



**SMCH/EH/011: Excreta disposal with reference to types of latrines**

**QUADRANT 1**

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**Description of Module**

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<b>Subject name</b>	Social Medicine & Community Health
<b>Paper name</b>	Environment and Health
<b>Module name/Title</b>	Excreta Disposal with reference to types of latrines
<b>Module Id</b>	<b>SMCH/EH/11</b>
<b>Pre-requisites</b>	Understandings of consequences of lack to basic sanitation
<b>Objectives</b>	To have an overview of role of sanitation barrier and different types of latrines
<b>Keywords</b>	Sanitation Barriers, Ecosan toilet, E toilet, Sanitary latrines



### **Introduction:**

According to *Vishnu Puran* defecation ought to be done at least 150 feet from water source and urination at a distance of 15 feet. After Indus civilization provision of latrines and bath were not essential for the home India is predominantly agricultural country and majority of the people lives in rural areas where open field defecations are culturally accepted by the population. However, it leads to fecal born diseases in order to prevent the diseases sanitation barrier has to be in place. Over a period of time different types of latrines evolved in India.

### **Learning Outcomes**

After going through the module the reader should be able to:

- To list package of rural sanitation
- To enumerate priorities for rural sanitations
- To list social factors related to excreta disposal
- To enumerate elements of sanitation barrier
- To enumerate essential features of sanitary latrines
- To state salient features of different types of latrines
- To explain public health importance of excreta disposal

### **Main text**

#### **1- Package of rural sanitation**

Access to basic sanitation stands as the most neglected Millennium Development Goal. Poor sanitation cost India \$ 54 billion or 6.6% of GDP in 2006 (World Bank). It is responsible for losses in terms of education, productivity time and tourism. Around 3.5 lakh under five children die of diarrhoea alone every year. According to census 2011 only 33% of rural households were using latrines, whereas 87.4% urban population did so and at national level it was 50%. The rural sanitation programme till 1995 was restricted to construction of latrines. Presently central rural sanitation program includes seven component packages:

- 1-Safe handling of drinking water
- 2-Scientific disposal of waste water
- 3-Safe disposal of human excreta including child excreta.
- 4-Disposal of garbage and animal excreta
- 5- Home sanitation and food hygiene



- 6- Improved personal hygiene
- 7- Village sanitation

## **2-Priorities for rural sanitation:**

The priorities for rural sanitation have been fixed:

- Preference will be given to the twin pit model of water seal latrines.
- School sanitation (providing toilets) should be given highest priority to inculcate safe hygiene habits among school children.
- Village Panchayats should adopt buildings by laws where dry latrines are not permissible only water seal type latrines are to be constructed.
- The State Council proposed for Urban sanitation sector should also have the mandate for rural sanitation.
- Subsidy for low cost household toilets should only be given to rural below Poverty Line (BPL) families and it should be par with subsidy for urban household.
- In order to mobilize funds for rural sanitation, financial institutions/banks including HUDCO and the National Bank of Agriculture and Rural Development (NABARD) should extent loan to states at lower rates of interest for provision of sanitation facilities.
- Private sector should be encouraged in setting up of building centres and sanitary marts in rural areas to provide cost effective sanitation technology.
- The recommendation made for urban low cost sanitation should also apply to rural areas as well.
- To change behaviour and adoption of sanitary practices, intensive, communication, education and appropriate information is necessary to be disseminated to women groups, PRIs and village Health and Sanitation Committee through multiple channels.

## **3- Social factors related to excreta disposal:**

Indiscriminate open field defecation leads to soil pollution in villages and in slums. It is responsible for 70-80% of illness related to water contamination and poor sanitation.

Latrines are identified as dirty places and nuisance of odour and filies. Toilets constructed by Government are used as storage bins. Hands are used for the act of ablution and improper washing of hands leads to contamination of food and water. As excreta of children is considered harmless, they defecate in and around have and after cleaning mothers do not wash their hand with soap and water this leads to contamination of soil, food and water. Open field defecation is not considered as health hazard by many villagers. Men contribute the act



of defecation with morning walk and smoking. The problem is of serious concern due to smoking land and less space for open defecation in urban slums.

#### **4-Sanitation Barrier:**

Sanitation barrier is the barrier through which the disease causing pathogens are unable to reach the susceptible host directly or indirectly. Improper disposed excreta may contaminate any one of the following (5 Fs fluids, food, flies, fingers, fomites) like water, food or soil through fingers or flies leading to disease transmission in a new host. Sanitation barriers could be two types.

**4.1- Primary sanitation barriers:** Proper disposal of excreta forms a barrier which would not allow the organism to enter into environment by constructing a bore hole latrines i.e., sanitary latrines, which prevents the disease agent to enter the environment either directly or indirectly.

**4.2-Secondary sanitation barrier:** It means, once the organism reached the food, formits, water, flies or fingers, etc, making these foods non infectious by food sanitation, water purification, controlling flies, washing hands etc. So the primary is the best way of disease control in the community.

#### **5-Essential features of sanitary latrines:**

- Sanitary latrines serve the purpose of sanitation barriers. Sanitary latrines are cleaned automatically in a systematic manner through “Flush.”
- Sanitary latrines are also known as by other names like Cleaned latrines, Non service type latrines, Sanitary Sandas, Clean Healthy latrines.
- It prevents direct contact of the feces with the five agents of diseases transmission vis a vis water, fingers, flies, soil, and foods.

#### **6- Types of Latrines:**

##### **6.1 Sanitary Latrines**

[A] Bore Hole Latrines

[B] Dug Well Latrines

[C] Water Seal Latrines

(i) PRAI type

(ii) RCA type

[D] Septic Tank

[E] Aqua Privy

[F] Shallow and Deep Trench



### **Bore Hole Latrines**

- In these latrines a pit that 6 meters deep and 40 cms in diameter is dug. This type of latrine serves a family of 5-6 people for a year.
- Presently these latrines are not in use.
- Since the hole of these latrines is using a boring machine, these are named bore hole latrines.

### **Dug well latrines**

- It is similar to borehole latrine, but dig the pit for this type of latrine neither a boring machine nor an auger is needed.
- The whole is 3.3 meters deep and 75 cms in meters deep and 75 cms in diameters.
- A concrete plate is used to sit on the hole
- A small family can use it for many years after that the pit is closed.
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### **Water seal latrines**

- It is improved version of sanitary latrine for small towns and rural areas. Here excreta is hand flushed by the user therefore it also known as “Hand flushed latrines”
- These latrines are two types:
- PRAI type
- RCA type

### **Septic tank**

- In the absence of public sewage system, sewage is disposed off through septic tanks.
- This brick an cement tank with two chambers. It has an inlet through which excreta enters the tank and effluent is collected in the constructed pit through outlet.
- Periodic removal of sludge from the tank is essential.

### **Aqua privy**

- It has a chamber like structure below the latrine pan, which retains water.
- Effluents are allowed to pass into an underground covered pit.
- This type of latrine is very useful for small families and railway stations.

### **Shallow and deep trench**

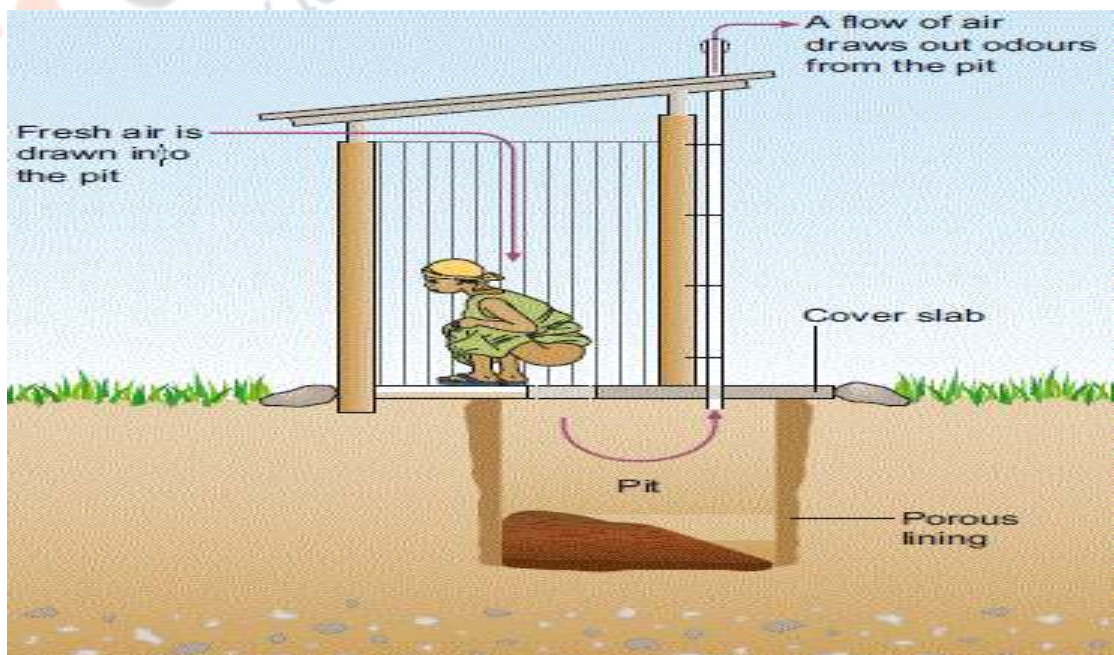
- These types of latrines are used temporarily at camps, fairs etc.
- A shallow trench that is 30 cm broad and 90 to 150 cms deep is dug.



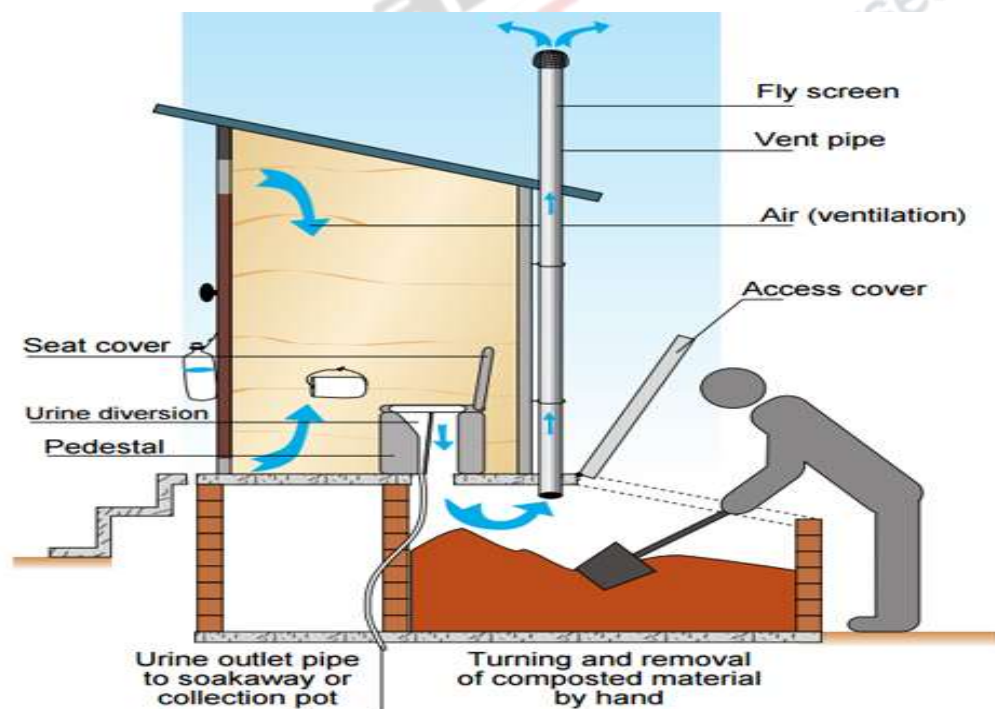
- Dug up trench is 2-2.5 meters deep and 75-90 cms broad, length of both these trenches is kept in proportion to the number of people.

## 6.2- Other types of latrines:

- **Service Latrines:** Man cleans excreta from these types of latrines which is against the dignity of man and also responsible for water and soil pollution and various infections.
- **Traveller's Latrines:** These are used in trains and other means of transport (Ships). It produces foul smell and also creates unpleasant view. Hence this method of excreta disposal is not appropriate from public point of view.
- **Direct pit Latrines:** The excreta fall directly into the pit through a drop hole. When the pit gets filled up short of 1m, its squatting plate is removed and it is covered with earth and allowed to undergo anaerobic putrefaction.
- **Indirect pit Latrines:** A concrete squatting plate complete with pan, a trap and a connecting pipe assembly leads to a circular pit. The excreta received in the pan are hand-flushed by the user. After the pit filled up to the desired level, covered with earth dome and allowed to undergo anaerobic putrefaction.
- **Ventilated Improved Pit Latrines:** A concrete squatting plate fixed on top of a pit. The excreta fall directly into the pit through a drop hole. There is no provision for a water seal. When the pit contents rise up to 1 m below ground level, its squatting plate is removed and it is topped with earth cover to allow anaerobic putrefaction of excreta.



- **Ecosan Toilet:** Urine diverting dehydrating toilets are commonly termed as *ecosan toilets*. This ecological sanitation (Ecosan) toilet is waterless, and has dehydration/evaporation system. Faeces, urine and wash water, where people follow ablution after defecation, need to be separate using a specially designed toilet 3-hole seat.
- It helps in saving water, preventing contamination of ground water and recycling nutrients excreted by human beings to agriculture.
- The dry waste is manageable and can be processed in the following ways:
- [A] used in the making of compost.
- [B] Disposed by using municipal waste services.
- [C] Used as a source of fuel.
- Urine diverted to a storage tank can be applied to crops as a nitrogen rich fertilizer containing both phosphorous and potassium.



- **e- Toilets:** It is India's first electronic public toilet. It incorporates full cycle approach in sustainable sanitation. The insertion of a coin opens the door of the e- Toilet for the user, switches on a light-thus saving energy and even directs the person with audio commands. The toilets are programmed to flush 1.5 litres of water after 3 minutes of usage. It also programmed to clean the platform with complete wash down after every 5 or 10 person use the toilet. Kerala is the first state in India to offer the connected e toilet facility.



### **Sulabh Shauchalaya:**

- It is a water-flushed toilet connected to twin pits. It is a hand flush water seal latrine and is essentially an improved version of the RCA latrine having pit size of about one cubic meter. It can be adapted to different hydro geological and physical condition.
- Thousands of Sulabh toilets complexes in slums and towns all over India are being used by 10 million people at present.

### **The reasons of success of Sulabh Shauchalaya movement are:**

- It is a non-government initiative.
- The system is self supporting.
- 3-The biogas plants have been established to generate combustible gas and electricity from the excreta, in places where the number of latrines is large.
- The organization not only builds the toilets but also provides maintenance services for smooth functioning.

### **7- Public health importance of excreta disposal:**

- Human excreta are an important cause of environment pollution and source of infection as well.
- For healthy environment removal and safe disposal of excreta are important responsibility of any society.

### **The health hazards of improper excreta disposal are:**

- Soil pollution
- Water pollution
- Contamination of food
- Propagation of flies.

### **Summary**

Sanitation is the collection, transport, treatment and disposal or refuse of human excreta, domestic waste water and solid waste and associate hygiene promotion. Primary and secondary sanitation barriers enforcement holds great promise in provision of basic sanitation. There are different types of latrines; their selection is context specific.





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