Sewage Sludge Management for effective Environmental Sustainability.

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(CONCEPT BIOTECH)

Resources as “WASTE”

- Garden Waste
- Food waste
- Bio-Sludge (STP Sludge)
- Packaging Material (paper, cardboard, jute etc)

Present Disposal Practice

- Food Waste- Mostly Dumped or sent to Bio-gas plant
- Garden/Horticultural waste-TSDF site (Treatment Storage Disposal Facility) or Open dumping
- Bio-Sludge (TSDF) or Open Dumping
- Packaging waste- To Recycler

Present Scenario of Sewage and Sludge

- As per CPCB waste water generation for Class 1 and Class II cities is 35558 MLD & 2696 MLD Sewage respectively.
- The installed Sewage treatment capacity is just 11553 & 233 MLD respectively

Best solution to take care of non Hazardeous waste

- Go for Composting
- Further practice Vermicomposting for Bio-sludge
- Co-incineration of Bio-sludge in cement klin if it has high Calorific Value

Bio-sludge conversion to non-toxic manure?

- Accumulation of large quantities of toxic pollutants in the environment (Heavy Metals).
- Treatment and disposal for such pollutants are very limited such as land filling, incineration and fixation etc.
- Disposal of inhibitory waste to land fills may lead their leaching and dispersal in the environment, while the incineration would lead to their conversion to gases as pollutant.

Disposal of SewageSludge –

- **Present technologies**
  1) Land filling
  2) Open dumping or sold to farmers

- **Disadvantages**
  1) Air pollution
  2) Space/safety
  3) Future hazard due to leachate pollution

- **Biological treatment**
  1) Yet not Done for Sludge?

Sludge Processing by Agitated Tunnels

(Good practice for Centralized processing or large STP)

- Multiple applications
- Design and Process flexibility
- Process Control
- Odor Control
- Expedites Composting/Drying
- Produces Quality Product

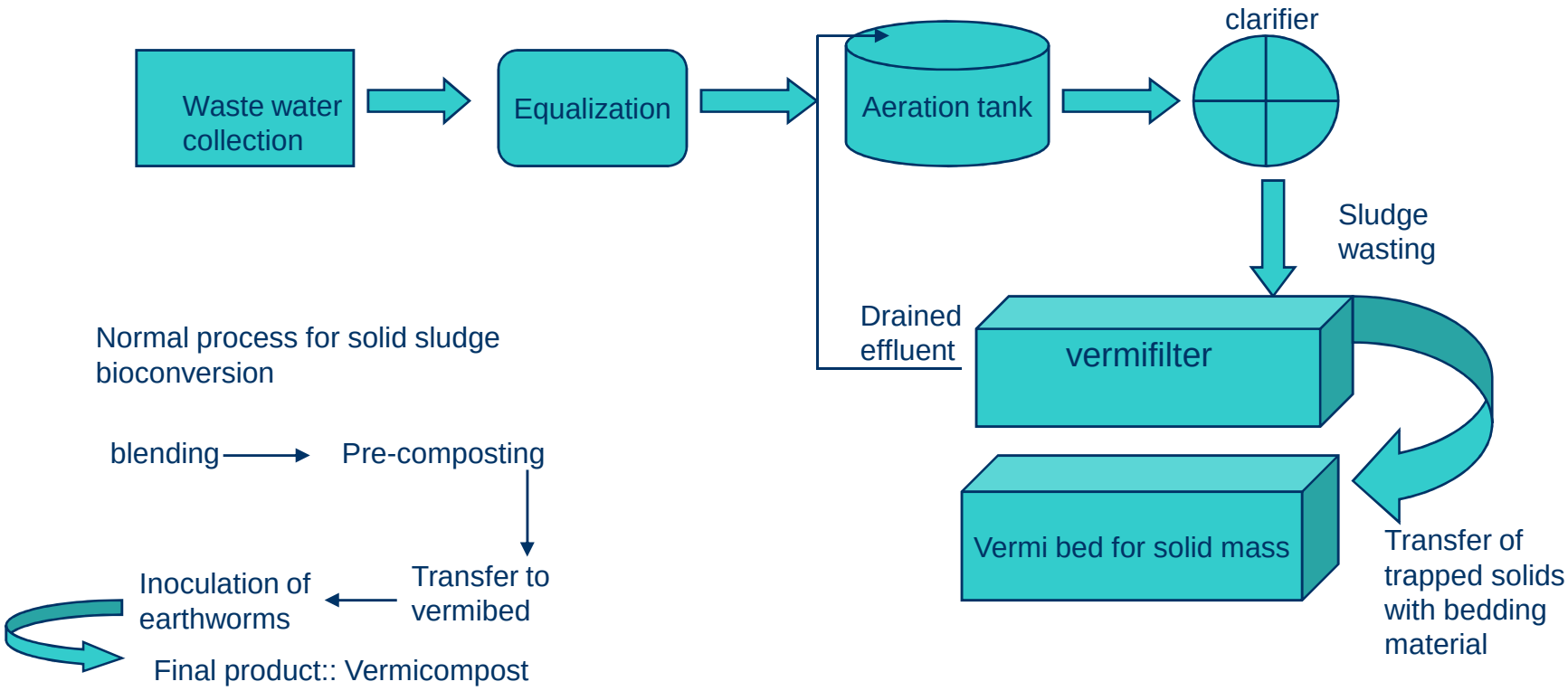
Advantages of Product from Agitated Tunnel

- Enhances Agricultural Soils
- Provides Valuable nutrients
- Supplies beneficial microbial population
- Increases water holding capacity
- Reduces material transport cost
- Minimizes landfill inputs
- Competitive processing cost to landfill
- Designed to minimize overall energy cost
- Qualifies for green initiatives

Eight Process Steps in a Agitated Tunnel

- **Receiving** of raw feed stock from WWTP
- **Mixing** and blending feed stock
- **Charging** (Loading) the blended feed stock into the process tunnels
- **Active Composting** by agitating and aerating the material
- **Discharging** the processed material from tunnels
- **Curing** the processed material for additional moisture removal
- **Storage or Recycling** of the finished product.

Block diagram of Ideal Action plan for small plants (Decentralized processing of Sludge)



VERMITECHNOLOGY

- In Situ processing of waste along with dewatering process.
- Conversion of waste and reducing hazard of soil contamination

- **LOGIC OF USING VERMITECHNOLOGY WITH ITS POSSIBLE USE IN TREATMENT**

- **Increased efficiency in dewatering process of sludge drying bed.**
- **Reduction of sludge toxicity in terms of heavy metals.**
- **Increase in nutrient value of converted sludge.**
- **Reduction in volume.**

Worms activity in fresh sludge

Healthy earthworms in the sludge bed

Healthy worms after sieving

Earthworm carrier box

Cleaning of bed

Sieving process


THANKS