DEVELOPMENT OF
ON-SITE SEPTAGE TREATMENT PRODUCTS

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Status of Sanitation in Urban India

Availability of Toilets*

- Open Defecation: 12.6%
- Community Toilets: 6%
- Household Toilets: 81.4%

Types of Sanitation Facility*

- None: 12.6%
- Others: 9.4%
- Pit Toilets: 7.1%
- Septic Tanks: 38.2%
- Sewerage: 32.7%

Treatment#

- Partial/No Treatment: 62.5%
- STP Facility: 37.5%

Source:
* Census of India 2011; # CPCB, Inventory of STPs (2015)
Picture: Self Explanatory
Existing Barriers in FSSM Business

• Profit of the truck operators depends on the distance between the emptying site and disposal point

• Transportation of septage – which is mostly of liquid part

• Absence of treatment, indiscriminate disposal of septage which contaminate the environment

• Cost of desludging restrict the households to go for scheduled desludging

• Old and leak trucks

• Lack of private operators in small towns due to low business opportunities
Our Innovation - # ONE

Pit /Septic Tank Life Extender
Our Innovation

Mobile on-site Septage Treatment Unit “The Annam”
Pit/Septic Tank Life Extender: How it Works?

- Treatment in two stages
  - Solid liquid Separation
  - Liquid treatment
- Sold Liquid Separation
  - Through fabric filtration and
  - Lifting of liquid to treatment unit
- Liquid Treatment
  - Micron filtration
  - Activated carbon
  - Ultra-Filtration
The Annam: How it works?

- Septage pumping Unit – lifts septage to solid-liquid separation tank
- Solid and liquid separation
- Sludge thickening
- Liquid treatment through membrane filtration process
- Disposal of treated liquid and collection of solids
Test Results of “Pit / Septic Tank Life Extender

Data (Mean) of 10 houses - 3 time (30 tests)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>TSS</th>
<th>BOD</th>
<th>COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septage</td>
<td>686</td>
<td>236</td>
<td>390</td>
</tr>
<tr>
<td>After Separation</td>
<td>142</td>
<td>207</td>
<td>346</td>
</tr>
<tr>
<td>Treated</td>
<td>12</td>
<td>8</td>
<td>18</td>
</tr>
</tbody>
</table>

Mean Data of 10 location in 3 times

- **COD**
  - Treated
  - After Separation
  - Septage

- **BOD**
  - Treated
  - After Separation
  - Septage

- **TSS**
  - Treated
  - After Separation
  - Septage
## Test Results of “The Annam”

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Raw</th>
<th>Treated</th>
<th>TNPCB Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS (mg/l)</td>
<td>712</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>BOD (mg/l)</td>
<td>270</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Coliform #s/100 ml</td>
<td>Too numerous to count</td>
<td>110</td>
<td>1000</td>
</tr>
</tbody>
</table>
How Annam Addresses the FSSM Barriers

• Effluent is treated and discharged onsite. Hence chances of leakage of septage will be nil.

• Allows the operators to undertake multiple desludging in a single trip, thereby saving operational cost.

• Private operators will be able to offer their services in small towns because of increase in business opportunities

• This will bring down the desludging cost and encourage the households to go for scheduled desludging.

• Reduces load of Treatment facilities/plants

• Cost of this mobile treatment unit is much lower than the desludging trucks used by Operators
WAY FORWARD

➢ Evaluating the efficiency of each stage of the treatment unit (with DUKE University Support)

➢ Analysis of economics through the commercial operators

➢ Obtaining certification from a reputed body

➢ Product design – beatification
Thank You