

Dry-San Hygienic Rural Toilet
(Dry Sanitation System from IIT Bombay)

Where there are no latrines people resort to defecation in the open - UNEP Report

665 million Indians practice open defecation, more than half the global total.

1,000 children younger than 5 years die every day in India from diarrhea, hepatitis- causing pathogens and other sanitation-related diseases

-the United Nations Children's Fund
The crisis is especially acute for girls:

Many drop-out of school once they reach puberty because of inadequate lavatories, depriving the country of a generation of possible leaders - UNICEF

The toll on human health, due to unhygienic sanitation conditions is grim.

300 million people in developed countries in one toilet flush use the same amount of water what many people in developing countries are entitled for a whole day. Water latrines and sewerage systems involve huge infrastructure and have high maintenance costs. Water latrines cannot ensure a clean environment as they pose a far greater risk to public health and environment in case of failures.

Therefore it becomes the need of the hour to design and develop simple and safe dry sanitation systems, which are cost effective for the region and community where these are being implemented.

Current Scenario



Dry-San - hygienic dry sanitation system avoids direct discharge of excreta into the nearby water bodies or on to the open lands.

A **sanitation solution** catering specifically to the needs of rural India with water shortages.

Cost effective,
Manageable, Modular
(portable, flexible,
easy to manufacture,
deploy and maintain)
Sustainable (derive
economic benefit by
making fertilizer for
their fields)

patent application no. 3711/MUM/2013
Patent Application no. 645/MUM/2014.

Dry-San Hygienic Rural Toilet
(Dry Sanitation System)

Sponsored by:
Ministry of Drinking Water & Sanitation
Government of India

Principal Investigator:
K. Munshi
Professor
Industrial Design Centre
IIT Bombay
munshi@iitb.ac.in



The Dry-San system is a step forward in mitigating the problems of rural sanitation in India, particularly for the vulnerable sections, like women, school going girls and children.

The design is based on the premise that there is dearth of water, so flush type of toilet cannot be part of the solution. The important design factor is to convert the waste material, which otherwise pollutes the land and water bodies, into a **resource (liquid fertiliser from urine and manure from solid waste) for the farmer by non-chemical, natural aerobic decomposition process, facilitated by design configuration.**

The Dry-San Toilet system can be directly taken for manufacture and deployment. The Design Manual & Guidelines are ready for distribution to NGOs and /or self-help groups, who would like to build and install the units in their respective areas of operation.

The Hygienic dry sanitation system consists of squat type toilet pan with three exclusive ports for solids, urine and washing water and arrangement of pits below it for collection, where extra water is filtered out and the solids allowed to decompose aerobically as shown in the fig. below

Benefits of using hygienic dry sanitation system

- Eliminates the spread of diseases by treating excreta and other waste, converting this waste into a valuable resource; and avoiding contamination of water and food.
- Composted human excreta and urine could be utilized as organic fertilizers which completes the human nutrient cycle by enriching the farming soil with nutrients. Also eliminates or reduces the need to buy industrial fertilizers.
- Avoids Contamination of scarce water resources.
- Helps save water for other purposes - drinking, washing, cleaning etc.

Waterless – No flush system

No external additives– No chemicals, enzymes

Aids & accelerates natural process of decomposition

Women friendly – help in disposing sanitation pads & diapers

Elderly friendly – heel support

Utilises Waste – to make fertiliser

Brings science to empirical level

Stainless Steel Squat type toilet pan with three exclusive ports for solids, urine and washing water
SS pan is durable, unbreakable and can last more than 20 years – long useful life
SS resists chemicals and removes accumulated dirt easily. Can be **scrubbed** if required.
Unique heel support aids in getting up from squat position, **especially for elderly**

Dry-San Hygienic Rural Toilet

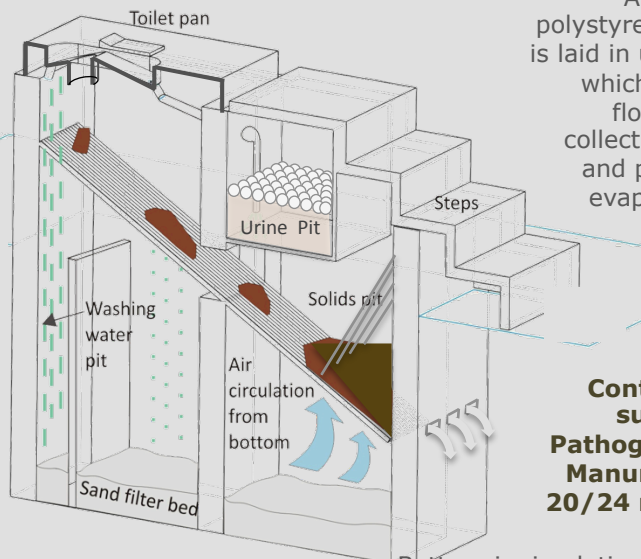
(Dry Sanitation System from IIT Bombay)



Sanitary Pads Kitchen waste can be disposed

The solid matter slides over the inclined sieve and collects at the edge of the sieve in the lower part of the front pit.

Gravel bed acts as a filter for washing water, which trickles down to the soil.



A layer of polystyrene balls is laid in urine pit which always floats over collected urine and prevents evaporation.

Continuous supply of Pathogen free Manure after 20/24 months

Better air circulation from the bottom as well, to aid aerobic decomposition.

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Washing water collection & Drainage
 Front compartment for urine collection and drainage



Cost of toilet usage:

Rs. 0.35 p / person / day (for 6 person family toilet)
Rs. 0.07 p / person /day (public toilet for 30 persons)

Design & Development:

MSG Rajan / Swapnil Ghutke / Prof. K. Ramachandran / Prof. K. Munshi (munshi@iitb.ac.in, munshi999@yahoo.com)