

ECOLOGICAL SANITATION IN INDIA AND SRI LANKA

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Relevance of this paper

The importance of this paper is that it describes what is probably the only extensive and successful ecological sanitation work undertaken amongst peoples where anal cleansing is performed with water. Reuse of the urine and washwater has also been promoted and demonstrated successfully.

Examples of Ecological Sanitation in Sri Lanka and India.

In Sri Lanka and India we have successfully demonstrated urine-diverting toilets in a variety of settings. Note that all these toilets are used by families who use water for anal cleansing. Over 200 examples of these toilets are working continuously and successfully in the following locations:

- Urban
- Peri-Urban
- Rural
- Highlands
- Lowlands
- Coastal

EcoSolutions presented the first workshop, training course and demonstrations of ecological sanitation in Sri Lanka this year (2001). The toilets described below were built as part of this work or are from earlier and ongoing work in India.

Urban Example, India

Robert lives in a modern and very attractive house on the edge of a south Indian state capital. He worked overseas for a few years to earn money to build this home and to set up a local business whilst also being actively involved in community development work. Over a year ago we built a urine diverting toilet inside the house. The toilet room also doubles as a shower room and has direct access from the owner's main bedroom. The toilet is in daily use but never smells and the urine and anal wash water is used most beneficially by diversion to a cluster of banana trees outside. The bananas, which were planted at the time of building have fruited most satisfactorily several times since then and are still flourishing today.

Coastal peri-urban Example, India

Gracie, her husband and two children live in a coastal fishing village which has been absorbed by the expansion of a major town. By hard work they have managed to afford a tiny plot of land and construct a small house. They have a well and also access to mains water. They wanted a toilet but a septic tank was seen as too

expensive and in such a small plot would pollute their well and upset the neighbours. Even a pit latrine would be close to the well and pollute it. Gracie had been helping our team raise awareness about urine diverting toilets and making follow-up visits to users of our toilet in the area. She needed no convincing that a compost toilet was the right choice for her family. The toilet is built against the wall of her house to save space and includes a tiny lean-to for bathing. The bathing water and urine feed a flower bed and a coconut tree.

Urban Example, Sri Lanka

Rose and her husband have lived for over ten years in the suburbs of Colombo. They have never had a toilet. As there are only two of them living on in a small house they are able to benefit from one of EcoSolutions compact design urine diverting toilets. It is feeding a pair of banana trees with urine and washwater in an extremely small backyard. The toilet is a single step from their back door there being no space inside the house. The area is very low lying and is extremely prone to flooding even after a few hours of heavy rain. Expensive and luxurious housing has sprung up all around them leaving this small lane of around 15 families poorly served by the municipality. A few of the families have water flush toilets emptying to small (for want of space) leaky brick and plaster holding tanks. All of the tanks overflow in the rainy seasons. Gully bowsers belonging to the corporation should be available to empty these regularly for a small fee but are often not available to come or do not have long enough hoses to reach down the lane which is inaccessible to vehicular traffic. Three families in the lane now have urine diverting toilets.

Highland Example, Sri Lanka

In parts of the Sri Lankan highlands, even within corporation areas, collecting water for the home is something of a chore. Even though roof harvesting is increasingly being practised it is certainly wasteful to use that for flushing toilets. Several families in such locations are now using urine diverting toilets built under a project established by EcoSolutions. The urine and washwater are used to feed bananas and other useful plants.

Urban Highland Example, Sri Lanka

In one highland town a middle-income family having a water-flush toilet emptying to a septic tank has opted for a urine diverting toilet. This toilet has access from inside the house off one of the bedrooms. The woman of the household decided that this technology was what she wanted for the family since during the rains the septic tank used to flood and overflow. She would like to see more people in the neighbourhood using these toilets.

Coastal Example, India

In several villages in south India families without toilets, living in very high water table areas, have opted for urine diverting toilets to solve their sanitation problems. Pit latrines simply fill up and overflow in the monsoon season. And since plot sizes

are small and water tables so high any form of water flush toilet pollutes the wells. Most families depend on their own or a neighbour's well for many of their water needs and a health and hygiene awareness raising campaign has resulted in many finding such pollution and associated health risk unacceptable. The urine and washwater is being used to grow chillies, coconut, bitter gourd and potted plants.

Rural Lowland Example, Sri Lanka

In a community working the lowland tea plantations in Sri Lanka sanitation was a bad subject. A few shared toilets served by septic tanks which were built up as high as the toilets themselves (because of high water table and flooding) were permanently backed-up and extremely offensive. When the concepts of dry, urine-diverting toilets were explained to them with a local slide show and mimed demonstrations of the operation they were more than willing to be the first to try them out. The families turned out to help build and commission the first toilet, including planting five banana trees to use the urine and wash water. All the youngsters as well as adults participated in demonstrating to us the user methodology to prove to us they had understood it fully. Inauguration was delayed a day because they insisted on serving us all a generous meal and because they wanted to whitewash and decorate the toilet before use.

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Advantages of Urine-Diverting Desiccating and Compost Toilets

- Can be used in waterlogged sites and places un-served by sewerage and will not contaminate the groundwater.
- Can be built in flats, apartments, tenements, houses, schools, factories and offices
- No need to dig pits. No need for sewers and treatment plants. No sewage.
- Safe and affordable for use anywhere i.e. urban, peri-urban and rural, but especially high water table and / or water scarce areas
- Do not pollute the ground water or soil, rivers, lakes or canals, sea or backwaters.
- Do not produce flies or smell.
- Use less water than other toilets. (The only water required is that for hand washing and in some cultures anal cleansing) A water flush latrine for a family can waste and pollute 70 - 100,000 litres of water per year. Desiccating and compost toilets save all this water and do not pollute at all.
- Totally self-contained treatment of human excreta on site. No sewage pipes, no septic tanks, no dangerous or unpleasant emptying.
- No mosquitoes - unlike septic tanks and pit latrines where covers are often left poorly maintained leaving access for mosquitoes to breed. There is nowhere for mosquitoes to breed in these systems.
- Produce a useful and non-odorous compost to improve and regenerate the soil.

- Beneficial reuse of urine. The evaporative plant bed can support attractive flowers, vegetables or plantain for sale or use by the family.

Background

South Asia is a pretty tough place to convince people that ecological sanitation makes sense. There is considerable paranoia about human faeces. There is so much bad, unhygienic, and smelly sanitation around that that is understandable. Open defecation is widespread in rural and urban areas. 糞 faeces smell, so does urine, it is unimaginable that anyone could be so naive as to propose they could be stored and used at home - the smell would be unimaginable". So that is it then. Its the smell. That is why the idea of a flush toilet (at least a properly installed and maintained one) is attractive. It flushes all the nasty stuff away and there is no smell. If you haven't got a toilet then, logically, you want to be defecating as far from the house as possible - to keep the smell away. And everyone knows that non-flush toilets are smelly so no one really wants one of those - and certainly not in the house!

In spite of the odds, and the fact that in south Asia people use water for anal cleansing, we are succeeding in promoting ecological sanitation. We have built urine-diverting dry toilets both attached to, and inside peoples' houses. The toilets don't smell and the users are happy with them. They have been using them now for several years so their opinions and actions should count for something. What is more they are growing bananas and flowers on the washwater and urine.

Our work started in the fishing villages in Kerala (ref 1,2), south west India where many households have no toilet facilities, and half or more still have to fetch their water from communal wells. Open defecation, poor hygiene, a very high water table and the proximity of communal wells to private soak-aways or pit latrines results in most wells being highly contaminated with faecal coliforms. It is hardly surprising that intestinal worms and diarrhoea are endemic, that outbreaks of cholera and dysentery occur each year or that it is not unusual to meet young people with polio-affected limbs. It was in this context that our work in these villages focused on raising awareness of the dangers of these problems and developing with the community a sanitation solution that would suit their needs and protect their health, water and environment. (refs 3,4)

However the approach is also appropriate in urban and peri-urban areas. Water is often scarce in many city quarters and too precious to be used for flushing toilets. Often there is nowhere for the flushings to go even if there was water enough to flush in the first place. Bad drainage and the absence or overloading of sewers in high water table areas of towns and cities can make water-flush toilets both offensive and a health hazard to live with. But for many urban dwellers overused, unsanitary toilets, or no toilet at all is the norm. In India, for example, only about 50% of the urban population have access to safe sanitation. Urine diverting toilets offer much better

solutions in many urban situations providing safe sanitation and productive reuse of products for income generation, food security and health. (ref 5)

Most importantly we use our work to raise interest and awareness amongst senior government and non-government decision makers. On the ground the aims of the projects are to propagate, amongst needy communities, sound hygiene behaviour coupled with sustained use of eco-san and wider awareness of, and confidence in, the eco-sanitation approach. We do this through good hygiene and environment education and practical demonstration of the approach. We build ecosan toilets with the community and demonstrate reuse of the products. We train and assist a local group to provide sustained follow-up support to the users.

Ecological Sanitation - more than just toilets

Ecological sanitation is far more than just toilets:

- It is also about our habitat, environment, health, food and water.
- It is about recycling the organic matter and nutrients in our excreta safely back to the soils that sustain us.
- It is about minimising unnecessary water use and protecting our water supplies from contamination with antibiotics, hormones, chemicals and pathogens.
- It is about destroying human pathogens and preventing the spread of disease by ensuring the pathogens do not enter our water or environment.
- Ecological sanitation is also about household and personal hygiene, about hand-washing with soap and safely managing children's faeces.
- It is also about managing our other household waste and grey water in a sustainable manner, maximising recycling and reuse at the household level.
- It is about our well-being and survival in a world where water-security, food-security and space to live are crisis issues for much of the world population.

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