VIP latrines: are they always the best alternative?

by Patrick Goss

A sanitation study in Sierra Leone reminds workers that VIP latrines need certain conditions to function properly, and that where those conditions are not right alternatives must be found.

IN SIERRA LEONE, as in many other African countries, Ventilated Improved Pit latrines (VIPs) are very popular. They are commonly built by the villagers, often with the assistance of personnel from both aid and local organizations. But are VIPs the best option? This research, sponsored by WaterAid, evaluated the performance of VIPs and gathered users' opinions of them.

The VIP latrine was developed by Peter Morgan and Ephraim Chimbunde nearly 20 years ago, and is an improvement to the traditional pit latrine because, among other things, it is equipped with a ventilation pipe which is capped with a fly screen. The vent-pipe is designed to reduce significantly the odours and flies synonymous with many standard pit latrines. Air movement across the top of the vent-pipe causes an updraught in the pipe from the pit. The air is sucked out of the pipe by air passing across the top, and is replaced by new air which is sucked in through the squathole in the cover slab. The odours from the pit pass up the vent-pipe and disperse into the atmosphere. Peter Morgan specifically recommends that VIP latrines be located away from trees, overhanging branches, and anything else that might impede the action of wind across the top of the different vent-pipe.

Flies in the pit are attracted to the light from the vent-pipe. They fly up the vent-pipe but are prevented from escaping by the fly screen, and soon die of dehydration and fall back into the pit. The inside of the superstructure should be relatively dark so that flies are not attracted to light from the squathole. (Ryan and Mara give recommendations regarding different vent-pipe designs.)

Various tests were conducted on the vent-pipes of VIPs in order to assess their efficiency in controlling odours and flies (see box).

The results of the tests indicate that the vent-pipe cannot operate efficiently in many of the latrines. One of the main reasons for this is the shortage of land in Sierra Leone, where villages tend to be sited in forest clearings. There is little land available for VIP latrines in the centre of villages because of the necessity to site them at least 15 metres from a cooking area. VIP latrines therefore tend to be positioned on the outskirts and are usually surrounded by many trees, which impede the airflow. This problem cannot be easily overcome because local people are obviously reluctant to cut down the trees which provide the annual harvests and are a valuable source of income.

Users' opinions

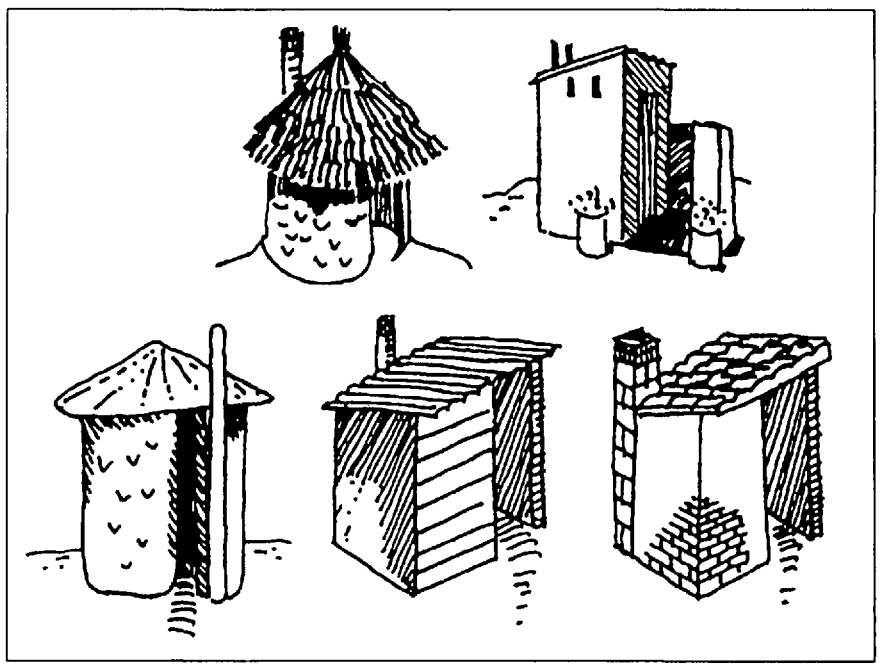
A questionnaire was designed, and various complaints about the VIP latrine emerged: flies, odours, and mosquitoes were common objections. Many villagers did not like using the latrines because they are dark. Most householders prefer a latrine with a door, which they can lock to prevent neighbours using them. WaterAid accommodated this by using slatted doors which do not restrict airflow.

The airflow through the superstructure and up the vent-pipe was measured with the aid of a Draeger smoke puffer: 20 puffs were released into the pit just below the squathole, and the time taken for the smoke to emerge from the vent-pipe was recorded. The number of flies were observed both in the superstructure and at the top of the vent-pipe. A subjective measurement was used to record odours.

Various factors were thought to be capable of affecting the findings of one or more of the measurements above. These include:

- the siting;
- the amount of wind and its direction (this involved releasing a few puffs of smoke into the atmosphere and observing its rate and direction of dispersion);
- the existence of a door;
- alterations made to the design;
- the height of the vent-pipe in relation to the height of the roof;
- the length of time the latrine has been used; and
- the amount of light entering the superstructure.

It should be noted that the results of the test when subjected to statistical analysis have relatively high standard deviations. (More details of the tests are available directly from the author, on request.)



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The questionnaire also revealed that 100 per cent of the people use water for anal cleaning. So why not build pour-flush latrines? In the circumstances, it would seem to be an appropriate choice. WaterAid, in conjunction with the local population, constructed a gravity-fed water supply which provides water in sufficient quantities for flushing. (The water systems are designed for a per capita consumption of 45 litres per day for a 25-year design life, assuming a population growth rate of 2.5 per cent per annum and 40 per cent wastage).

A pour flush latrine would have a number of advantages:

- The siting problems would be greatly alleviated as the latrines could be close to the houses. It is thought that if latrines are sited near dwellings they are more likely to be used.
- A pour-flush latrine is more effective in controlling flies and odours. Because it has a waterseal and providing there is an effective seal between the pit and the cover slab, flies and odours cannot escape from the pit. Latrines can therefore be located near cooking areas.
- VIP latrines have no mechanism to control mosquitoes. Mosquitoes are not attracted to the light from the vent-pipe, but escape through the squathole and into the environment. With pour-flush latrines there is no access from the pit. There is no need for a dark latrine interior. If people feel uncomfortable about using a latrine, not only are they likely to use it less frequently, but they will also be less willing to keep it in a hygienic condition.
- People gave many reasons for wanting to have a door. The addition of a door is irrelevant to the functioning of a pour-flush latrine, and one could be built to any design.
- The cost of a pour-flush latrine need be no greater than the cost of a VIP.

The questionnaires also revealed that most children under the age of 10 are not permitted to use the latrines because their parents fear that children might fall through the squathole and/or mess the cover slab. It is anticipated that by providing pour-flush latrines parent's anxieties will be eased, and with a greater emphasis allocated by the health education team to promote child usage, children from the age of three will use the latrines.

WaterAid is currently introducing pour-flush latrines on an experimental basis.

Reading

MacGarry, B., 'Development of the Blair VIP latrine', *Waterlines* Vol.1 No.4.

Morgan, P., *Rural Water Supply and Sanitation: Blair Research Bulletins*, Macmillan, London, 1988.

Ryan, B.A. and Mara D.D., 'Ventilated improved pit latrines: Vent-pipe design guidelines', *TAG Technical Note No.6*

diary

15-22 August 1992. **International Seminar on Groundwater and the Environment in Arid and Semi-Arid Areas, Baidaihe, China.** Contact: *A. Skinner, IAH, National Rivers Authority, 500 Streetsbrook Road, Solihull, W. Midlands, B91 1QT, UK. Fax: +44 21 711 2794.*

30 August-4 September 1992. **18th WEDC Conference on Water, Environment and Management, Kathmandu, Nepal.** Papers will be presented by those with relevant experience of work in developing countries. Topics include: rural water supply, low-cost sanitation and urban services. For information write to: *Mrs Rowena Steele, WEDC, Loughborough University of Technology, Leics LE11 3TU, UK. Fax:+44 509 211079.*

31 August-3 September 1992. **First International Conference on the Safety of Water Disinfection, Washington DC, USA.** For more information, contact: *Ms Diane Dalisera, ILSI, 1126 Sixteenth Street, N.W. Washington DC 20036, USA. Fax:+1 202 659 3859.*

1-4 September 1992. **Aqua Tech '92, Amsterdam, The Netherlands.** The main theme of this year's event is '25 Years of Water Technology as a Basis for the Future'. A two-day conference 'Recently identified pollutants in water resources' will focus on the treatment of surface waters, filtered matter and ground water. More information from: *Anita Kanters, RAI Press Department, Europaplein, NL-1078 GZ Amsterdam, The Netherlands. Fax:+31 20 6464469.*

28 September-1 October 1992. **International Seminar on Supplementary Irrigation and Drought Management, Bari, Italy.** Contact: *Dr Atef Hamdy, Isituto Agronomico Mediterraneo, via Caglia 23, Cap 70010, Valenzano (Bari), Italy.*

6-8 October 1992. **Fifth International Pump Congress, Karlsruhe, Germany.** More information from: *J. Huggelmeier, VDMA, D-6000 Frankfurt/M.71, Postfach 71 08 64, Lyoner Strasse 18, Germany. Fax: +49 69 66 03 511.*

25-9 October 1992. **Water Malaysia '92, Kuala Lumpur, Malaysia.** The 8th Regional Conference and Exhibition of the Asia-Pacific Group (ASPAC) of the International Water Supply Association (IWSA). The conference programme will cover source development, water-quality control and monitoring, water treatment, distribution and management. More information from: *The Secretary, Organizing Committee Water Malaysia '92, c/o Office of Director of Water Supplies, Public Works Department, Jalan Sultan Salahuddin, 50582 Kuala Lumpur, Malaysia. Fax:+60 3 2931557.*

1-5 November 1992. **International Conference on Water-Related National Disasters and their Environmental Impacts, Bangkok, Thailand.** Contact: *Prof. A. Das Gupta, AIT, GPO Box 2754, Bangkok 10501, Thailand.*

10-12 November 1992. **International Water and Effluent Treatment Exhibition '92, Birmingham, UK.** Annual show for the water industry; attracted 9000 visitors in 1991. Details from: *Paul Tweedale, Exhibition Sales Manager, Turret Group plc, Turret House, 171 High Street, Rickmansworth, Herts WD3 1SN, UK. Fax: +44 923 771297.*

1-5 December 1992. **WATERTECH Indonesia, Jakarta, Indonesia.** Being held as part of the 2nd International Exhibition and Conference on Equipment and Systems for Pollution Control and Environmental Improvement. Details from: *Matthew Meredith, Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB, UK. Fax:+44 71 486 8773.*

30 August-12 September 1993. **15th International Congress on Irrigation and Drainage.** Contact: *Secretary-General, International Commission on Irrigation and Drainage, 48 Nyaya Marg, Chanakyapuri, New Delhi 110021, India.*