and their precaution. Ask the other groups if they had any other precautions to add for that concern. Continue until all concerns have been discussed.

Review

10 minutes



1. Ask the participants to turn to the Latrine Emptying and Sludge Transport section in their Sanitation System Design Workbook. Tell them they will have 10 minutes to complete the worksheet.
2. Remind the participants to make sure that their choice matches the excreta storage technology they have previously selected. Tell them that they can change the excreta storage or other latrine options if needed. Ensuring that the entire system works together as you gather new information is part of good design. Their design might go through many iterations.
3. Encourage participants to discuss any questions or challenges with each other or with you.

Reflections on Lesson