

# **BSA GROUP**

## **ToT Holder**

***Corporate Off.:18-20, Sukhwani Fortune, Morwadi Road, Pimpri Pune – 411018.***

**Branch Off:-1.Maa,B/7,Vivekanand Marg, Patliputra,Patna,Bihar**

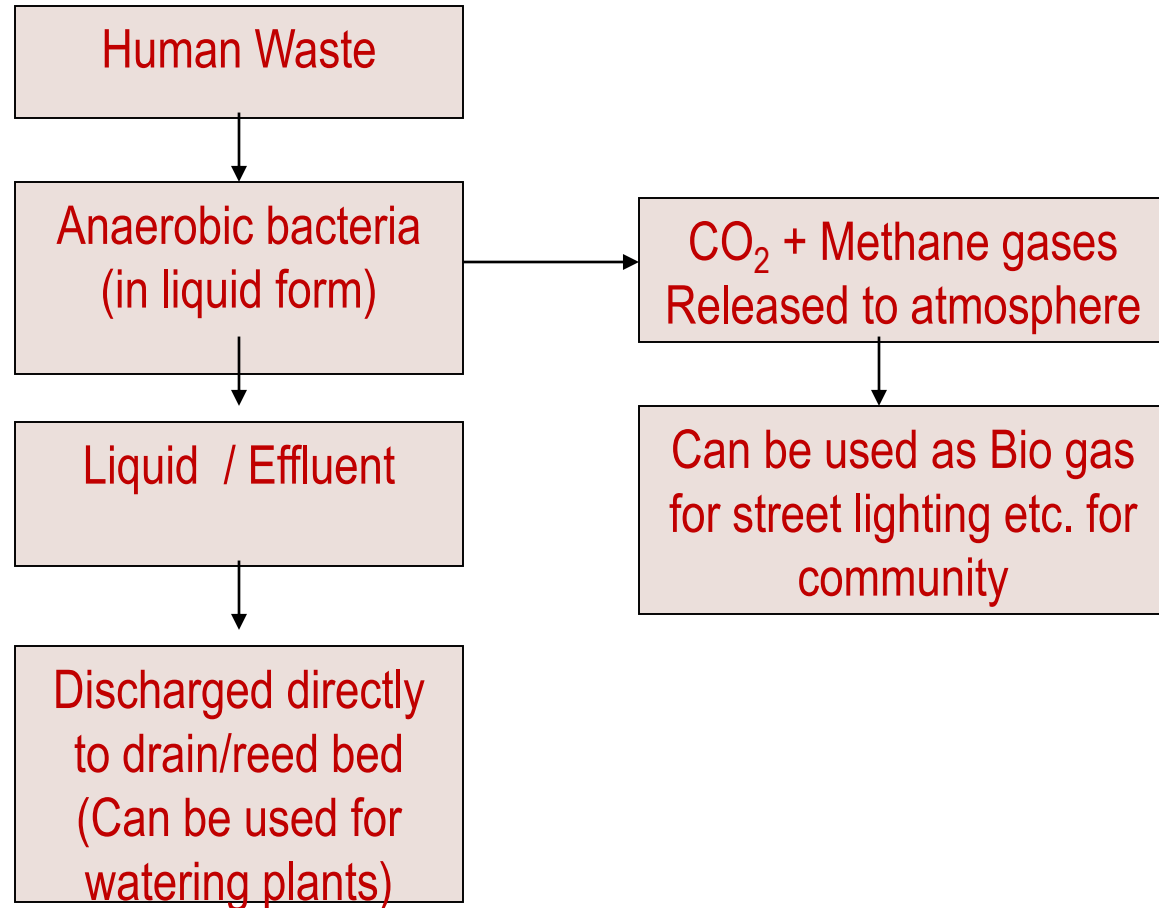
**2.Near Chaudhari Rice Mill, Hathipahar Road,  
Bajnathpur,B.Deoghar,Jharhand**

## Product:- Bio-Tank, Technology:- Bio-Digester, Situation:- Anaerobic by DRDO

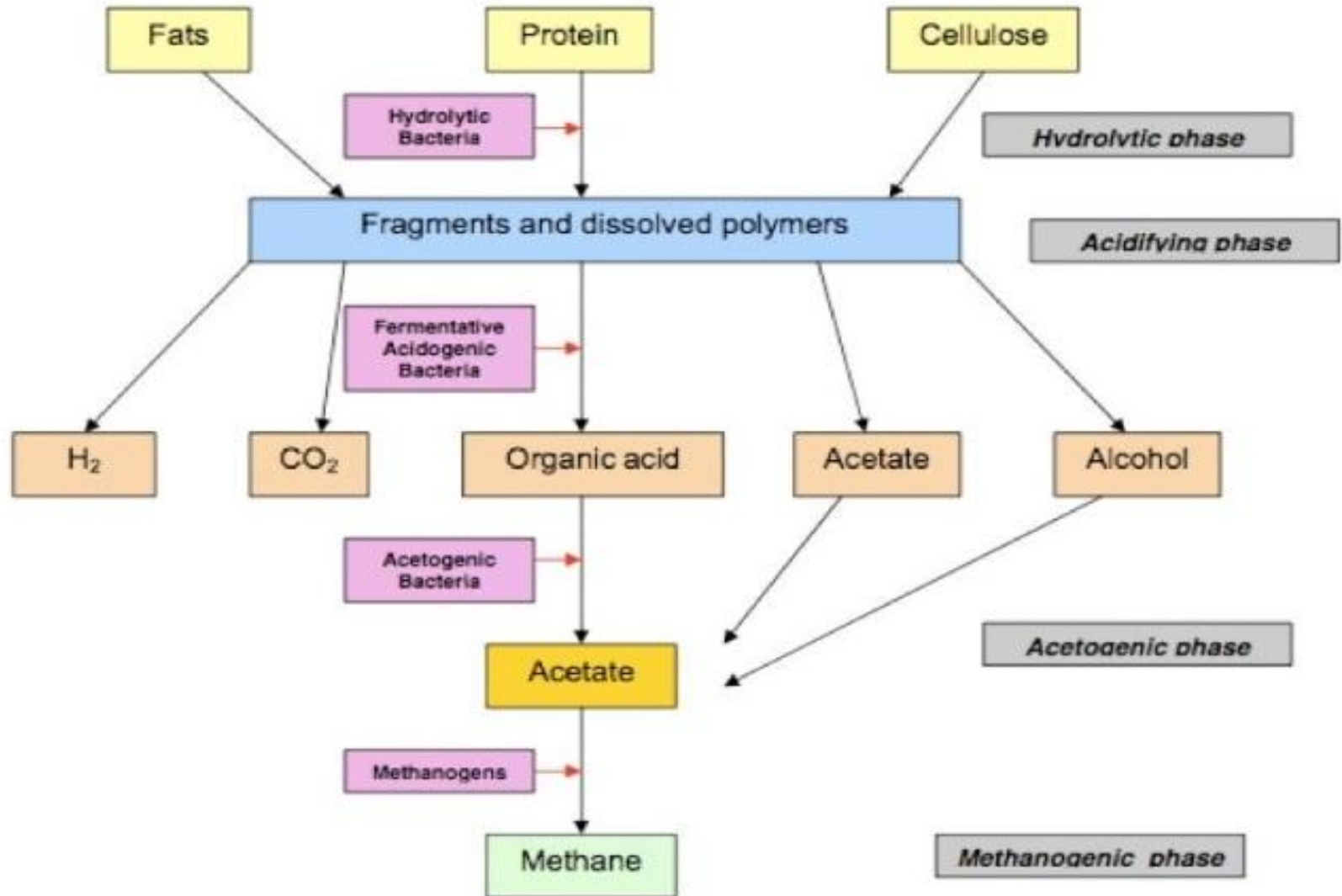
- ❖ The treatment process in septic tanks attached to toilets does not break down the waste completely.
- ❖ Defense Research Laboratory(DRL),Tejpur – an R&D organization of DRDO, has developed a technology of bacterial inoculums for sewage treatment under diverse geo-climatic conditions.
- ❖ Recently developed technology named as '**Bio-Tank**' is the excellent Bio-Degradable, Non-Energy intensive, low cost, 100% Eco-Friendly alternative of the conventional septic tanks . The zero-waste bio-digester technology breaks down human excreta completely into usable water and gas through anaerobic process.

# Working Principle Of Bio-Digester / Bio-Tank

Top to Bottom:-



# Anaerobic Biodegradation



# BIODIGESTER/BIOTANK : WATER QUALITY

	<b>Septic Tank</b>	<b>Biodigester/ Biotank</b>	<b>Biotank + Reed bed treatment</b>
<b>pH</b>	<b>6.7-7.5</b>	<b>7.0-7.2</b>	<b>7.0-7.5</b>
<b>Turbidity (NTU)</b>	<b>500-800</b>	<b>70-90</b>	<b>2-5</b>
<b>Total Suspended Solids (mg/L)</b>	<b>150-300</b>	<b>90-120</b>	<b>50-80</b>
<b>TDS(mg/L)</b>	<b>500-850</b>	<b>350-450</b>	<b>100-300</b>
<b>VS (mg/100ml)</b>	<b>50-60</b>	<b>20-30</b>	<b>5-12</b>
<b>COD (mg/L)</b>	<b>1200-2000</b>	<b>250-300</b>	<b>15-25</b>
<b>BOD 5 (mg/L)</b>	<b>350-500</b>	<b>70-120</b>	<b>2-4</b>
<b>Coliforms (MPN/ml)</b>	<b>&gt;3000</b>	<b>300-350</b>	<b>0-12</b>

## Aerobic biodegradation

- ❖ Forced aeration/ agitation is essential and is energy intensive
- ❖ Incomplete aeration (partial aerobic condition) leads to foul smell
- ❖ Not effective in pathogen inactivation
- ❖ Can not tolerate detergents/ phenyl
- ❖ Generates large amount of sludge
- ❖ Repeated addition of bacteria/ enzyme is required for the process
- ❖ Maintenance & recurring cost is high

## Anaerobic biodegradation

- ❖ No aeration is required
- ❖ Complete anaerobic conditions
- ❖ More than 99% Pathogens inactivation
- ❖ Can even degrade detergents/ phenyl
- ❖ Hardly Sludge generation
- ❖ One time bacterial inoculation is enough
- ❖ No maintenance & recurring cost

# Bio-Tanks vs Septic Tank

## **SEPTIC TANK**

- ❖ Requires larger space, bigger volume.
- ❖ Not efficient
- ❖ Sludge needs periodic evacuation
- ❖ Obnoxious smell
- ❖ Maintenance intensive
- ❖ Unhygienic disposal
- ❖ Water requirement is high
- ❖ Cost intensive

## **BIODIGESTERS/BIO TANK**

- ❖ Requirement is 40 to 70% less.
- ❖ Effluent is well treated and safe
- ❖ No need of periodic evacuation
- ❖ No smell. Generation of odorless and inflammable biogas
- ❖ Only one time charging of Inoculums
- ❖ No such requirement
- ❖ Minimizes water consumption
- ❖ Cheaper in long run

# Product Based on Bio-Digester Technology

- ❖ Bio-Tank
- ❖ Individual Bio-Toilet
- ❖ Community Bio-Toilet
- ❖ Twin Bio-Tank
- ❖ Master Bio-Tank/Digestion Engine(Replacement of STP)



# Advantages

## Features:-

- ❖ 100% Eco-Friendly
- ❖ Long life & Wide utility
- ❖ No need of STP
- ❖ No foul smell
- ❖ Maintenance free
- ❖ Minimize water consumption
- ❖ No need to evacuate
- ❖ 1/3<sup>rd</sup> to 1/5<sup>th</sup> space of conventional septic tank is required

## Extra Features:-

- ❖ Reduction of organic matter by 99%
- ❖ Reduction of pathogens by 99%
- ❖ Waste water from Kitchen & Bathroom(Black/Gray water) can be treated easily using Bio-Tank Reed Bed system
- ❖ Treated water can be reused

## Our Major Clients:-

- ❖ Department of Urban Development
- ❖ Department of Drinking Water and sanitation(Bihar, Jharkhand & Assam)
- ❖ Urban Local Bodies(DMC, JNP, RMC Jharkhand)
- ❖ Department of Police Housing Corporation(Bihar, Jharkhand, Assam)
- ❖ PSUs(CCL,MCL,NTPC)
- ❖ Department of Tourism(Bihar & Jharkhand)
- ❖ Department of Health(Bihar)
- ❖ Department of Building Construction(Bihar)
- ❖ Department of Housing Development(Bihar)
- ❖ Department of Prison(Jharkhand)
- ❖ Department of Forrest(Maharashtra)

# Case Study -1

- Bedo, Jharkhand (Funding by-Unicef)

**Project Name:-** Community Bio-Tank cum Waste water Treatment Plant

**Scope:-** To provide 100% Eco-Friendly solution for Human Waste & Waste Water

**Target:-** To Digest Human Waste & Treat Waste Water from Community Toilet using Bio-Digester Technology and make Waste Water reusable

**Size:-** 4m x 2m x 1m(8CuM) Capacity:- 100 Defecation &200 Urination/Day



- **Community Feedback:-** Surrounding community is very Much impressed with this technology because they are not facing any foul smell, polluted water. Even no need of maintenance is required hence recurring cost become Zero now
- **Problems Faced:-** The main problems we faced during running period was awareness of community regarding Do's & Don'ts(Egg:- Entry of Plastic material , Napkin, Condom, Sanitary Pad are restricted).
- **Solution:-** Now we conduct a awareness program regarding this technology and its Do's & Don'ts, Where we install Bio-Tank.
- **Conclusion:-** Now installed system is working efficiently and water is being reused in **Flushing**.

## Conclusions

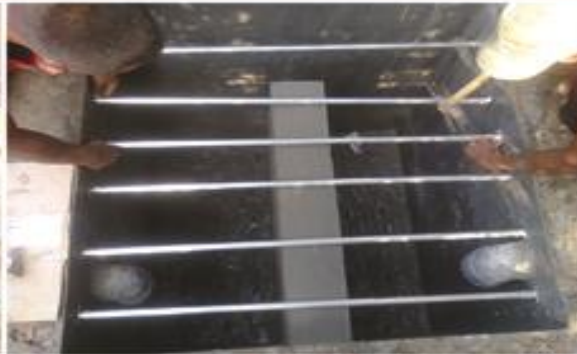
- ❖ The most Eco friendly Sewerage system designed by DRDO
- ❖ The reduction in size and cost of STP by almost 30-40%
- ❖ The reduction in load of STP by 70%
- ❖ The most efficient and economic sewerage system designed so far
- ❖ Conversion of water by almost 90% which is re-usable
- ❖ Reduction of water consumption by almost 50%
- ❖ No major maintenance required so almost maintenance free
- ❖ The designed life of Bio -digester is 30 years with one time bacteria fill
- ❖ Methane as a bi product of the process can be used for various applications depending upon the quantity produced.



# Pictures



**Asam**



**Asam- 2**



**Deoghar Nagar Nigam**



**Bero, Bio-Tank**



**Mansinghi**



**Deoghar Nagar Nigam- 2**



**IPC, Deoghar**

# THANK YOU

*Presenter*

**Nishi Kant Rai**

*Zonal Manager*

*H & H Division*

*BSA Corporation Ltd*