

## UDDT (ECOSAN)

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| What is a sanitation system about?  | A sanitation system is more than the toilet. It has to do with disposal and potential reuse of urine and faeces following treatment, grey water discharge, treatment and reuse or disposal, comfort, affordability, hygiene aspects, etc.  |
| <i>What is Ecosan?</i>  | <i>Ecosan is the technically not correct Indian name for urine diversion dry toilet (UDDT). This type is also known under other names: urine diversion composting toilet (UDCT,) ecological sanitation and ECOSAN. It is thus a toilet combined with treatment and a serious option for reuse.</i>   |
| <i>What is UDDT?</i>  | <i>UDDT is a continuation of the segregation that has taken place in the human body, whereby urine is segregated from faeces. This is done through having a slab with three holes, one for urine, one for faecal matter and one for wash water (anal cleaning). All these holes are thereafter connected to different collection, treatment and reuse systems.</i>                               |
| Why UDDT?   | UDDT is a relatively new and holistic approach to sanitation; it treats excreta as a valuable and manageable resource, protects and conserves water and sanitizes the excreta. It improves the soil and enhances food and water security; it is safe, attractive, logical and eco friendly.  |
| How it differs?   | Unlike in other systems, here , urine, wash water and excreta are collected and processed separately   |
| <i>What are the advantages?</i>   | UDDT - Ecosan - is a concept that aims at: <ul style="list-style-type: none"> <li>➤ Reducing the use of water in sanitation practices</li> <li>➤ Recycling human wastes into resources</li> <li>➤ Re-using the resources in agri-and horticulture.</li> </ul> This strategy is closing the loop. This means that   |
| <i>What are the disadvantages</i>   | <i>UDDT requires more efforts to be put into awareness raising and habit changing. It typically requires some higher investment and care in operation and maintenance. Ecosan in urban areas requires special attention in collection of urine and composted faecal matter (logistics) and treatment of wash water. One should also note that UDDT is not meant for treatment of grey water.</i> |
| What is urine, apart from being a waste product?                                      | It is not at all a waste. It is a safe product containing lots of nutrients; The urine should preferably be stored and diluted to provide a harsh environment for pathogens. It should be stored in a sealed container to prevent loss of nitrogen.  |
| Will it produce foul smell? If so how to remove the smell? If not how is it possible? | Actually fresh urine has no smell. In many places urinals produce bad smell because of stagnation. Moreover if the faeces and urine are mixed together problem will arise. If they are separated then, there will be no foul smell. In Ecosan toilets there is no foul smell because there is no stagnation of urine and urine and faeces are separated.   |
| What are the dimensions for the toilet chamber?                                       | 1.83 m x 1.35 m x 0.60 m (2 chambers)  |
| When people are using LPG for cooking, how can we get ash?                            | We are using so many other materials from morning till evening; these materials are purchased from the shop. If demand for ash is there, the shop keeper will sell it. The other alternatives like saw dust and lime are commercially available even now.  |
| How can or who can construct UDDT?  | Trained masons are available for construction of UDDT, if these are not available nearby, training is provided by some NGOs. The chambers of UDDT are constructed above the ground level. The super structure is   |

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|   | constructed above the chamber after fixing the squatting slabs and the urine and wash water collection pipes. After completing the construction of super structure a vent pipe is fixed which goes above the roof level and is fixed with a cowl covered with mosquito net.  |
| Is vent pipe necessary?                                       | Vent pipe is necessary for venting off gases formed in the composting chamber.   |
| How to fix the vent pipe?                                     | The vent pipe should be straight. Connect the two faeces chambers in such a way that only one ventilation pipe is needed. Install a vent pipe with cowl and covering with mosquito net. (To prevent water entering through the ventilation pipe).  |
| How many days are needed for masonry training?                | One week   |
| Who will give training?                                       | The trained master masons along with a supervisor will give the training.  |
| What is the cost?   | Cost varies according to the states (approximately 10 - 12 thousand rupees)  |
| How can we reduce the construction cost?                      | By constructing large number of toilets at a time the material can be procured in bulk quantities at lower costs. Up to squatting slab level construction should be pucca. Super structure can be constructed with locally available materials.  |
| Why ventilation?  | Any slight smell which may remain in the toilet should go out.   |
| Roof materials  | Prefabricated ferro cement slabs or sheets.  |
| Leakage   | There should not be any leakage in the roof, because water should never enter the drop hole.   |
| Which area is suitable for UDDT ?                             | UDDT is suitable at any location especially best for water logged (not flood prone unless special precautions are taken), rocky and water scarcity areas.  |
| Income generating   | Urine/compost application improves the crop yield bringing more income. Landless families using the toilet can generate income by selling the compost to farmers who need it   |
| Is there any alternative for washing method?                  | At present no. Alternatives are being thought of keeping in view that wash water does not enter the drop hole.   |
| What are the points to be remembered during the construction? | <ol style="list-style-type: none"> <li>1. The compost toilet should be constructed above ground level.</li> <li>2. The flooring of the toilet should be cemented.</li> <li>3. A vent pipe should be provided at the junction of the separation wall of the two compost chambers to remove the air and gas inside the compost chamber to prevent foul smell inside the toilet. It will quicken the process of dehydration. The vent pipe should be above the roof level, covered with a cowl and mosquito net.</li> <li>4. The door should be fixed ½' above the flooring and 1' below the roof, to ensure air circulation.</li> <li>5. The urine hole in both chambers should be connected by a pipe and led into the pot with holes.</li> <li>6. The wash water in both chambers should be connected by a pipe separately and collected in a filter bed.</li> <li>7. Cana indica or reeds should be planted in the filter bed</li> <li>8. The faeces chambers connected in the direction of the sun so that the faeces get hot which makes the pathogens die more quickly.</li> </ol> |
| How to motivate the people to construct UDDT?                 | Make people understand the problems of existing toilet models. Teach them the concept of UDDT. IEC is a must. (Film shows, usage of urine in agriculture etc.)   |
| What are all the  | ➤ It is easy to change the mindset of the people who are going for   |

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| learning's? | <p>open defecation to go for ECOSAN toilets.</p> <ul style="list-style-type: none"> <li>➤ Water is saved as less water is consumed.</li> <li>➤ Water, soil and air pollution prevented.</li> </ul> |
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### Operation and maintenance

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| What is the usage procedure?   | <p>Take out the lid<br/>Sitting position should be proper so that the faecal matter is dropped right into the drop hole without falling on the sides of the drop hole<br/>After defecating sprinkle hand full of ash or saw dust or lime powder over the faecal matter<br/>Close the drop hole with lid<br/>Slightly move backwards and wash your body<br/>Wash your hands using soap or ash thoroughly after using the Ecosan toilet.</p>   |
| In how many months the chamber gets filled?  | The chamber is designed in such a way that it gets filled up in a year for a family of 5 +1 = 6 members using the toilet.  |
| How many months will be needed to compost?   | Nine months.   |
| Will it produce foul smell? If so how to remove the smell? If not how is it possible?          | Actually fresh urine has no smell. In many places urinals produce bad smell because of stagnation. Moreover if the faeces and urine are mixed together problem will arise. If they are separated then, there will be no foul smell. In Ecosan toilets there is no foul smell because there is no stagnation of urine and urine and faeces are separated.   |
| Wrong usage  | Water should not go into drop hole where faecal matter is collected.   |
| By mistake if water goes inside the chamber what we have to do?                                | If the water goes into the drop hole, more ash/saw dust/lime should be added.  |
| If a person is sick (stomach problem) and if he uses the UDDT, what will happen in composting? | No problem, the sick person can use the toilet, the compost quality is the same as the compost of an ordinary person's toilet. The chamber should not be opened before 8 months.   |
| Can we add natural microbes for fast and better quality of composting?                         | Demonstration conducted and the result is yet to be received.  |
| After construction, how can it be put to use?  | Put 3 cm fine layer of ashes or saw dust on the floor before using a chamber to stimulate the drying process.  |
| How do we maintain the toilet?   | <ol style="list-style-type: none"> <li>1. Ash, limestone powder, lime or sand should be sprinkled over the excreta. After defecation, the drop hole should be covered with a lid. The fertility of the compost could be increased by adding dry leaves inside the drop hole weekly once.</li> <li>2. If by any chance some insects, worms and the like are found inside the chamber crushed or pound neem leaves should be added. Neem oil/ cake/powder can also be used</li> <li>3. The user should not wash the body over the drop hole. He/she should move a few inches back and wash the body. The wash water is drained out through the rear basin hole.</li> <li>4. The hands should be washed.</li> <li>5. The first chamber can be used for one year. When it is full the toilet above should be sealed so as to make further use impossible.</li> <li>6. From then onwards the second chamber is to be used.</li> </ol> |

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|  | <ol style="list-style-type: none"> <li>7. Urine is collected in a perforated pot and used for watering plants. The wash water runs through a filter bed and used for watering plants.</li> <li>8. After nine months the compost in the first-used chamber can be taken out. It will not have foul smell and can be touched with the hands. It is better that if gloves are used while removing the compost from the chamber. It can be used as a fertilizer for agriculture purposes. After removal, the empty chamber should be cleaned and closed with the detachable slab.</li> <li>9. Always keep ash or saw dust in a bucket inside the toilet.</li> <li>10. Keep water in a small bucket and use a small mug. Water tap should not be provided inside the toilet.</li> <li>11. Keep a brush/small piece of cloth fixed with stick for cleaning the pan at regular intervals. If need be use a damp cloth for cleaning the pan.</li> <li>12. Always wear gloves during emptying the chamber and wash hands with soap.</li> <li>13. The chamber not in use/sealed for composting should be well marked so that it should not be opened.</li> <li>14. Teach new users and children the proper use of toilet.</li> </ol> |
| What are the precautions to be taken?  | <ol style="list-style-type: none"> <li>1. Do not use both the chambers at the same time.</li> <li>2. Urine and water should not enter the faeces vault</li> <li>3. Do not use chemicals, acids and water for cleaning the pan</li> <li>4. Do not use partially digested / fresh excreta as fertilizer since it is harmful.</li> <li>5. Do not empty the chamber before nine months after sealing it for processing.</li> <li>6. Do not allow rain water to enter the pan from vent pipe or from ventilator/ door.</li> <li>7. Do not leave urine container open and unprotected.</li> <li>8. Do not urinate standing. The urine will splash on the latrine floor giving rise to bad smell.</li> </ol>  |
| Can urine be reused when ladies have their periods or do special precautions need to be taken? | Yes, it can be used after filtering it with sand and charcoal. As a precaution the urine must be used only after 24 hours.   |
| What happens if a family member is on medication, can he still use the toilet?                 | Yes, he can still use the toilet.  |

#### Reuse

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| How to use urine?   | Collected in a jerry can or perforated mud pot and used for kitchen garden. In the case of the former after applying urine, water is to be added.                              |
| How to use compost?                                       | Compost can be used as basic dose. It is a good soil conditioner.  |
| Is there any nutrient value in human waste?               | After nine months the fecal matter becomes very good compost, which is full of nutrients and very good for all agricultural crops. The compost is a valuable soil conditioner. |
| What about urine?   | Urine contains more nutrients. The fertilizer value of urine produced by a human per year is - Urea (nitrogen) 2.5-4.3 kg; Phosphorus- 0.7-1.0 kg; Potassium 0.9-1.0 kg        |
| What is the contents of NPK one person excretes per year? | One person excretes about 4.56 kg of N, 0.55 Kg of P and 1.28 Kg of K per year   |
| How much of grain can                                     | These nutrients are enough to produce about 256 kg of grain per year   |

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| these nutrient produce a year?                               |  |
| What is the average consumption of grain per person per year | Approximately 250 to 260 kg of grain is consumed by a person a year. |