



Uttarakhand State Advisory Note

Co-treatment of Faecal Sludge and Septage with Sewage in Sewage Treatment Plant



Uttarakhand state advisory note on co-treatment of faecal sludge and septage with sewage in sewage treatment plant

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1. Issued in accordance with state Septage Management Protocol 2017

This advisory is issued in accordance with the “Septage Management Protocol 2017” (<https://bit.ly/3vyOno9>) by the Urban Development Department, Government of Uttarakhand. State Program Management Group (SPMG), Namami Gange, Uttarakhand vide letter no. 896 dated 11 Nov 2019, recommended co-treatment of Faecal Sludge and Septage (FSS) in existing Sewage Treatment Plants (STPs) in Ganga towns based on the study conducted by IIT Roorkee – Co-treatment of Septage at STPs of Ganga Towns in Uttarakhand, 2019.

The advisory note acts accordance to Swachh Bharat Mission 2.0 operative guidelines which recommends STP cum FSTP (co-treatment) facility for treatment of faecal sludge and septage in STPs.

The Uttarakhand Pey Jal Nigam identifies co-treatment of FSS with sewage in STPs as a viable solution for treatment of FSS in the towns having existing or proposed STPs. The objective of this note is to advise engineers / project in-charge from Pey Jal Nigam / Jal Sansthan / STP operators in planning and implementing co-treatment of FSS without causing any damage to or adversely impacting the treatment efficiency of the STP. As per the ‘Septage Management Protocol’ of the state and [Advisory for operationalising Protocol for Septage Management in Uttarakhand](#), all STPs should allow the discharge of septage into their plant. Practically, STP can handle FSS only when it has spare capacity available for treatment of equivalent pollution load.

2. Definition of co-treatment of faecal sludge and septage with sewage

Co-treatment is defined as a process where sewage treatment plant, in addition to treating the domestic sewage, if feasible, also treats faecal sludge and septage emptied from various Onsite Sanitation Systems (OSS) in the city.

3. Recommendations for co-treatment by Pey Jal Nigam

A. STPs in operational stage:

- STPs with smaller capacity (1-3 MLD) which are running at minimum 40% to maximum 80% of its designed capacity, and STPs with capacity of 3 MLD or more, having spare capacity available for treatment, can be utilized for FSS treatment, after conducting co-treatment feasibility study for possible FSS addition. It

is advised not to add FSS to STPs with capacity less than 1 MLD until any advisory is released by the Pey Jal Nigam.

- The plant operator the authority responsible for Operation and Maintenance (O&M) of the STP should carry out the feasibility study for co-treatment of FSS in the STP and accordingly allow desludgers / emptiers for discharging of FSS. During the O&M stage, the plant operator should closely monitor the characteristics of inlet FSS and the performance of the STP.
- The private operator/s contracted for O&M of all commissioned STPs in the state should also come under the purview of this advisory with immediate effect.
- Depending upon the spare capacity available in the STP and based on the feasibility study, the co-treatment process should involve one of the two methods:
 - » Discharge of FSS after solid-liquid separation: FSS should undergo solid-liquid separation prior to entering the STP. The plant operator must utilize existing dewatering facilities within the STPs, and if unavailable / insufficient, propose a solid-liquid separation unit.
 - » Direct discharge of FSS: STP with higher capacity i.e., more than 20 MLD direct discharge can be done at wet well of STP with basic facilities.
- Basic facility for co-treatment: Whether it is a direct discharge or prior solid-liquid separation of FSS, the basic facility should be installed with the following units- screens, grit chamber, oil and grease trap (if required), homogenisation tank with submersible pumps and parking area for tankers.
- The feasibility study along with the cost estimates should be submitted by the project in-charge to the appointed state nodal officer (Pey Jal Nigam) for approval of the projects.
- B. STPs under construction stage:**
Co-treatment of FSS with sewage should be added in the scope of work.
- C. STPs in DPR or proposal stage:**
The upcoming STPs in the state which are under planning process should incorporate co-treatment of FSS with sewage into their process design.

4. Support required by Pey Jal Nigam from other agencies

- Urban Local Bodies (ULBs) should ensure desludging operator/s comply with all the requirements mentioned under the “Septage Management Protocol, 2017”, section vide 5.4.2 released by Urban Development Department. ULBs should facilitate installation of GPS based monitoring systems in all desludging vehicles.
- Uttarakhand Jal Sansthan (UJS) should maintain a daily activity record book to monitor the functioning of the desludging operator/s. This record book should contain information to comply with the Septage Management Protocol, 2017; please refer to Form 1: Record keeping form; should be maintained by STP operator/s inside the premise of the STP.
- In order to sustain the co-treatment operations, the UJS, in consultation with the city Septage Management Cell (SMC) should levy an appropriate decanting fee on the desludgers for the discharge of FSS co-treatment in the STP.
- The plant operator should not allow industrial waste to be discharged or dumped in the STP. In case of doubt, the chemist of the STP should check the appearance of the waste by discharging waste for 10 – 30 seconds at Main Pumping Station/Wet Well unit of the STP. Any desludging operator/s found guilty of illegally disposing industrial waste in the STP should be subject to penalties by the UJS or the concerned ULB.
- The desludging operator/s should mandatory fill out Form I before discharging FSS at the STP. Form I consists of information regarding the desludging operator/s or desludging agency/ies, desludging equipment used, quantity of FSS discharged at the STP, source of the FSS collected by the desludging operator/s or desludging agency/ies. The desludging operator/s are responsible for the details entered in Form I. If any of the detail/s found in Form I is found to be false, then the desludging operator/s will be penalised by the UJS or the concerned ULB.

- Reuse and revenue generation potential of the sludge generated from co-treatment and dewatered sewage sludge should be taken into consideration. The dried sludge generated from FSS is very high in nutrient content and has good potential for use in agriculture. The ULBs should explore the possibility of co-composting of sludge generated from sewage and FSS treatment with organic municipal solid waste, which further helps to improve the nutritional value of compost and reduce the pathogen content.

5. Occupational safety at STP

With the recent outbreak of COVID-19 and FSS being considered as a hazardous waste, occupational safety needs to be maintained on the STP premises. In view of safety measures at STP, [Standard Operating Procedure for Cleaning of Sewers and Septic Tanks](#) released by CPHEEO should be followed. The plant operator/s should enforce safety protocols through preparation of the safety plan, keeping in mind any physical, chemical and biological hazards. The safety plan should include the following:

- a. Use of personal protective equipment (PPE) kit during O&M activities: While handling/decanting septage, the plant operator of the STP and desludger shall wear PPE.
- b. Measures to control infection and ensure hygienic conditions: FSS should only be decanted at the decanting station assigned.
- c. Protection in case of spillage, falling and drowning hazards: In case of any spillage while decanting of FSS, soda lime/bleaching powder should be sprinkled on the affected surface, immediately.

6. Decanting fees

Decanting fees is paid by the desludging operator/s to the plant operator for discharging FSS at the STP facility. The levy of decanting fees should be based on an assessment of the desludging market scenario in the city. The assessment should consider the profitability of private desludging operators, the capacity of UJS / ULB in monitoring the desludging activity and the paying capacity of the households in the city. The plant operator should generate a bill/receipt of the decanting fees and provide the same to the desludgers.

7. Feasibility criteria and infrastructure requirement for co-treatment

Feasibility criteria

The plant operator/project in-charge should undertake the feasibility study of co-treatment of FSS with sewage in STPs. The feasibility study should take into account the following factors:

- The load and characteristics of influent sewage and FSS.
- Spare capacity of the STP to handle the extra hydraulic, organic and solids loading due to the addition of FSS.
- Location of the STP and land available for construction FSS receiving station.
- The STP treatment technology and possibility of process disruption due to the addition of FSS.

Infrastructure requirement

For discharge and co-treatment of FSS at the STP, a separate FSS receiving station should be constructed at the STP.

A FSS receiving facility has following units:

- Parking area for tankers
- Screen chamber having coarse and fine screens followed by a grit chamber
- A homogenisation/holding tank with submersible pumps (based on capacity requirement)
- Oil and grease trap (optional)
- Solid-liquid separation with necessary conveyance mechanism (based on capacity requirement)

A co-treatment should be designed having at least two units of screens. The requirement for holding tanks with detention time of 24 hours and dewatering units should be based on feasibility study and should be evaluated on a case-to-case basis.

Co-treatment of FSS with sewage at STP should involve one of two following methods:

• For solid – liquid separation:

Based on a feasibility study of the STP, solid-liquid separation is recommended in plants which receive significant volume of FSS on a daily basis.

A dewatering unit is a major and costly component of any co-treatment facility, and selection of dewatering units should be made based on rational basis. Utilization of the existing dewatering unit of the STP should be analysed first. If an existing dewatering unit cannot be utilized for co-treatment, a separate dewatering system can be installed. In hilly areas where space is a constraint, mechanical dewatering units may have to be installed and for plain areas unplanted sludge drying beds with solar sheds can be installed.

The plant operator of the STP should prepare design and drawings along with the estimates of the co-treatment facility required and submit it to the appointed nodal person by Pey Jal Nigam.

• Direct discharge:

FSS collected from the OSS should be added to the STP at the head works or in the wet well of the STP (or Sewage Pumping Station) to achieve dilution, which brings down the concentration of resultant liquid closer to the inlet sewage characteristics.

This is recommended only for relatively very less quantity of FSS. This method should be explored for co-treatment after feasibility study of FSS at STP. If direct discharge is not feasible for co-treatment of FSS then solid-liquid separation method should be used.

8. Monitoring the performance of the co-treatment process

Characteristics of FSS are highly variable, hence monitoring of the performance of the STP units co-treating FSS should be carried out on a regular basis. If the respective STP is unable to carry out laboratory tests of influent FSS, effluent and dried sludge, then plant operator can approach the institution(s) having environmental laboratories in the state.

9. Capacity building

Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Nainital supported by National Institute of Urban Affairs (NIUA), New Delhi is recognized as the nodal institute for training and capacity building programme for mainstreaming co-treatment of FSS at city wide-scale in Uttarakhand.

The training module for co-treatment of faecal sludge and septage with sewage is available on the NIUA website - <https://www.niua.org/scbp/?q=training-modules>.

10. Nodal department and agencies

In case of any dispute in terms of roles and responsibilities between agencies, the district level Septage Management Committee will be the official arbiter for resolution of such issues.

The Pey Jal Nigam appoints Mr/Ms....., Designation
 as a nodal person and point of contact for implementation of co-treatment facilities in the state.

Form 1: Record keeping form

1	Date and time	
2	Name of the tanker operator	
3	Vehicle no	
4	Contact number	
5	ULB Permit no	
6	Capacity of the tanker	
7	STP location where faecal sludge and septage is disposed	
Checks before entry (tick mark)		
8	Mounted on	<input type="checkbox"/> Truck <input type="checkbox"/> Tractor
9	Septage collected from	<input type="checkbox"/> Household <input type="checkbox"/> Community toilet <input type="checkbox"/> Public toilet <input type="checkbox"/> Hotels <input type="checkbox"/> Banquet hall
10	Tanker leaking	<input type="checkbox"/> Yes <input type="checkbox"/> No
11	Operator wearing PPE	<input type="checkbox"/> Yes <input type="checkbox"/> No
12	Carrying safety kit in the vehicle	<input type="checkbox"/> Yes <input type="checkbox"/> No


 Signature by tanker operator

 Signature of plant operator

Approved by

Managing Director

 Uttarakhand Peyjal Sansadhan
Vikas evam Nirman Nigam

 11, Mohini Road, Danawala,
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प्रबन्ध निदेशक
उत्तराखण्ड पेयजल संसाधन विकास
नग्न (उत्तराखण्ड)
Signature with official stamp

Endorsed by

Director

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मुख्य महाप्रबन्धक
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Signature with official stamp

