NATIONAL SEMINAR

ON

SUSTAINABLE URBAN WATER & WASTE MANAGEMENT THROUGH GOOD GOVERNANCE

Organized by

INSTITUTION OF PUBLIC HEALTH ENGINEERS, INDIA

Jointly with

INSTITUTION OF PUBLIC HEALTH ENGINEERS, INDIA, KOLKATA CENTRE

IN ASSOCIATION WITH ALL REGIONAL CENTRES

ON

15th & 16th MARCH, 2024

(Friday & Saturday)

AT

The Stadel

Vivekananda Yuba Bharati Krirangan

Salt Lake Stadium, Gate No. #3, Sector 3, Kolkata-700106

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Platinum Sponsor	:	**GBC Infrastructure Pvt. Ltd.**
Gold Sponsor	:	**Structural Design Consortium**
Co-Sponsor	:	**Supermexx Energies Pvt. Ltd.**
		BSR Corporation Pvt. Ltd.
		Mint Environ
Collaborator	:	**Odissi Innovations Engineers Pvt. Ltd.**
		Eastern Organic Fertilizers Pvt. Ltd.
		Balaji Traders

16.03.2024 (Saturday)

10.30 hrs-13.00 hrs	:	**Technical Session II- Liquid Waste Management : Issues & Challenges**
Session Chairman	:	**Dr. Tapas Gupta**, Chief Technical Adviser, WBPCB
Rapporteur	:	**Er. Ashis Dutta Chaudhury,** Council Member, IPHE India
Speakers	:	1. **Dr. Mrinal Kanti Biswas,** Regional Director,Central Pollution Control Board, Kolkata
		2. **Mr. Onkar Tiwari**, Director, Biomimicry Technologies Pvt. Ltd.
		3. **Dr. Partha Sarathi Ghosal**, Assistant Professor, School of Water Resources Engineering, IIT Kharagpur
		4. **Dr. Ashim Bhattacharya**, Consultant
11.45 hrs-12.00 hrs.	:	**Tea Break**
12.00 hrs- 13.00 hrs.	:	**Technical Session II continued**
13.00 hrs-13.30 hrs.	:	**Power Point Presentation by GBC Infrastructure Private Limited.**
13.30 hrs – 14.30 hrs	:	**Lunch**
14.30 hrs- 16.30 hrs.	:	**Technical Session III – Solid Waste Management : Issues & Challenges**
Session Chairman	:	**Dr. Nilangshu Bhusan Basu**, Vice President, IPHE India
Rapporteur	:	**Er. Ashis Dutta Chaudhury**, Council Member, IPHE India
Speakers	:	1. **Er. Asraful Islam**, Chief Enigneer, KMDA
		2. **Dr. Anshuman Pal**, Capacity Building Manager (Engineering) ISGPP Program, Panchayat & Rural Development Dept. Govt. of W.B.
		3. **Mr. Akshay Santhawala** , Director (EOF)
16.30 hrs – 16.45 hrs	:	**Tea Break**
16.45 hrs- 17.45 hrs	:	**Valedictory Session**
16.45 hrs	:	Address by the **Prof. Arunabha Majumder**, Vice President, IPHE India
16.55 hrs	:	Valedictory Address followed by Presentation and Draft Recommendations by the Chief Guest, **Er. B.K. Sengupta** , Former Secretary General, IPHE India
17.20 hrs	:	Open House Session on Recommendations and Adoption
17.40 hrs	:	Vote of thanks by **Er. Kripan Ayudh Roy**, IPHE India
17.45 hrs.	:	Closing of the programme

Blue Gold Needs Attention

By

Onkar Tiwari

(Biomimicry Technologies Pvt Ltd)

Wastewater studies suggest the actual reuse of treated wastewater in India is lower than the treatment rate, possibly around 10-15%.

The major reasons for not reusing treated wastewater are:

1. Usually, wastewater treatment plants are built at the end of the sewer infrastructure, as most sewage water flows are gravity-driven. So, wastewater treatment plants are at the lowest point of the watershed, usually beside the river and sea.

   In the last 30 years, standards were not focused on reuses, so the BOD of 30, COD of 100, and TSS of 100 were unsuitable for human touch; hence, no water use was practiced, or minimum reuse was under trend.
2. Even if groundwater is precious to be used for grass irrigation, the lack of regulations on groundwater use has facilitated the large-scale use of groundwater for parks and gardens in India.
3. The ecology of commerce has not been explored holistically. For example, in any industrial estate, various industries have very high water uses in process, and after one uses the water is drained in a public utility drain, other sectors could have used that water with minimum treatment cost and capacity.
4. As most seasonal and small tributaries have been converted into urban drains due to sewage line connections, various parks use groundwater instead of the tributary or treated water.

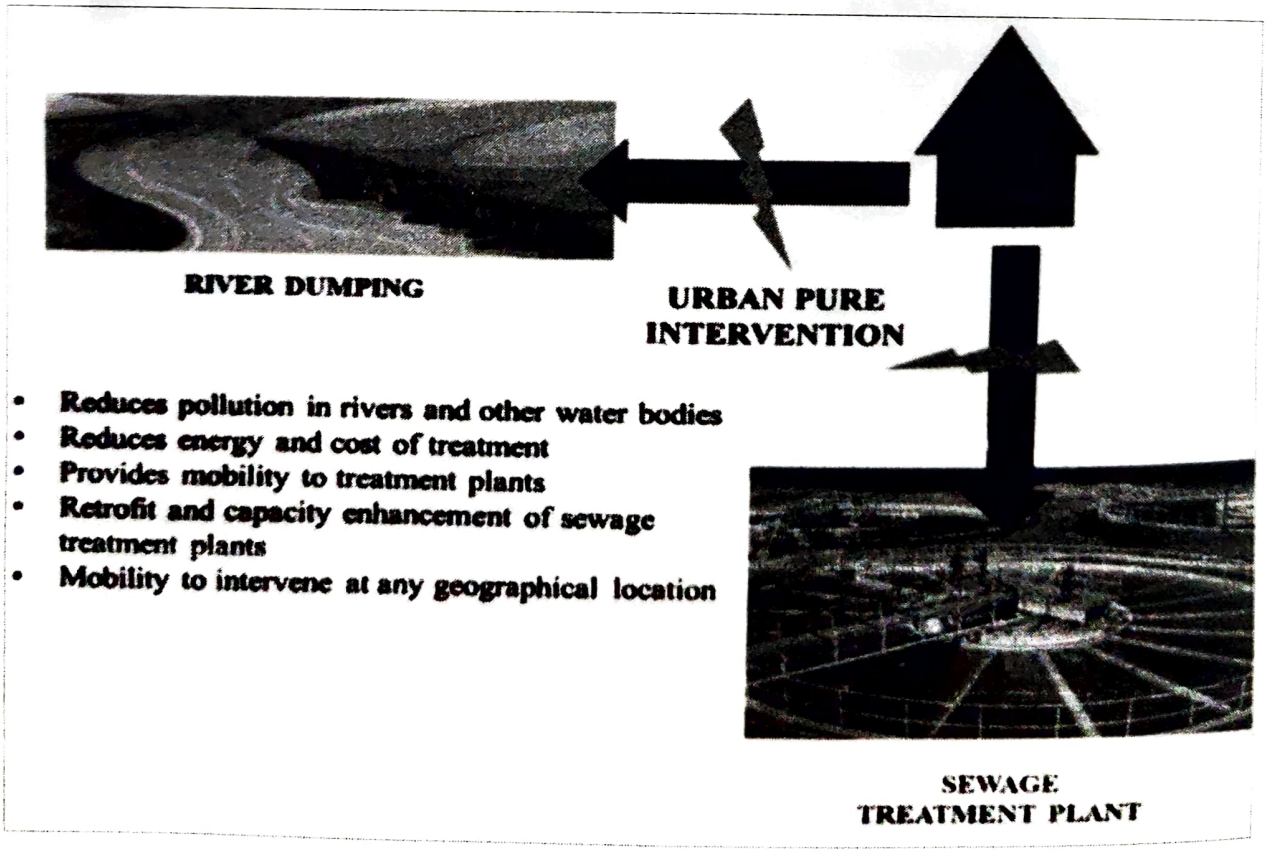
Few citations and Regulations and recent intervention of courts :

1. Original Application No. 703/2022 NGT has banned the use of Groundwater by Parks and Gardens.
2. NGT order dated 09/01/2023 in Ao No 21/2023 In the matter of Ashwani Yadav Vs Government of NCT. Has instructed not to insert drain water in river without treatment.

3. Original Application No. 593/2017 The judgment also laid down rigid timelines, enforcement mechanisms, and funding sources. Even in the absence of the said judgment, doing so is the mandate of the Water (Prevention and Control of Pollution) Act, 1974. The said Act established the Central and State Pollution Board to prevent, reduce, and control rivers and streams to restore the wholesomeness of watercourses and control the discharge of domestic and industrial wastes. Penalties are provided for contravention of the provisions of the Act. The Constitution of India under Article 243 W, read with the 12th Schedule, entrusts the responsibility of "public health, sanitation conservancy, and solid waste management" to Municipalities.

4. Hon'ble NGT, New Delhi, under its Order dated 15.04.2021 in O.A. No. 94/2021, has directed MoJS to consider the issue of regulating the extraction of groundwater for maintenance of cricket playgrounds and to ensure that effective rainwater harvesting and water store/ recharging systems are installed in all playgrounds to save the groundwater

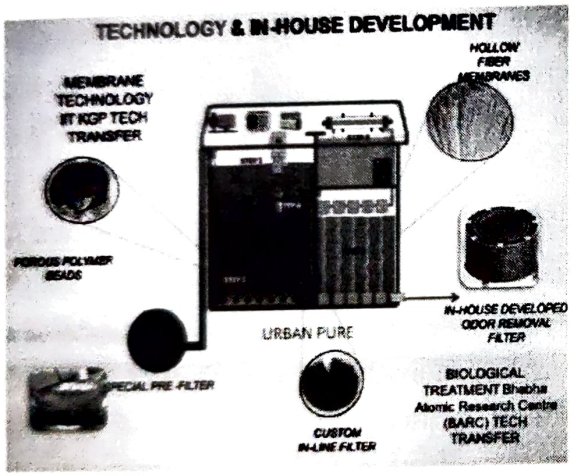
The quantum possibility of decentralized wastewater treatment solves two significant challenges our country faces and will pave the way for the world.

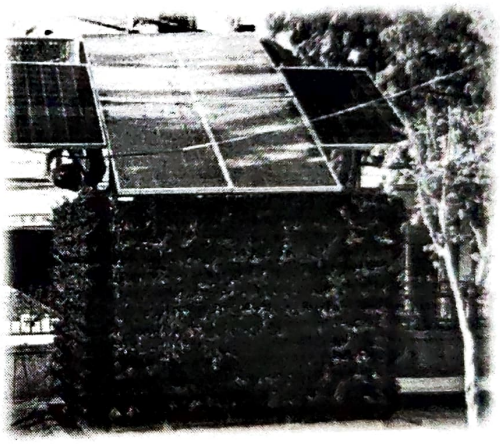


A few of the significant areas of concern in wastewater treatment are :

1. Large space requirements.
2. Bad smell near the treatment plants
3. High energy requirement in energy-stressed habitation
4. No aesthetic focus in any of the wastewater treatment plants
5. No proper guidelines for decentralized wastewater treatment plants.
6. No online and live information for the quality and quantity of water treated is available.
7. Due to long drainage gravity-fed systems, pumping and lift stations are built, which are very high capital/maintenance structures.
8. Large infrastructure cost of redistribution
9. Very long plant setup time

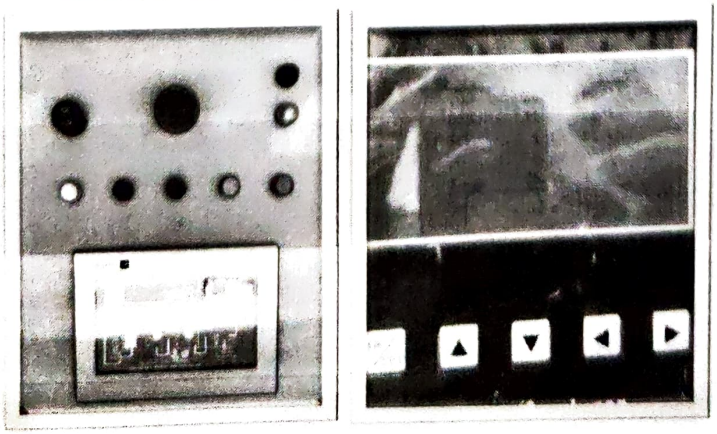
Current solutions are addressing the above challenges.





Online display of data and SCADA systems

Online display of data and SCADA systems



The scale of the challenge: Currently, Delhi and more than 12000 parks are under various authorities and control, including DDA/MCD/NDMC/ULB, etc, of which currently, not more than 10% of parks use treated wastewater.

Mumbai has more than 1000 large parks. Again, in Mumbai, not more than 5% of parks use treated wastewater. Instead, ULB buys water to irrigate gardens, which is illegally unauthorized groundwater extraction.

- Similar is the situation at 100 Municipal Corporations 2100 Nagar Panchayats
- And 1500 Municipal Councils across India

Areas where use of treated wastewater can be highly beneficial :

1. Park irrigation: irrigating parks with treated wastewater will save a massive amount of groundwater and help unconfined groundwater table maintenance through the percolation of irrigation water.
2. There is a ban on groundwater use for construction purposes. Most of the ULB has banned groundwater use for construction. Still, the public has not been given options and facilities for the alternative of the same and treated wastewater availability if each pin code and again saves a massive amount of groundwater being illegally used.
3. With the Clean Air program, various ULBs are using sprinklers on roads and tree washing, for which treated precious drinking water of groundwater is used on a large scale; again, treated wastewater can be used.
4. Almost every urban space, including state roads and highways, has vegetation beside the road or on the road's median; treated wastewater again will help availability near the point of use and have a good volume of groundwater.

Wastewater source availability

1. Pumping stations and lift stations
2. Open flowing storm water drains
3. Sewage pipe direct connection
4. Sewage drains
5. 1000 drains are under quarterly monitoring of NGT

Careful considerations for reduction in capex and OPEX

1. As per CPHO, the pretreatment tank capacity of treatment is recommended, but if we are doing wastewater treatment for immediate reuse, the pretreatment tank can be avoided, reducing the capex by 10%.

2. Again, as per CPHO guidelines, a treated water tank of the quantity of treatment plant capacity needs to be built; this can be scaled down drastically, and only 10-20% holding can suffice the requirements, which can save us 5-10% of capex cost.

3. At times, treated water is just needed for park irrigations to manage nitrogen treatment-related costs, as nitrogen in wastewater can act as fertilizer.

4. If we are taking water from a stormwater channel or drain with a small quantity of water and our treatment plan at a given location is a small quantity, we can screen that much water and save on the complete drain's screening cost.

5. Almost all public urinals require a good amount of water; putting up a DSP with the system flushing requirements will reduce freshwater requirements to a minimum.

6. The industrial estate's water requirement should be seen holistically, and water mass balance should be considered, considering all industries together can reduce the water need of the industrial estate by at least 25%, which is a good saving.

7. Holistic thinking and using human night soil as manure must be rethought; our soil is almost 50% organic and 50% inorganic. We can innovate solutions for our construction debris and night soil to create fertile soil for our farmers and reduce desertification, a significant area of concern in various parts of our world.