Ventilated Improved Pit (VIP) Latrines

Introduction

Latrines are a simple technology that can break the fecal → oral transmission of disease. When infected urine and stool are contained and are not allowed to spread to nearby food or water, the health of a population can improve. Given latrine technology can be so simple, break downs in the technology are uncommon. The only time latrines do not break the fecal-oral cycle is when humans do not use the latrine (or do not hand wash adequately). The most common reasons latrines are not used are because of the smell and the insects. The Ventilated Improved Pit (VIP) latrine is an adaptation of the ageless pit latrine that can reduce the foul odor and amount of bugs. There are many other latrines designs available, but this chapter will focus on the VIP latrine.

How the VIP latrine works

The VIP latrine is a simple hole-in-the-ground latrine (pit) with a chimney added. The chimney can remove the foul smell from inside the latrine and send it outside. The chimney works to draw out foul odors by two different methods. 1. When wind blows over the top of the chimney, a negative pressure is created that draws the foul smells up and out the chimney. 2. If the chimney is painted black, whenever the sun is hitting the black chimney, the air inside the chimney gets hot and rises out the top of the chimney, again drawing the foul smells out of the latrine interior. Every technology has its limitations, as does the VIP latrine. During a windless night, the chimney adds no benefit. However, reducing the smell inside a latrine 50-80% (when there is wind or sun) of the time it is being used is a great improvement.

Design considerations

Parts List

Note: The parts list varies greatly depending on local conditions and building practices

General parts – Foundation and floor of latrine

- 3/8 – 1/2 inch ree bar
- Tie/Binding wire for ree-bar
- 1 @ 4 inch drain PVC, 10 ft
- Black paint
- Cement, sand and gravel to make concrete
- Water, clean and plentiful
- Wood boards to make forms
- Possibly nails or other binding material for forms
- Rocks or cement blocks for side walls or collar (depending on local soil conditions)

General parts – Above ground privacy structure

This varies greatly based on local materials. It can be as simple as thatch walls and no roof to the other extreme of cement block walls and tile or galvanized steel roof. Given the purpose of the above ground structure is mainly privacy, the design is determined by local customs and cost.

Commonly used materials

Walls

- Locally gathered sticks and thatch or leaves for walls
- Locally cut lumber for walls
- Plastic sheet strung over stick or wood framework.
- Adobe block walls
- Rammed earth walls
- Cement block
- Corrugated roofing sheet

Roof

- None
- Thatch or leaves
- Tile
- Asbestos sheets
- Wood
- Steel roofing sheet
- Plastic roofing sheet
- Cement/concrete casting

Tools

- Shovel
- Masonry tools – float, trowel
- Boards for forms and leveling concrete
- Hack saw
- Wood saw or other method to cut boards (machete)
- Measuring box to accurately measure cement, sand, gravel
- Paint brush
- Level
- Hammer

Concrete Slab

General considerations

Dimensions of concrete slab are mainly dictated by room needed to move around inside above ground structure. Otherwise, length and width of slab are not critical. If creating multiple latrines at various sites, choose a size that works for the needs of the population and above ground structure, then formalize the size so that the hole in the ground can be a specific dimension and the forms for the concrete work can be a specific dimension. If using cement block for the foundation or collar, choose a slab size that optimizes block dimensions.

When determining minimal size for slab, take the following into account

- Need 4” PVC pipe to perforate slab on the inside of the foundation or collar. If the foundation or collar is 12 inches wide, the PVC pipe will need to be at least 12-14 inches in from the back edge of the slab so that the pipe enters inside the foundation/collar.
- Hole in foundation for excrement/urine.
- Walls of above ground structure. Will the walls rest on the slab (which is typical if abode or block walls) or be outside the slab – possible with a thin walled structure such as wood or roofing sheet.
- Thickness of concrete slab should be at least 4 inches and steel reinforced.