Management and reuse of sludge by farmers
The informal sector at work in the state of Karnataka,India

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The narrative

- Situations are local
- Informal is at work
- Sanitation Safety Plan provides a good tool to work with farmers
- The state has provided Honey-suckers to all 214 towns and 174 Taluks in Karnataka

Honey-suckers

About 800 million litres of untreated sewage flows out of the city

From untreated sewage

In many apartments a daily visit

In the most expensive of buildings

The informal sector in urban sanitation

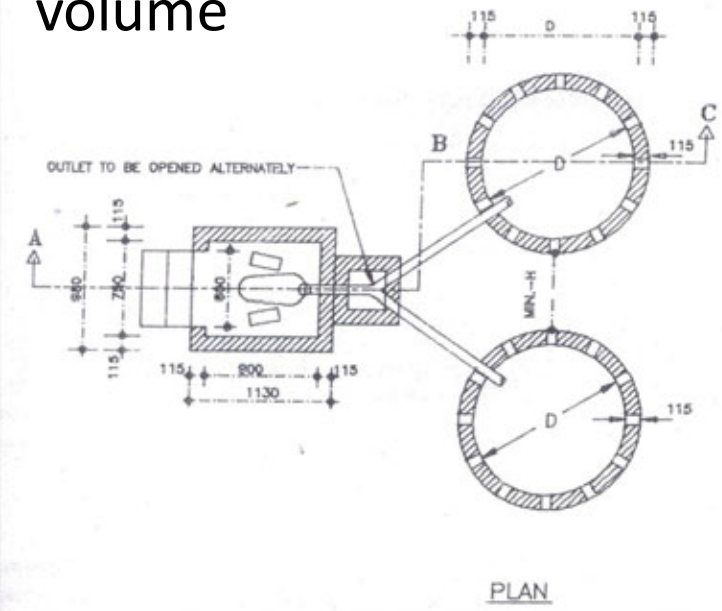
Pre-cast concrete rings

In informal vacant sites

Pit toilet connected to WC

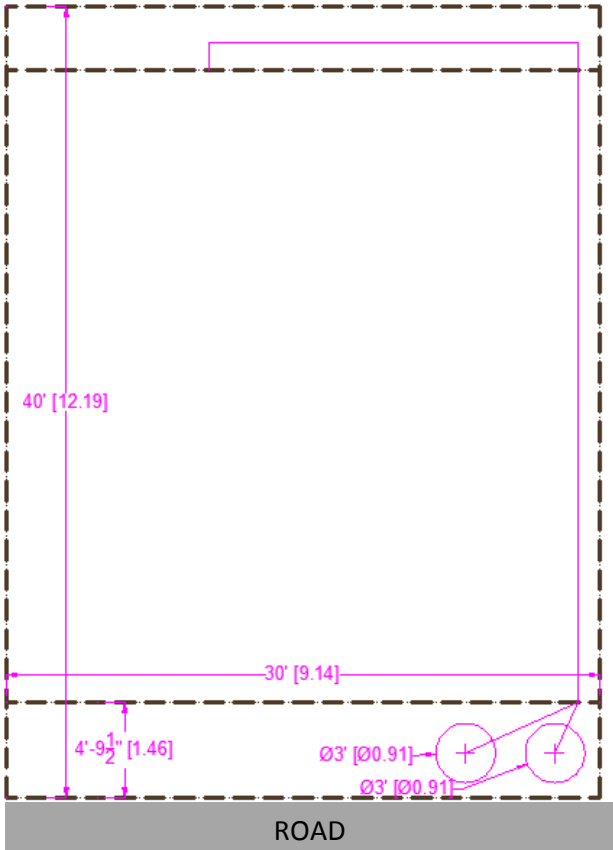
Soil type	5 Users		10 Users		15 Users	
	Pit Dia in mm	Pit Dept in mm	Pit Dia in mm	Pit Dept in mm	Pit Dia in mm	Pit Dept in mm
Dry circular leach pit	900	650	1000	1050	1200	1100
Wet circular leach pit	900	1250	1200	1400	1400	1550

2 year de-sludging interval or solid storage volume



PLAN

Source: Ministry of Urban Development of India, Technical guidelines for Twin pit pour flush latrines



Pit toilets are common in the urban periphery

The Honeysucker vacum sucks a pit toilet

Mechanization eliminates manual scavenging

Trucks are now indigenously developed


PIT
CLEANERS
KA-1
421
STOP

All over the country – Mobile Technology

Mobile technology

We estimate nearly 500 honey-suckers in Bangalore

Protocol for safe disposal needed

The sewage is nutrient rich but also pathogenic

Cost to building Rs 700 / to Rs 3000/

Soil as a nutrient recipient rather than water

Behind the bushes

But how to compost and treat the sludge well ?

The composting (?) pit

Diluted grey-water

Compost sells for Rs 2500/- to Rs 3500/- a tractor load (4 cu mt)

Compost sample being collected for testing

The city moves in

Application on banana

The crop

The fruits

The soil – alive with alive with earthworms and ants

Sanitation Safety Planning

- Risk based management tool
- Guide investments based on actual risks
- Provide assurance to authorities and public on the safety of sanitation services

- Developed by WHO in partnership with several towns

SSP Team

SSP Team

Designation	Institution	Role
Selection Grade Executive Engineer	Karnataka Urban Water supply and Drainage Board, Water and Waste Water Learning Centre	Provide leadership and link with SSP Steering committee, and enable all activities on the field. Take bottom line responsibility of all SSP work.
Environment Engineer	**Devanahalli, Town Municipal Council**	**Key team of "soldiers" from the Devanahalli Town municipal council responsible for on ground data collection, SSP formulation, Improvement & monitoring planning and follow up on implementation of SSP.**
Senior Health Inspector	**Devanahalli, Town Municipal Council**	
Junior Health Inspector	**Devanahalli, Town Municipal Council**	
Professor and Faculty, Department of Community Health	St Johns Medical College	Medical and health related inputs and training to TMC team in Qualitative data collection method & to adopt hazard matrix which enables rating of observed risk. Anchoring institution of pilot trial on the Health risk assessment.
Executive Director	Biome Environmental Trust / Biome Environmental Solutions	Facilitating organisation, technical and other facilitating guidance as necessary

Objectives of Sanitation Safety Plan

- Study the Present Scenario of sanitation in Devanahalli
- Identify Sanitation linked health risks for different groups (Sanitary workers, Agricultural workers, community & consumers)

- Identify sanitation improvements that can be implemented ***directly by Town Municipal Council***

- **Enable appropriate partnerships with Health & Agricultural resource persons**

Components of SSP

1 . Prepare for SSP

2. Describe the sanitation system

3. Identify hazardous events, assess existing control measures and exposure risks

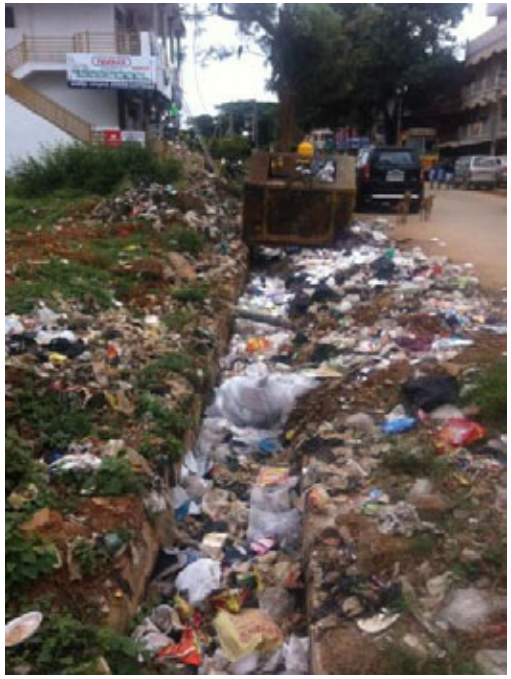
4. Develop and implement an incremental Improvement plan

5. Monitor control measures and verify performance

6. Develop supporting programmes and review plans and implementation

7. Go back to step 2….

Devanahalli : Storm water drains – Receptacle for solid waste & Liquid waste



Drain Clogging

Sewage Stagnation

Cleaning operations

Solid Waste Landfill (“Dumping yard”) – to be converted to Integrated Waste management site

Waste water use in Irrigation : Existing control measures

Devanahalli centre for vegetable washing.
Farmers specifically set up infrastructure for this.
Vegetables always washed with fresh water.
Wash water may be used for irrigation.

1. Farmers have washing and bathing habits after farming & before eating
2. Consumers wash vegetables at home. This is a wide spread practice.
3. Root vegetables like Beetroot and carrot are peeled.
4. In Indian culture they are usually cooked before consumed.
   However Beetroots and carrot in salads in hotels may be raw.

Module 1

MODULES

- Establish priority areas or activities
- Set Objectives
- Define the system boundary and lead organisation
- Assemble the team

OUTPUTS

Agreed priority areas , purpose, scope and leadership for SSP

A multidisciplinary team representing the sanitation chain for development and implementation of SSP

Way forward

- Include farmers as key solution providers
- The informal sector is a large part of the solution
- Single pit to twin pit to septic tank is the likely move for sanitation
- Sanitation Safety Plan provides a tool to help farmers and consumers manage faecal sludge
- Work within the capacity of towns and cities