

Proceedings

Residential Training Programme

FSTPs and Co-treatment Plants: How their Sustainable Operations and Maintenance can lead to More Effective Faecal Sludge and Septage Management

The residential training programme titled **“FSTPs and Co-treatment Plants: How their Sustainable Operations and Maintenance can Lead to More Effective Faecal Sludge and Septage Management”** was conducted from **July 9 to 11, 2025**, at the **Anil Agarwal Environment Training Institute (AAETI)** in Nimli, Rajasthan. Organised by the **Centre for Science and Environment (CSE)**, the training aimed to enhance the capacity of government officials—particularly those serving as nodal officers for FSSM in various towns—on the sustainable operations and maintenance of Faecal Sludge Treatment Plants (FSTPs) and co-treatment plants in Uttar Pradesh.

A total of **23 participants** attended the training, coming from diverse backgrounds including engineering, sanitation, food safety, and municipal administration. The programme included keynote talks, expert-led presentations, hands-on exercises, group discussions, lab tours, and live demonstrations of working treatment technologies on the AAETI campus.

Day-1, July 9, 2025

Day 1 began with a welcome address and context setting by **Subrata Chakraborty (CSE)**, followed by a room mapping and ice-breaking session. The first technical session, delivered by **P.K. Srivastava, AMD, AMRUT-UP (Retd.)**, was the **Keynote: “Current Landscape and Streamlining FSSM in Uttar Pradesh.”** During this session, participants shared on-ground challenges that were acknowledged for further exploration through the training. Post tea, **Hari Prakash Haihyvanshi (CSE)** presented an **“Overview of FSSM Treatment Chains in UP: Systems, Technologies and Practices”** to familiarise participants with the variety of treatment systems operational in the state. This was followed by focused technical sessions on treatment modules: **“Primary Units: Operations and Maintenance, Precautions and Safety, Case Examples”** by **Harsh Yadava (CSE)**, **“Secondary Units: Operations and Maintenance, Precautions and Safety, Case Examples”** by **Manish Mishra (CSE)**, **“Tertiary Units: Operations and Maintenance, Precautions and Safety, Case Examples from UP”** by **Sarim (CSE)**, and **“Sludge Processing Units: Operations and Maintenance, Precautions and Safety, Case Examples from UP”** by **Alka Kumari (CSE)**. Day 1 was dedicated to enabling a deep understanding of the operations and maintenance needs of each treatment module within FSTPs and co-treatment facilities, with a strong emphasis on safety protocols and sustainability.

Day-2, July 10, 2025

Day 2 began with a guided campus tour by **Harsh Yadava and Manish Mishra**, where participants were introduced to on-site technologies such as Decentralised Wastewater Treatment

Systems (DWWTs), improved septic tanks, rainwater harvesting structures, and Soil Bio-technology systems. The day's classroom sessions began with a recap of Day 1 using Mentimeter, led by **Harsh Yadava and Alka Kumari**. The main theme for Day 2 was **"Closing the Loop and Sustaining the Overall FSSM."** The focus was on promoting the **reuse of by-products from faecal sludge treatment**, such as treated wastewater and biosolids, and on strengthening the overall FSSM ecosystem. This included sessions like **"Closing the Loop: Re-use of Treated Bio-solids"** by **Manish Mishra**, followed by **"Resource Recovery, Reuse, and Business Model through Co-composting: Case Studies from Different Parts of India"** by **Mr. Abhishek Chaudhuri**, and a live demonstration session on **drum composting in Gonda City** by **Mr. Sandeep Tiwari**, Sanitation and Food Inspector, UP. These sessions introduced practical approaches to resource recovery. The day also addressed the sustainability of FSSM through informed economic planning and risk preparedness. **Harsh Yadava** delivered a session on **"Emergency Response Planning for FSTP Operations: Standard Responses as per SOP for Emergency Situations"**, highlighting the importance of safeguarding plant operations from disruptive incidents. In the afternoon, **Alka Kumari** conducted a session on **"Documentation and Monitoring of FSSM"**, focusing on monitoring protocols, roles, and responsibilities across the O&M workforce. This was followed by **"Strategies for Implementation of FSSM Bye-laws"** by **Manish Mishra**, and **"Economics of Desludging"** by **Sarim**, which included a practical group exercise using the **desludging calculator**. Participants found the session highly interactive and relevant. **Sarim** also conducted a session on **"Planning for Increasing Sludge Loads in the Plant: Preparing Desludging Plans"**, where he demonstrated the need for balancing scheduled and demand-based desludging to ensure adequate sludge inflow. The final session of the day was on **"Operations and Maintenance Costs: Brief on Approach for Determining O&M Costs and Tendering Protocols"** by **Hari Prakash Haihyvanshi**, which emphasized financial planning as a critical component of sustainable plant operations.

Day-3, July 11, 2025

Day 3 opened with a recap of Day 2 using Mentimeter, facilitated by **Sarim and Alka Kumari**. The day focused on **laboratory-based assessment and preparing for long-term and emerging challenges in FSTPs**. Participants were taken on a tour of AAETI's **Environmental Monitoring Lab (EML)**, led by **Dr. Rajarshi Banerjee**, who explained the functioning of key instruments used to analyse environmental and sludge parameters. Following the lab tour, Dr. Banerjee conducted a session titled **"Critical Aspects of O&M of FSTPs and Co-treatment Plants: Strengthening Sustainable O&M in UP – Insights from EML's Assessment Reports."** He presented data from multiple FSTPs and co-treatment sites in UP, highlighting recurring operational gaps and recommending specific corrective measures. Post-tea, a final session was delivered online by **Ms. Suryabarti Majhi**, **Superintending Engineer, OWSSB and Additional Director, Odisha Urban Academy**, titled **"Resolving Third Generation Problems: Insights from Odisha OWSSB – Understanding Long-term Challenges of O&M and Appropriate Solutions."** She provided a comprehensive overview of Odisha's journey in FSSM and addressed how future challenges can emerge in aging treatment systems. Her insights into institutional preparedness, adaptation strategies, and long-term O&M resilience were highly appreciated by participants.

The programme concluded with a **certificate distribution ceremony** followed by lunch and the participants' return journey to Delhi.