LATRINE TYPES - THEIR IMPACT ON MANUAL SCAVENGING

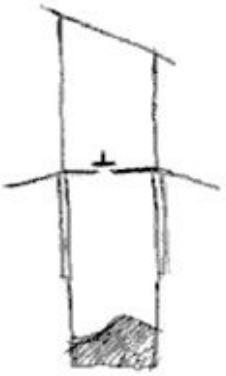
May 2017

'Manual scavenging' is the term used to describe the job of cleaning dry or pit latrines (including 'night-soil' collection), septic tanks, cess-pits and sewers by hand. In South Asia manual scavenging is done by one particular caste group and there is a huge amount of stigma, disgust and shame associated with this work. In 1993, manual scavenging was made illegal in India but latrines requiring manual emptying still exist and the work continues to this day. Outside South Asia, the task of manual scavenging is not linked with any particular people group and does not carry the same level of stigma or shame, but the work is still disgusting and the people doing it will tend to be from the poorest and most vulnerable families.

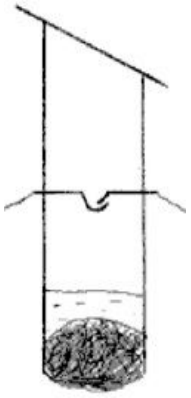
Dry latrines and bucket latrines can be open areas without privacy, or they may be housed in cubicles. There may be a bucket under the squatting area that catches the excrement or it may simply collect on the ground. The excrement has to be collected and taken to another place to be dumped. These types of latrines and the work of manual scavenging are common in many parts of the world.

Pit latrines (simple pit latrines, ventilated improved pit latrines (VIPs), and pour-flush latrines) may have one single pit, or sometimes they have two pits. Sometimes the excrement drops directly into the pit below and sometimes it passes along a chute or through a water-seal unit to a pit nearby. The pit may or may not have a vent pipe to reduce odour. The pits may be lined with stone, bricks or concrete to prevent them from collapsing. Some pits are too small (less than 1.5 metres deep and less than 1 metre in diameter) and fill up very quickly; and some are very large (over 2 metres deep and over 2 metres in diameter). When pits are very large, people employed to dig/empty the pits can die if a pit collapses on them. With time and use, the latrine pit(s) fill up with excrement. Where there is plenty of land, a new pit can be dug and a new latrine built and the old hut demolished and the pit filled in (a tree planted over the pit will grow very well). In urban areas, there may be no space to build a new latrine so the old latrine pits have to be emptied.

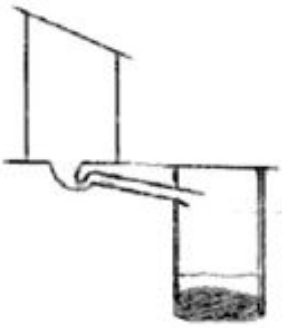
Simple pit latrine



Pour-flush latrine



Off-set latrine

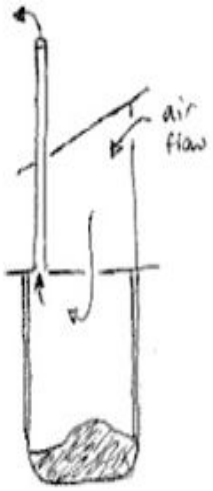


Emptying pit latrines – can be done with mechanical pumps (such as 'the gulper'– based on the hand-pump; 'the nibbler' – based on the Archimedes screw; and vacuum and micro-vacuum tankers (e.g. 'vacu-tug')) but these pumped systems are unable to remove solidified sludge. They are also prone to blockage by other things that get thrown into latrines (e.g. glass, stones, plastic bags). Many people will pay someone else to dig out the excrement by hand (manual scavenging). The pit contents need to be carried away and dumped somewhere else. Pumps and equipment used to empty the pits will also need to be cleaned.

Twin pit latrines (Direct-drop/off-set/pour-flush/ ventilated twin-pit latrines and twin-vault latrines) – are specially designed so that users use one pit first until it is full of excrement, and then that pit is closed off and the second pit is used. By the time this second pit is filled (minimum of 1 year), the excrement in the first pit will have decomposed and the excrement become like soft brown compost which is odour-free and can be safely handled. Composted excrement may be put on the soil as fertilizer. This type of latrine is promoted in many countries. The main difficulty with this technology is in educating the users to alternate the use of the pits. Often pits are not used as intended, and both pits end up being filled with excrement that does not get time to decompose (1 year) before it is emptied. Hence, this type of latrine still usually involves the undignified and hazardous practice of manual scavenging to empty it and dump the contents somewhere else.

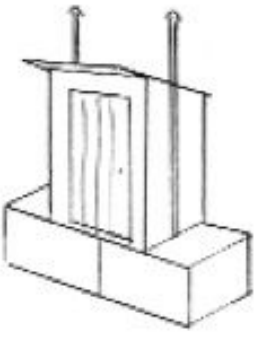
Aqua-privy, septic tanks and cess-pits - are designed to process significant volumes of water as well as excrement. The excrement and toilet-flush water along with water used for other domestic purposes is flushed into the unit. The unit is divided into several tanks (or baffled sections within a larger tank) to increase the settlement and treatment time on the waste. With use, the unit fills up with sludge and requires emptying. The emptying is usually designed to be done by suction tanker. Some suction tankers have the capacity to also blow water jets into the tank to break up solid layers of sludge and make it possible to pump the contents out. Where these tanks cannot be accessed by the tanker or where tankers are not available, these tanks are sometimes emptied by hand (manual scavenging).

Ventilated Improved Pit-latrine (VIP)



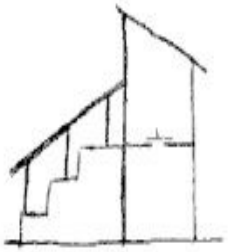
Twin-pit latrine

Twin-VIP latrine



Un-decomposed sludge must be disposed of safely in a pre-prepared waste pit or a sewerage treatment works. Often the sludge is discharged indiscriminately, e.g. into a nearby ditch or unused well. Sometimes a person will enter the tank to manually remove the sludge by bucket (manual scavenging). This exposes the person to high levels of noxious gases. A survey of 5 Indian States by the Tata Institute of Social Studies recorded 200 fatalities in 2014 because of manual scavenging in cess-pits, septic tanks and sewers.

Raised latrine with handrails

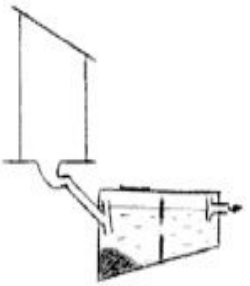


Safety clothing and equipment, such as protective gloves, masks, gum-boots and gas monitors may, occasionally, be provided by some employers. This type of equipment may limit the contact of a person with the excrement and toxic gases but it does not reduce the gross stigma of a person involved in this type of sanitation work.

Commode

Train toilets – Many Indian train toilets still use a chute which discharges toilet waste including excrement directly onto the railway tracks. While this may be much of a problem in rural areas, large quantities of faeces are deposited on the tracks at stations each day. Train toilets may have notices telling people not to use train toilets in stations, however the evidence is that the notices are ignored (if they are in a language that the user can read). The work of clearing the tracks of excrement is called 'manual scavenging' in India, except when the workers are using protective gloves, masks and boots. In India trains are being upgraded with tanks to collect toilet waste which is later emptied in designated depots. Sometimes these trains have a system whereby the tanks empty automatically when the train reaches a high speed.

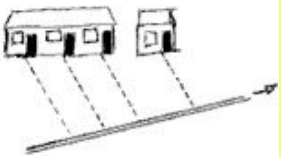
Septic tank



Bio and Biochemical treatments: By adding specially prepared micro-nutrients, special seed-bacteria and/or worms into the pits the breakdown of the excrement will speed up and increase the time the unit takes to fill up. This may extend the time between emptying by 30-50%. Some chemical preparations are toxic and should be avoided.

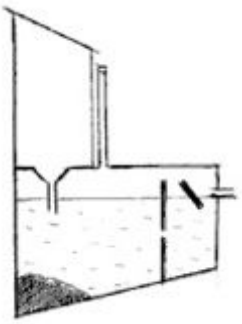
Bio-gas systems: These are similar to septic tanks but the methane gas given off in the process is trapped and used for lighting or cooking. The system also requires other organic matter (vegetable peelings, straw, cow-dung) must be added regularly. The system will fill up with sludge and require emptying. There may be stigma associated with the gas in some cultures, especially if human excrement has been added to the system.

Sewerage



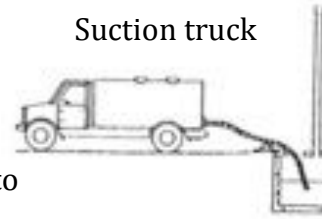
Eco-san (composting latrines, urine separation): These are carefully designed systems where lime and other materials are added to the excrement to reduce the odour and increase the speed of composing. In some systems, urine is separated from the faeces through carefully designed squatting plates so that urine can be used immediately as liquid fertilizer. These latrines are more eco-friendly but are hard to manage. When it is the householder who manages their own eco-toilet, this may not be a problem but when someone else is paid to stir the excrement – this has the potential to be considered disgusting and might be termed 'manual scavenging'.

Aqua-privy



Sewage treatment works (trickling filters, disc filters, activated sludge): These are expensive to build and require electricity to operate the process. Sewage treatment works incorporate separate processes for settlement of sludge, treatment of waste-water and effluent. The settled sludge requires regular emptying of large volumes of sludge by suction tanker.

Suction truck

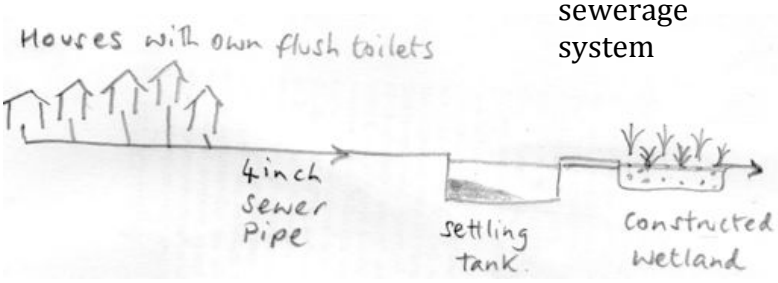


Sewer pipes: These carry the excrement and waste-water to the sewage treatment works, but sometimes block. Inspection chambers are built so that the sewer pipes can be emptied. But sometimes the covers are damaged, removed and not replaced so that general rubbish falls down the manholes into the sewers, causing blockages. Suction and jetting equipment may be used to clear the blocked sewer lines but in countries like Bangladesh and India, people may be paid to enter the sewers and unblock them using their hands. This is a very hazardous job and grossly stigmatised.

Pit and barrow

Simplified sewerage: This uses 75-100cm diameter pipes to carry waste from household pour-flush latrines/toilets into a large settlement tank where the sludge is retained. In hot climates, the sludge breaks down in the settlement tank and (under ideal conditions) may not need emptying. The tank effluent passes through a constructed wetland before discharging to the environment. This system is the preferred technology in South America and could be a dignified alternative sanitation technology in South Asia.

Simplified sewerage system



CONCLUSION

THERE IS A NEED FOR DIGNIFIED SANITATION OPTIONS; SYSTEMS THAT DO NOT REQUIRE MANUAL EMPTYING. THIS WILL REMOVE THE NEED FOR MANUAL SCAVENGING WORK.