
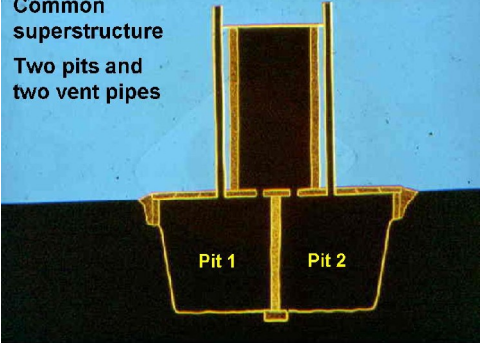
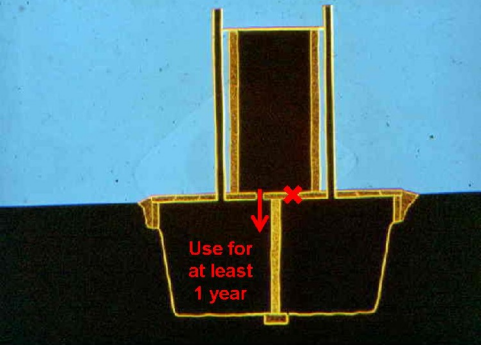
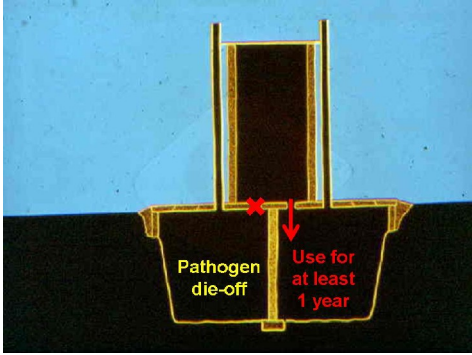

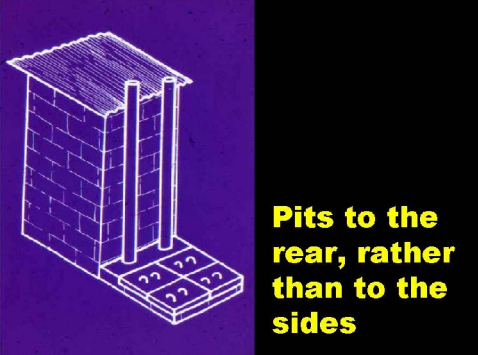



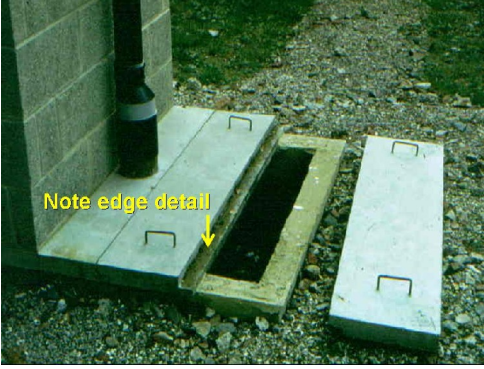
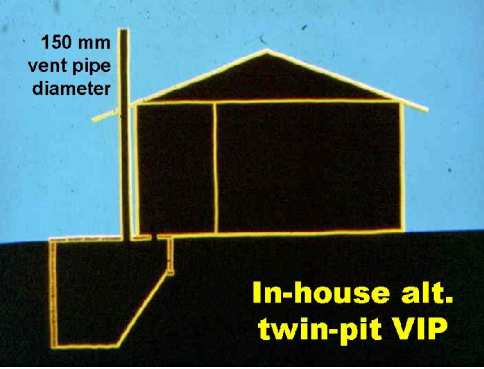
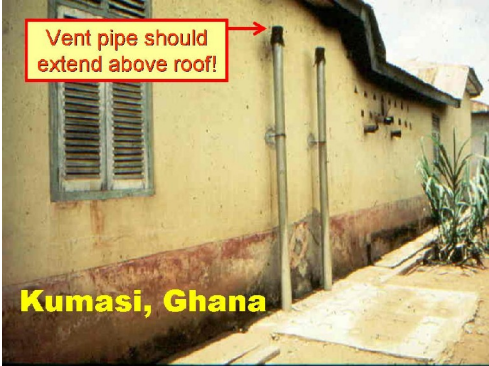
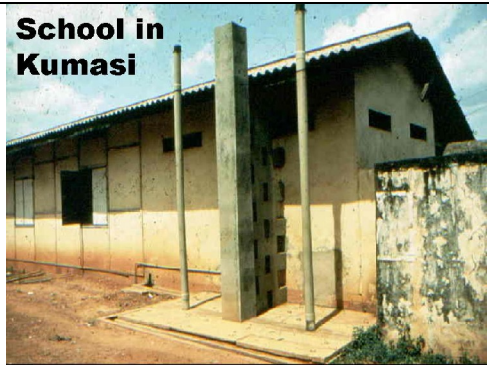

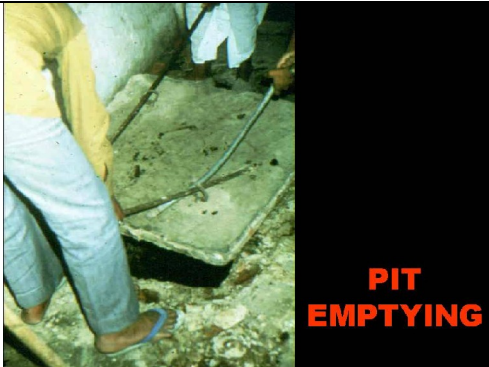






Alternating twin-pit VIP latrines

<p>1.</p>	 <p>On-site Sanitation II Alternating twin-pit VIP latrines</p> <p>Professor Mara</p>	<p>This presentation is on alternating twin-pit VIP latrines, and ...</p>
<p>2.</p>	<p>ALTERNATING TWIN-PIT SYSTEMS</p> <ul style="list-style-type: none"> • Permanent on-site sanitation systems for peri-urban areas <u>with enough space</u> ➢ Alternating twin-pit VIP latrines ➢ Alternating twin-pit PF toilets 	<p>these are permanent sanitation facilities – that is to say, they don't need to be relocated when they become full. So they're best suited to periurban areas if there's enough space for them. This 'alternating twin-pit' concept can be applied to pour-flush toilets as well as to VIP latrines.</p>
<p>3.</p>	<p>Common superstructure Two pits and two vent pipes</p> 	<p>This slide shows the basic features of an alternating twin-pit VIP latrine. There's one superstructure, two vent pipes and two pits, which we'll call Pit 1 and Pit 2.</p>
<p>4.</p>		<p>Pit 1, the one on the left, is used for at least a year and during this time Pit 2, on the right, is not used and the squat-hole over it is blocked off.</p>

<p>5.</p>		<p>At the end of year 1 (or at the end of year 2 if the system's been designed for an alternating cycle of 2 years), Pit 1 is taken out of service and Pit 2 put into service.</p> <p>While Pit 2 is in use, for the next year (or 2 years), the excreted pathogens in Pit 1 die; only a few <i>Ascaris</i> eggs will still be viable. Just before Pit 2 is full Pit 1 is emptied, and we'll come to pit emptying later in this presentation.</p>
<p>6.</p>	 <p>Trial unit built at BRE, Stevenage</p>	<p>This slide shows a demonstration alternating twin-pit VIP latrine built at the Building Research Establishment, near Stevenage, just north of London. This unit has the pits extending outwards from the sides of the latrine, but ...</p>
<p>7.</p>	 <p>Pits to the rear, rather than to the sides</p>	<p>they could equally well be located at the rear of the latrine.</p>
<p>8.</p>	<p>Rural Tanzania</p> 	<p>Here's an alternating twin-pit VIP latrine built in rural Tanzania. The pit cover slabs have been removed so the two pits are clearly visible.</p>

<p>9.</p>		<p>This is another example from Tanzania, with a ‘squared off’ spiral superstructure. Access to the pits is at the back: to the left you can see an open hole over one of the pits; over the other bricks have corbelled upwards to close the pit – this is an alternative to a thin reinforced-concrete cover slab.</p>
<p>10.</p>	 <p>Removable cover slabs</p>	<p>The cover slabs have to be easily removable, as shown here in the demonstration unit at the UK Building Research Establishment.</p>
<p>11.</p>	 <p>Note edge detail</p>	<p>The edge detail is important as the overlap prevents light entering the pit and so providing an escape route for any newly emergent adult flies.</p>
<p>12.</p>	 <p>150 mm vent pipe diameter</p> <p>In-house alt. twin-pit VIP</p>	<p>We often think that VIP latrines are external to the house, but this needn't be the case. The slide shows an in-house alternating twin-pit VIP latrine and this is perfectly satisfactory if a 150-mm, rather than a 100-mm, diameter vent pipe is used.</p>

<p>13.</p>	 <p>Vent pipe should extend above roof!</p> <p>Kumasi, Ghana</p>	<p>This shows one such in-house latrine in Kumasi in Ghana. It's OK but really the vent pipes should have been extended above the roof to maximize the wind effect which controls odour.</p>
<p>14.</p>	 <p>School in Kumasi</p>	<p>And here is a double unit in a school in Kumasi, one side for girls and the other for boys.</p>
<p>15.</p>	 <p>Kumasi prison</p>	<p>And this is a multi-compartment unit used in the prison in Kumasi.</p>
<p>16.</p>	 <p>PIT EMPTYING</p>	<p>Now we come to pit emptying. Obviously the cover slabs have to be removed first and then ...</p>

<p>17.</p>	 <p>Manual emptying OK with alternating twin pits if pits are 'dry'</p>	<p>if the pit is a 'dry' pit – that is to say, its base is above the groundwater table, it can be emptied manually, and this is perfectly safe as all the excreted pathogens will have died with the exception of just a few <i>Ascaris</i> eggs.</p>
<p>18.</p>	 <p>Inoffensive, odourless material</p>	<p>The material which has to be dug out is inoffensive and odourless as it will have composted quite well during the period when the pit's not been in use. So it's not a repugnant material at all and, once this is realised by the householders and the emptiers, there's no problem in getting these pits emptied. The material removed can be used on-site as a soil conditioner if there's enough space, or else it can be carted away and used for this purpose elsewhere, or simply landfilled.</p>
<p>19.</p>	 <p>For wet pits...</p>	<p>But if it's a wet pit and its contents are therefore liquid, it can't be emptied manually and ...</p>
<p>20.</p>	 <p>....an ordinary vacuum tanker is OK</p>	<p>instead an ordinary vacuum tanker, of the type used to empty septic tanks, has to be used to suck out its contents.</p>
<p>Note: VIP latrine design details are given in <i>The Design of Ventilated Improved Pit Latrines</i>, which is listed in 'Supporting material'</p> <p style="text-align: center;">© Duncan Mara 2006</p>		