

RIVER WATER REJUVENATION



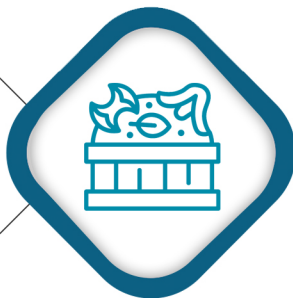
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Microbial Replishment for



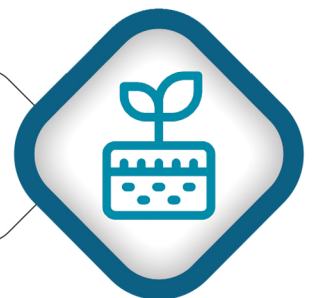
Municipal Sewage
Treatment Plants



Garbage
Landfills



Compressed
Biogas Plants



Soil Health

This presentation examines operational inefficiencies in STPs and proposes the **Odor Eliminator Decomposer (OED)** as a cost-effective & scalable solution to enhance biological treatment processes and improve river water quality.

RIVER WATER REJUVENATION

Odour Eliminator Decomposer (OED) is a liquid organic solution derived from cow dung and urine of indigenous cows having **Native Bacteria & Fungi, Natural Fungicide and Larvicides** known for its **instant odour removal** and **faster decomposing activity**.



RIVER WATER REJUVENATION



The Problem Statement

River pollution remains a critical challenge despite the widespread installation of **Municipal Sewage Treatment Plants (STPs)**.

These facilities are designed to **treat sewage through biological processes** before discharge into natural water bodies.

While factors such as **population growth** and industrialization are often blamed,

The under performance of existing Muncpal STPs plays a significantly responsible for this situation.

This presentation examines operational inefficiencies in Muncpal STPs and proposes the **Odor Eliminator Decomposer (OED)** as a **cost-effective and scalable solution** to enhance biological treatment processes and improve river water quality.



How did the
Rivers Remain Clean
for hundreds of years
without STP plants?

Natural River **Self-Purification** (Pre-1970 Scenario)



The large population of **indigenous cattle** played a crucial role in maintaining soil health. Agricultural soils were rich in diverse native microorganisms, supported by indigenous **cow dung and cow urine**, which also served as a **nutrient source** for earthworms.



During **irrigation** and **rainy seasons**, these microorganisms were transported into river systems, resulting in continuous and **natural microbial replenishment**.

Rivers originating from mountainous regions underwent **cascading flows**, which promoted natural **aeration** and increased **dissolved oxygen (DO)** levels in water.

The combination of high **microbial diversity** and adequate dissolved oxygen enabled efficient **natural purification**, resulting in significantly lower pollution levels and **healthier river ecosystems**.



Current Water Treatment Processes Overviews

Modern Wastewater Treatment Systems



Domestic
Sewage



Municipal
Wastewater



Industrial
Effluents

are primarily based on biological processes such as

ACTIVATED SLUDGE PROCESS (ASP)

MOVING BED BIOFILM REACTOR (MBBR)

MEMBRANE BIOREACTOR (MBR)

SEQUENTIAL BATCH REACTOR (SBR)

These systems operate on **suspended growth or attached growth mechanisms**. In aeration tanks, **microorganisms oxidize organic matter** in the presence of **oxygen supplied** through mechanical aeration systems.

This engineered process closely resembles **natural river purification**, where organic load, microorganisms, and dissolved oxygen interact to degrade pollutants.

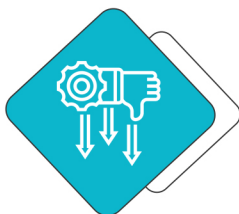


KEY CHALLENGES in STP OPERATIONS



Shock Load VARIATIONS

Organic loads in municipal wastewater vary significantly throughout the day. These **fluctuations disrupt biological stability**, reducing treatment efficiency. Recovery from such **disturbances is often slow due to limited scientific standardization** in wastewater microbiology.



Process INSTABILITY

Equipment failure, power outages, or **operational errors can disturb microbial activity**, leading to incomplete treatment and **inconsistent maintenance practices** adversely affect plant performance.



Odour GENERATION

Foul odour is a common issue in STPs, caused by the **decaying of accumulated organic matter** in dead zones such as pipe bends, joints, valves, and tank corners. This leads to anaerobic conditions and the **release of offensive gases**, impacting treatment as well as surrounding communities.



CURRENT GAP between Design & Actual Performance of MUNCIPAL STP'S

A significant discrepancy exists between the **designed capacity of STPs** and their actual operational performance. Although authorities and contractors often report compliance with design parameters, indirect indicators suggest otherwise.

Detailed Project Reports (DPRs) specify expected energy usage for full-capacity operation. One such indicator is **electricity consumption**:



1st important indicator is the electricity usage—often far **below expected levels**—suggesting underutilization.



2nd indicator is **sludge generated** which is much below the expected levels. These lead to **partially treated wastewater** being discharged into rivers.

This gap indicates that **plants are not operating at their designed capacity or efficiency**, leading to inadequate treatment of wastewater. Consequently, partially treated or untreated effluents are **discharged into rivers**, contributing to environmental degradation.



The Proposed **Solution**

Odour Eliminator Decomposer (OED)

To address both **biological process instability** and odour issues

OED is to be applied/**dosed in the equalisation tank** (first reactor), where we can introduce a diverse microbial population at the initial stage of treatment. These **microorganisms propagate throughout the plant** and:



Enhance decomposition
of organic matter



Reduce sludge
accumulation across
the system



Significantly minimize
odour generation



Application Guidelines:

OED can be applied through:



Direct dosing into inlet sewage



Recommended dosage: 10 litres of OED per day for a 1 MLD STP



Dosage may be adjusted based on influent load and plant capacity



Spraying or mixing with biodegradable waste streams

RIVER WATER REJUVENATION



River rejuvenation efforts must go **beyond infrastructure expansion** and focus on optimizing the performance of existing assets.

The current inefficiencies in municipal STPs represent a **critical gap** that can be addressed through targeted interventions.

By enabling Municipal STPs to operate at or near their design capacity, **OED can play a pivotal role in improving river water quality across urban India.**

KEY BENEFITS of using **OED**



Improved efficiency &
Performance of Municipal
STP's



Improved water quality
which further reduces river
pollution



Stabilization of
Biological Processes



Faster troubleshooting
and recommissioning



Lower load on **Tertiary**
treatment systems



Reduce Mosquito and
odour-related issues

50 MLD Municipal STP in PUNE CITY (ASP Technology)

Case Study

Background

During my tenure as O&M In-Charge (2007–2010), the plant was operating significantly below its design capacity.

Key Challenges

- Heavy sludge accumulation (55–60 tonnes) in raw sewage pumping station
- High inlet BOD levels
- Inefficient blower performance due to design limitations
- Fouled diffusers affecting aeration efficiency
- Suboptimal sludge management

Interventions

- Removal of accumulated sludge, resulting in **20–25% reduction in inlet BOD**
- Replacement of undersized heat exchanger, restoring airflow efficiency
- Cleaning and reinstallation of diffusers
- Improved maintenance and operational practices

Breakthrough Innovation

The introduction of microbial culture (OED) in the **Primary Settling Tank** significantly reduced the organic load entering the aeration tank. This resulted in:

- Improved biological stability
- Achievement of design capacity
- Superior Case Study outlet water quality compared to design parameters

This marked the successful implementation of the Odor Eliminator Decomposer

Experience and Clients

Following this success, the OED approach was applied in the commissioning and optimization of **70–80 wastewater treatment plants (2011–2019)**.

The system is compatible with:

- All treatment technologies
- Any plant capacity
- Anaerobic digesters and biogas systems

In several cases, treated water parameters were recorded below detectable limits, demonstrating high efficiency.

Clients

Our OED solution has also been effectively applied for **odour control in solid waste management**, successfully eliminating offensive odours at landfill sites and biodegradable waste facilities across **15 municipalities in Odisha** and more than **6 cement plants utilizing Refuse Derived Fuel (RDF)**.

Additionally, OED has been supplied to three industrial units of Reliance CBG Industries for odor removal of pressed mud and has proven effective in sanitation systems, where it helps control flies and mosquitoes due to its natural larvicidal properties.

Conclusion

River rejuvenation efforts must go beyond infrastructure expansion and focus on **optimizing the performance of existing assets**. The current inefficiencies in municipal STPs represent a critical gap that can be addressed through targeted interventions.

The Odor Eliminator Decomposer (OED) offers a **sustainable, economical, and scalable solution** to enhance biological treatment processes. By enabling STPs to operate at or near their design capacity, OED can play a pivotal role in improving river water quality across urban India.



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Test Report

ANALYSIS REPORT FOR WASTE WATER SAMPLE

Name of the Client	: M/S. DY. CITY ENGINEER
Nature of Sample	: Waste Water
No. of Samples	: One
Date of Sample Receipt	: 27.10.2010
Sample collected by	: Client
Your Ref. No.	: Your letter Dt: 27.10.2010
Report No.	: 1010/5703
	Nov 16, 2010

PARAMETERS	TYPE OF SAMPLE	METHOD
	SIP TREATED	
pH	7.09	APHA 4500 - H+ B
Suspended Solids	BDL	APHA 2540-D
C.O.D.	BDL	APHA 5220.C
3 Day B.O.D. @ 27°C	BDL	IS: 3025 (PART 44)
Oil & Grease	BDL	IS : 3025

NOTE: 1) BDL: Below detectable level
2) All values except pH are expressed as mg/L.

FOR KLEAN LABORATORIES & RESEARCH (P) LTD

Rohela

THIS REPORT IS FOR 50 MLD STP, ERANDVANE
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OPTIMIZING THE **PERFORMANCE** OF EXISTING **MUNCIPAL STP'S** IS THE **FASTER** **SOLUTION** TOWARDS **CLEAN RIVERS**

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