

# Central-Asian Alliance for Water

## «Dry toilets»

Application of new technologies in  
agriculture or Ecosan concept in the  
Fergana valley

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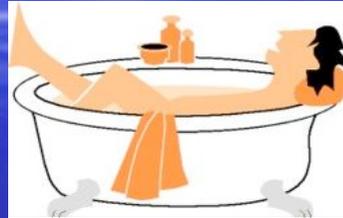


# Sources of everyday sewage

Washing



Bathing



Kitchen



Toilet



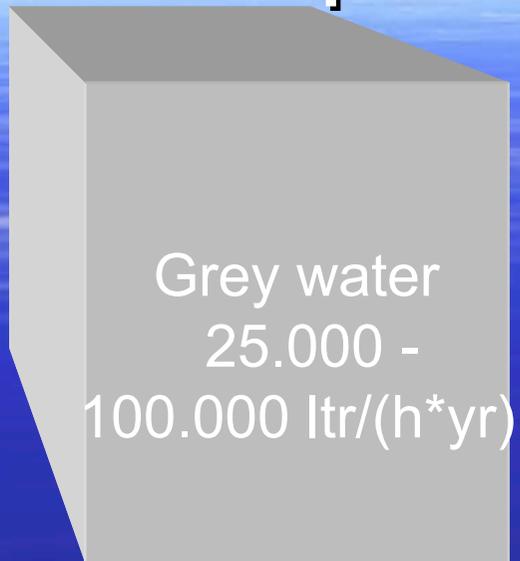
Grey water

Urine

Faeces

Black water

# Description of different streams



- largest capacity
- lowest hygiene risk
- few nutrients
- easy to clean

Water from toilet sinks  
6.000 - 25.000  
ltr/(h\*yr)

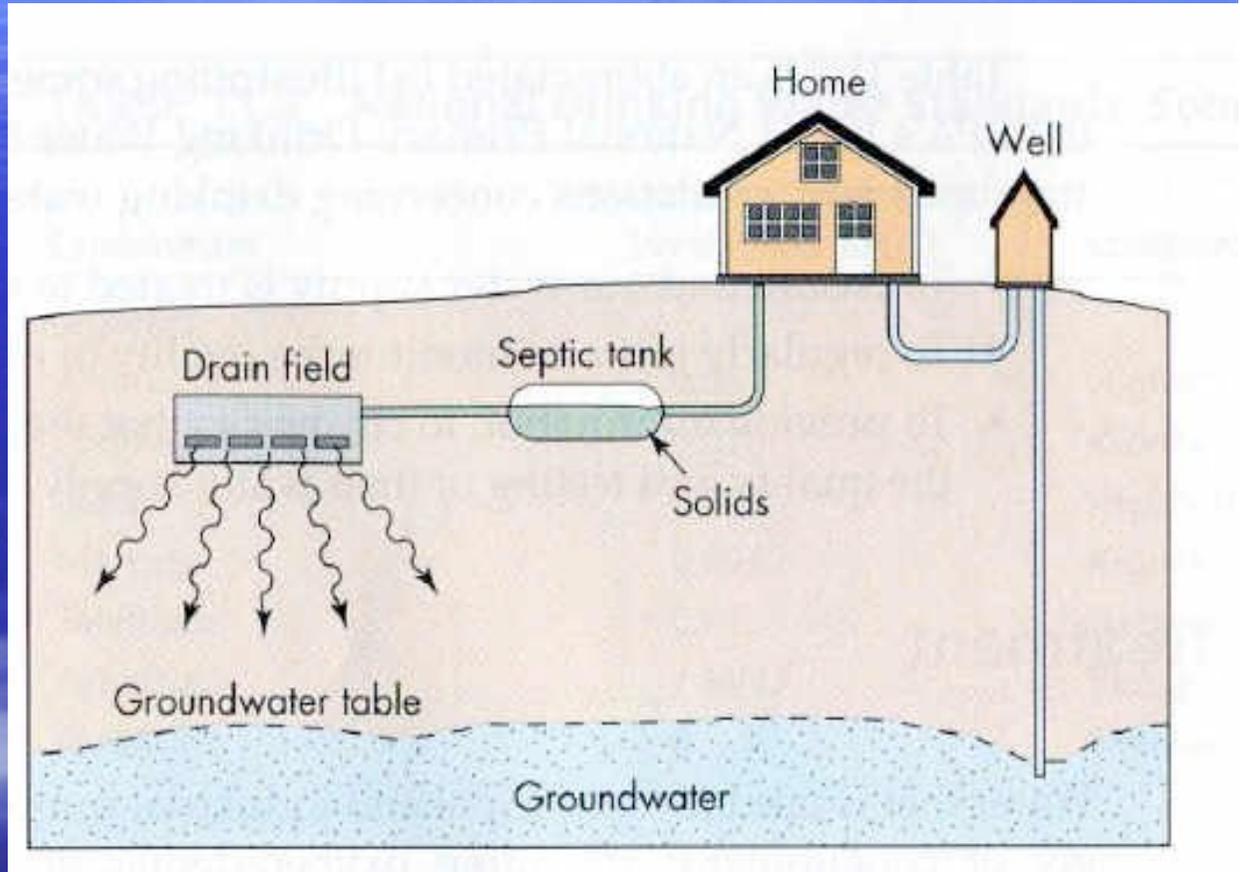
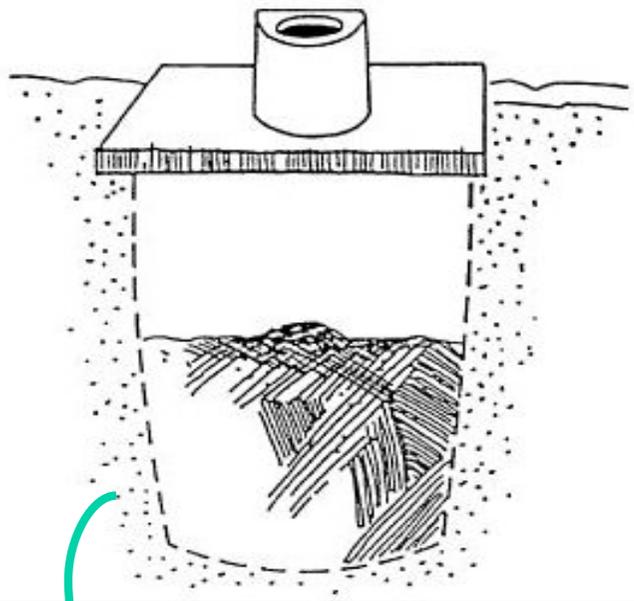
Urine  
~ 500 ltr/(h\*yr)

- relatively small capacity
- low risk
- nearly all nutrients

Faeces  
~ 50 ltr/(h\*yr)

- small capacity
- high hygiene risk
- Careful handling is required

# Common decentralized systems



Ground Waters

# Nutrients in Excrement

Urine and Faeces – full fertilizers of high quality

Urine rich in:

- Nitrogen
- Phosphorus
- Potassium
- micronutrients

Faeces rich in:

- Phosphorus
- Potassium
- Organic substance
- microorganisms
- Pathogens

Urine of healthy human is sterile

Faeces should be processed before utilization in cultivation period

Pathogens must be always eliminated before application of faeces on domestic or municipal level

Directive of World Health Organization (WHO) on processing of Faeces.

- Alkaline processing
- Storage
- Composting
- Burning out

# Generalization of storing rules and processing of Excrements

- Urine from home toilet: direct application with mixing of water in number of 1κ 3ltr or 1κ 5ltr after storing
- Urine from school or social toilets: not least than 6 months of storing period
- Faeces: 2 years of storing combined with alkaline processing with addition of ashes or lime, or combined with composting.

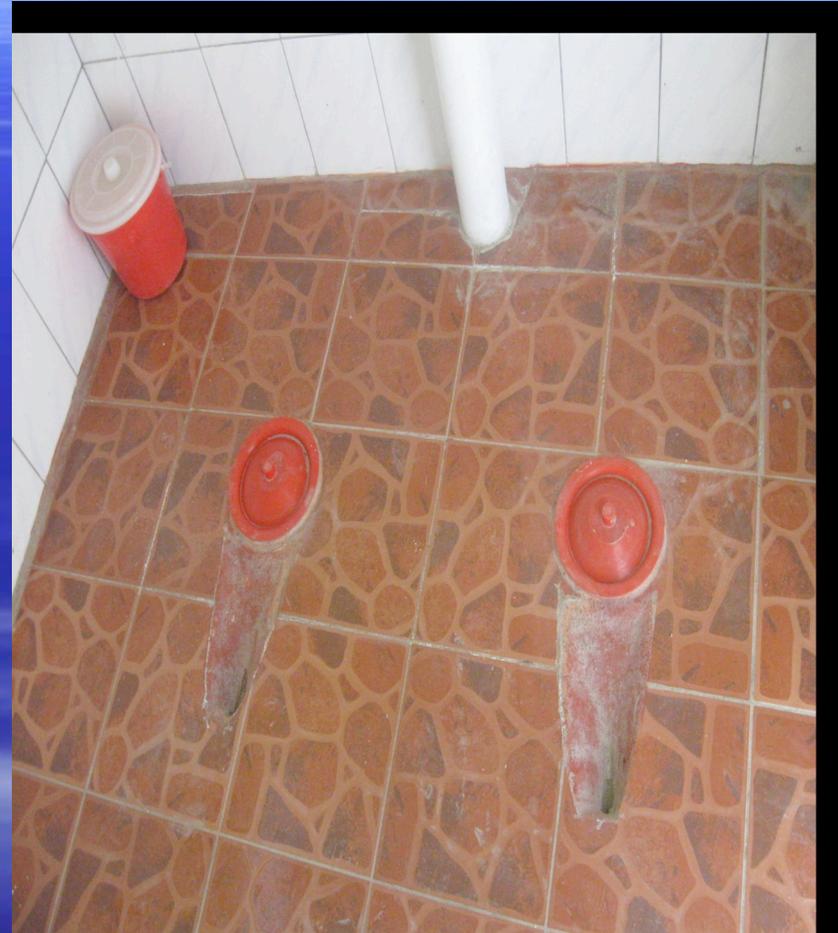
# Ordinary village toilets



# Inside of toilet in the period of ground waters rise

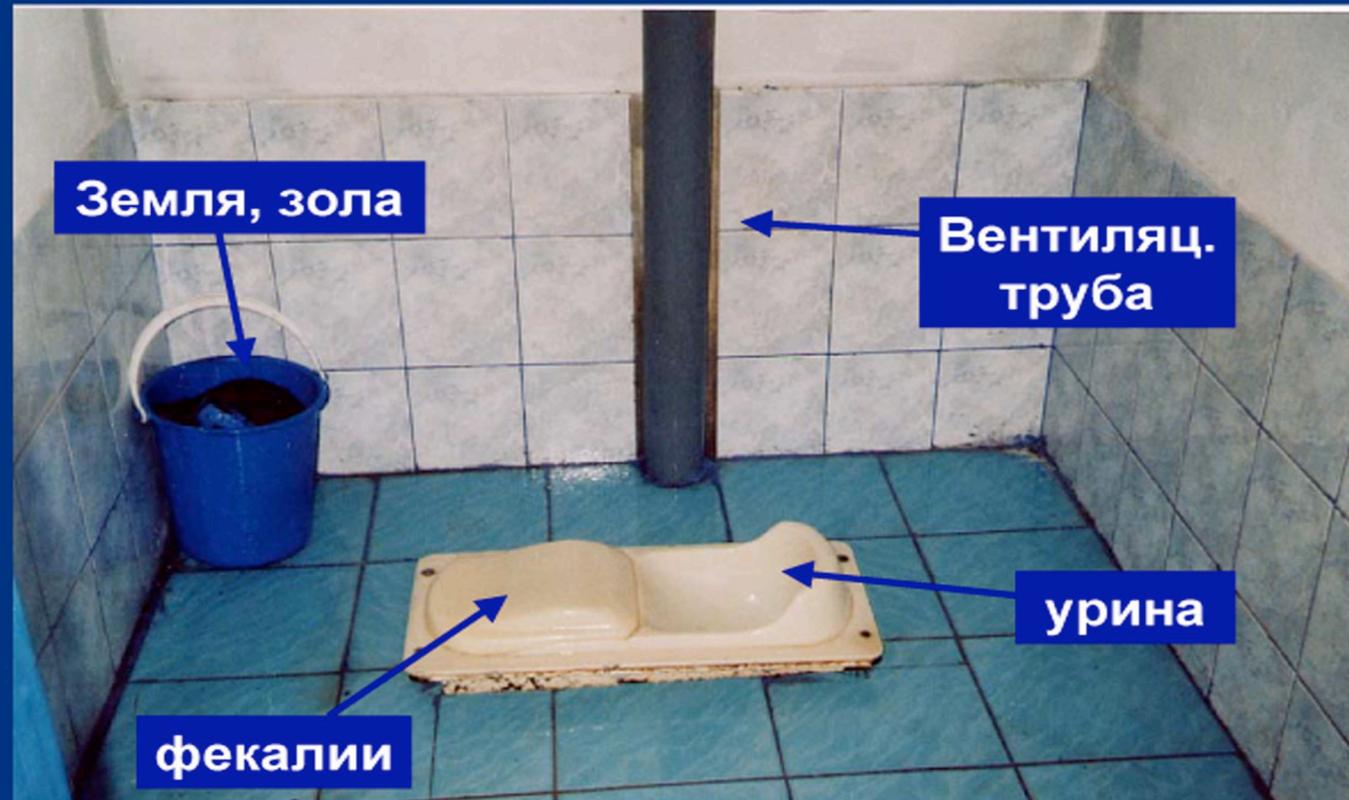


# Ecosan toilets in Aravan village



# Ecosan toilet attached to house

**Внутри  
туалета**



# Risk for Health

Nearly 5 million of people die annually from contaminated water

1 gram of faeces may contain:

- 10,000,000 viruses
- 1,000,000 bacteria
- 1,000 parasitic spores
- 100 parasitic egg cells

(info source: UNESCO, 2001)

Certain ways of infection:

- arms
- faeces on surface water (in drinking water or in lake, swimming areas)
- faeces in food and so on.

# Two-chamber dry toilet



Model: EcoSanRes, Sweden



model: Ecosan, Aravan

# What cost is for health?

Wholly for today the sum to construct Ecosan toilet accounts for more than 20000 soms, including new design and inflation of construction materials at local markets.

# Toilets before construction



# Ecosan toilets after construction



# Utilization of local materials for urine collection

- Using of handy means
- Using of aluminium cans from local shops.



# Results of Urine Utilization in domestic fields



# Использование урины и фекалии в домашнем огороде



- Anora, Yambarak village, Uzbekistan
- After utilization of urine plants became growing faster in our vegetable garden. My strawberries now give much harvest, comparing with my other villagers. They are more juicy and tasty.

# Self-reliant design of Ecotoilet

Ecosan toilet in Kyrgyzstan with urinal for men



# Urine application in Agriculture in Sweden



# Materials used

- WECF- In current presentation materials gathered by Stephan Desinger were used, educational presentation at training in Osh city (dated 25.02.08-29.02.08)
- PA «CAAW» - materials collected by Ibragimov Shakhruh and Boris Dudnikov, from practical experience at construction and conducting trainings in target villages, during realization of the project on Ecosan toilets (dry toilets)

# Benefits of dry toilet with mechanism of urine diversion

- ✓ Comfortable and hygienic
- ✓ Absence of contaminated water
- ✓ Smell free
- ✓ Flies free
- ✓ Avoid the loss of water and nutrients
- ✓ Produce excellent fertilizer and improve the soil
- ✓ No connection to water at all
- ✓ May be constructed inside of a house
- ✓ Economy of money

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# Thank you for Attention !

