KARNATAKA

Total Sanitation Campaign

Swabhimanakkagi Swachathe

Ecological toilets are safer for groundwater than other toilets

www.ecosanindia.org

Ecosan Approach

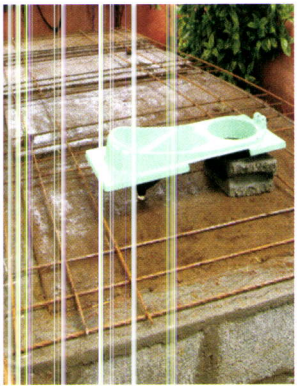
The approach of Ecological Sanitation breaks with the conventional flush and pit toilet systems. Instead, ecological toilets (Eco-Toilets) turn faeces and urine into soil conditioner and fertilizer. This benefits both people's health and the environment by preventing germs from spreading and turning harmful human waste into something useful as well as saving lots of water. Ecological toilets are safer for groundwater than other toilets because they sit above ground or use shallow pits. They reduce the amount of water needed for sanitation purposes as well as they produce fertilizer. Unlike pit toilets they can be used for many years. Although these toilets need more maintenance then pit or flush toilets, it is easy to summarize how they work: Ecological sanitation turns waste into a resource.

Rich, healthy soil needs organic matter what is left when plants and other living things die and decompose. This natural process of organic matter breaking down into soil is called composting. Around the world, farmers compost their wastes and add them into the soil. This keeps the soil full of nutrients for growing crops. Just as people need nutrients from food to grow strong and healthy, plants need nutrients in soil to grow strong and bear fruit.

Both urine and faeces carry nutrients that can improve soil. But faeces can also have many germs that cause disease. For this reason, making fertilizer from faeces takes more care than composting animal manure and food scraps. Faeces should never be used raw. But once they are made into fertilizer, it can safely help to grow food, trees, and other crops without chemical fertilizers. Urine carries far fewer germs than faeces and has more nutrients. This makes it safer to handle and very valuable as fertilizer. But because it does carry some germs and is too strong to use directly on plants, it also needs special handling.

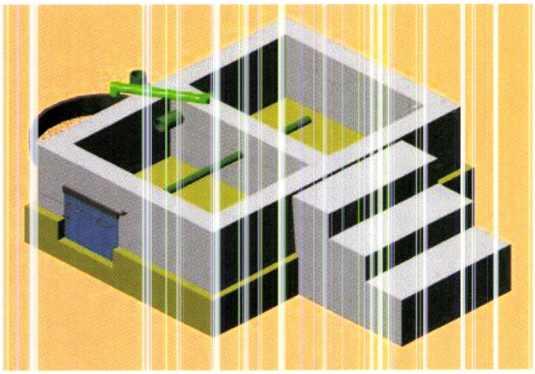
How to construct an eco-toilet

The easiest way to construct an Eco-Toilet is to build it above ground. This makes it easier to remove their contents as well as the impermeable bottom of the toilet prevents any disposal to go into soil and groundwater. Therefore a good foundation is the first step building up a toilet facility. Using a concrete foundation guarantees a stable ground for the toilets basement.



The second step is to build up the facility's basement. To construct two chambers for keeping the faeces is a good option, as one side could be in use while the faeces in the other break down to compost. Leave enough space on top in the walls which separate the chambers to use a hose or a pipe to collect the urine from the urine bowl of the toilet. Integrate also a sealed door into the basements wall at the toilets backside to enable the remove of the compost later.

Cover the basement with a platform of concrete in which a toilet pan or closet for each chamber of the basement is integrated. Make sure that the hose or pipe for urine collection is attached appropriate to



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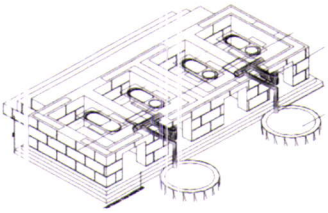
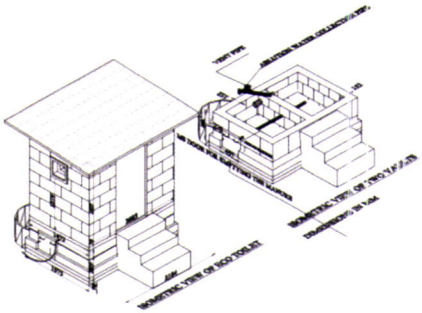
the urine bowl of the pan or the closet. A separate platform for washing could also be integrated. This makes it easier to keep water away from the faeces container. A pipe for ventilating the compost container should also be integrated.



Afterwards the erection of the toilet could be constructed. Integrating windows in the walls and using bright colours for painting makes the interior more bright and friendly. The door to the toilet facility should be lockable from both inside and outside. First guarantees the necessary privacy for the toilet user while the last one enables the toilet facility only for those users who where allowed to.

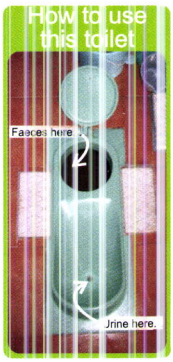
The ventilation pipe should be raised more than two feet higher than the toilets roof. Use dark sun attracting material to heat the air in the pipe. This will stimulate the effectiveness of the vent. Use a protective cover for keeping rain and a net to keep flies away from entering the pipe.

Finally the hose or pipe for urine collection should be connected with an adequate container. This container should be made of plastic as metal containers could be easily corroded by the urine's acids. Make sure that only authorized personal has access to the urine container as well as its filling level is controlled regularly. A handwash basin should be supported with soap and water.



How to use and Maintain the toilet

Toilets constructed under the Ecosan approach need the users help to separate urine from faeces. Therefore the user has to be aware to urinate only in the front of the toilet pan or closet while defecating only in the back part.



After carrying out one's business a small amount of water is added to clean the urine bowl while the faeces should be covered with two shoves of dry sawdust, ash or sand. Washing water should be kept separate from the toilet bowl and should only be used at the washing platform. Post instructions should be installed in the form of posters to help people use and maintain the toilet.

The first step in maintaining an Eco-Toilet is to equip the toilet facility with enough water for cleaning the urine bowl and washing purpose, enough dry sawdust/ash/sand for covering the faeces and soap for hand washing afterwards. Keep the lid of the toilet pan or closet in use closed to prevent flies from entering as well as preventing washing water dripping in inadvertent. Close or cover the other toilet pan or closet to make sure that only one is in use at the same time. Make also sure, that no water gets in the faeces collection chamber. Depending on the user's health, the contents could get wet. In that case add more dry matter. A bad smelling toilet could be a symptom for both that faeces are not covered with enough dry matter or that the vent pipe is not clear. Add more dry matter and make sure the vent pipe is clear. If the pile builds up too high in the compost chamber, use a stick to push it back down.

For ecological toilets to work, they must only be used for excrements. Women having monthly bleeding may safely use ecological toilets. But sanitary pads and other products should be put in dustbins not in the toilet. Ecological toilets cannot be used to recycle things that will not break down, such as cans, bottles, plastic, or large amounts of paper. They can take small amounts of paper, leaves, sawdust and other plant matter because these things break down and can be turned back into the soil. To keep garbage out of the toilet you should support the facility outside and inside with enough dustbins.

When the first chamber is filled, use the other chamber. Be sure to cover the first chamber. After a year or when both chambers are filled, empty the first one and repeat the process. If the chamber has been filled in a time shorter than one year, finish the composting process in a normal compost pile. As already mentioned above, empty the urine collection

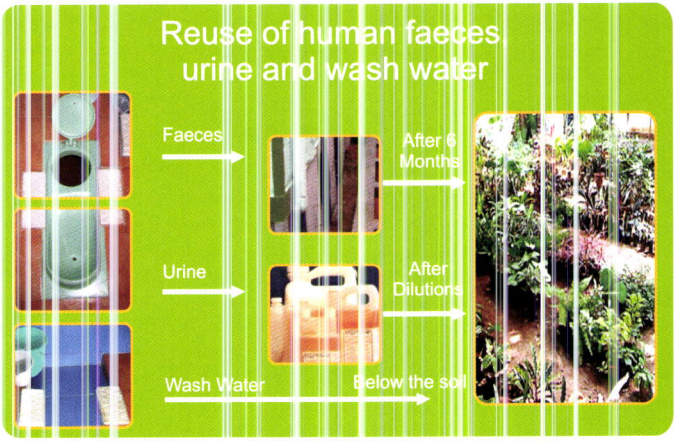
How to use and Maintain the toilet

container and make fertilizer when it is full. Make sure that you have enough soil to be fertilized. Otherwise you would poison the plants. If the landsite for fertilizing is in a distance to the toilet facility be sure to have an adequate possibility for safely transporting the urine.

The contents of an Eco-Toilet's faeces chamber are ready to remove when they are dry, have little or no smell, and look like ordinary soil. For this to happen, they should be kept dry inside the toilet chamber for one year. When you think the contents should be ready to remove, open the chamber. If the pile is still wet, add dry plant matter or soil mixed with ash and let it sit for several weeks more. If the pile is dry and does not have a strong smell, it is ready. Remove it with a shovel. After drying out for one year, most germs will be dead and the material should be safe to handle and to add directly to garden soil. But if there is any doubt, the contents of the toilet can be given extra treatment to ensure that all germs are killed. To completely dry the contents of the toilet, store it in bags or buckets for a few weeks. To heat it up, leave it in a dry, sunny area, or add it to a compost pile. Since there still may be some germs, it is important to wear gloves and shoes when handling the contents, and to wash well after emptying the toilet.

Unlike the faeces the urine could be easily used as fertilizer a few days after its collection. However urine is much safer to handle than faeces, the same nutrients that make it a good fertilizer can pollute water sources. Also, it can carry blood-flukes (schistosomiasis) common in only some parts of the world. Because of this, it is important not to put urine into water sources, or near where people drink or bathe. To make urine fertilizer, store the urine for a few days in a closed container before use. This will kill any germs it contains and will also prevent nutrients from escaping into the air. To make fertilizer, dilute the urine with water. Mix three parts of water for every part of urine. You can fertilize plants with diluted urine as often as 3 times a week. Like all fertilizers the amount depends on the plant. However, plants fertilized with urine can grow as well as plants grown with chemical fertilizers, and need less water. Plants that make edible leaves, like spinach, grow best. You should always wash hands after handling urine.

How to use the resources created by an Eco-toilet



Another but more elaborate way of getting fertilizer out of urine is to ferment it. Adding compost to urine, and letting this mixture ferment (rot and turn sour), can create new soil for planting. Therefore, add one tablespoon of rich soil or compost for each litre of collected urine. Let the mix rest uncovered for four weeks. As it will smell badly, do it in a place away from people. After the period mentioned, the mixture will ferment and turn brown. Fill a large container with dry leaves or other dry plant matter and the urine mixture. The best mix is seven parts plant matter to one part urine (about three litres of urine for every 30 cubic centimetres of plant matter.) Cover with a thin layer of soil and add plant seeds or seedlings. Add water every two days with a mix of one part urine to ten parts water. The dry plant matter will turn to rich soil in ten to twelve months. The new soil can be used as compost or to top up another container.

For more Information you can contact :

Local Zilla Panchayat Office of the District

Or

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