Concept note

Training on laboratory-based testing procedures for faecal sludge and used water management

Date: 3rd to 5th September 2024
Venue: Centre for Continuing Education IIT, Roorkee (Uttarakhand)

Background

Sanitation Capacity Building platform (SCBP) is a platform anchored by National Institute of Urban Affairs (NIUA) and works as a collaborative endeavour of experts and organisations devoted to the goal of sanitation to support and improve the capacity of towns/cities to plan and implement decentralised sanitation. SCBP supports the Ministry of Housing and Urban Affairs (MoHUA), Government of India, by concentrating on urban sanitation and assisting states and cities in moving beyond open defecation free status by addressing safe disposal and treatment of human waste; and strengthening the state and cit through knowledge and experience sharing on decentralised sanitation to achieve national missions like the Swachh Bharat Mission, AMRUT, Smart Cities Mission, etc.

Through a Memorandum of Understanding (MoU), SCBP-NIUA has been working with the Urban Development Directorate (UDD) of the state of Uttarakhand to scale the faecal sludge and septage management (FSSM) agenda across the state since 2019. It offers support through technical assistance, capacity building, and policy advisory.

NIUA in association with IIT Roorkee is conducting a three day residential training programme, at the IIT Roorkee campus, in order to conduct cutting-edge training for Assistant Engineers (AE) and Junior Engineers (JE) from Peyjal Nigam, Jal Sansthan and State Program Management Group (SPMG), who are directly involved in the planning and operations of FSTP and STPs. The training programme will provide participants with the skills to identify potential discrepancies to meet permissible limits, enabling them to uphold the quality and integrity of test results obtained from laboratories.

Need for the training

Increased knowledge about the consequences of water pollution and the public desire for better-quality waterhave prompted the implementation of much stricter environmental laws. Water of good quality is necessary for domestic, environmental, industrial, recreational, and agricultural uses. For those working in sanitation and water management, it is important to understand the rationale for and be practically competent in the sampling of water and wastewater and the measurement and interpretation of water quality parameters. The course is intended to provide the groundwork of understanding in the area of basic and advanced quantitative analysis,which is commonly referred to as wastewater and sludge analysis that will serve the practicing engineers and scientists as a basis of common phases of environmental engineering practice, especially for the Uttarakhand region.

Objective of the training

The training is designed to disseminate the knowledge of wastewater and sludge quality.

1. Wastewater and sludge quality & standards
2. Practical in sludge water quality sampling, data handling, analysis
3. Standard physico-chemical, heavy metal, and microbiological tests

Target groups and knowledge gaps to be addressed during the training

Target Groups	Gaps in Knowledge
Engineers from Jal Sansthan, Jal Nigam, Pollution Control Board of Uttarakhand Government	1. Sampling techniques, preservation and sources of error 2. Quality assurance 3. Basic wastewater and sludge qualityanalysis 4. Data interpretation etc.

Draft Training Agenda

Day No.	Time	Session	Name of Faculty/Expert
Day 1	9:00-9:30	Registration	IIT Staff/Student
	9:30-10:00	Introduction to faecal sludge and septage management	NIUA Representative
	10:00-10:30	Introduction: FSM Value chain, about the training course, expected results. Water, Sludge/Septage quality parameters & theirsignificance	NIUA Representative & A.A. Kazmi, IIT Roorkee
	10:30-11:00	Tea Break	
	11:00-12:00	Units of measurement, molecular and equivalent weights, standard solutions, titrimetric analysis. Sources of errors. Chemicals, reagents, distilled water, glassware, measurement of mass & volume, filtering, drying, ignition, equipment maintenance, laboratory notebook, safety	Ankur Rajpal & Muntazir Ali, IIT Roorkee
	12:00-13:00	Physical Water Quality Parameters: Solids-Organic (Dissolved & Suspended) & Inorganic (Dissolved & suspended)	Vinay Tyagi, NIH
	13:00-14:30	Lunch Break	
	14:30-17:00	Laboratory: Analysis of Solids in wastewater & Sludge: TSS, VSS, TDS, FDS, Conductivity, Organic Carbon	Ankur Rajpal, Muntazir Ali and Banafsha Ahmad, IIT Roorkee
Day 2	9:30-10:30	Components of FSTP/Co-Treatment plants and their functioning. Permissible values of the parameters at each step.	NIUA Representative
	10:30-11:30	Organics in Wastewater & Sludge BOD, COD, TOC tests, Spectroscopic Methods (COD), calibration curves, Determination of DO, BOD, COD, TOC, the effect of storage of the sample and discussion of results. Analysis of Nutrients (Nitrogen & Phosphorus) in Wastewater & Sludge	Ankur Rajpal and Muntazir Ali, IIT Roorkee
	11:30-12:00	Tea Break	
	12:00-13:00	Analysis of Heavy Metals in Wastewater & Sludge	M.K. Sharma, NIH

	13:00-14:00	Lunch Break	
	14:30-17:00	Laboratory: Analysis of DO, COD, TOC, TP and CHNS	Ankur Rajpal. Muntazir Ali and K.M. Ghani, IIT Roorkee
Day 3	9:30-10:30	Pathogens in Wastewater	Akanksha Bhatia and Sudipti Arora, IIT Roorkee
	10:30-11:30	Analysis of Pathogens in Wastewater and Sludge	
	11:30-12:00	Tea Break	
	12:00-13:30	Laboratory: Analysis of Coliforms, Salmonella, and Helminth Eggs in Wastewater and Sludge	Akanksha Bhatia and Sudipti Arora, IIT Roorkee
	13:30-14:30	Lunch Break	
	14:30-16:00	Panel Discussion, Conclusion and way forward	NIUA Representative

Key contacts for the training programme	
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