



Mode of Operation DPHE Faecal Sludge Laboratory (FSL) in Cox's Bazar August 2023

Background:

The Embassy of Switzerland in Bangladesh, through its humanitarian Direct Action Project in Cox's Bazar, is supporting the Department of Public Health Engineering (DPHE) under the umbrella of a Memorandum of Understanding (MoU) with DPHE. The support focuses on the strengthening of DPHE and the support of the humanitarian WASH Sector. One component of this support is the establishment of a Faecal Sludge Laboratory (FSL) within DPHE, which is starting its operations in January 2022.

Purpose of FSL:

The FSL provides DPHE with the means to test treated wastewater and treated faecal sludge from all wastewater and faecal sludge treatment plants (FSTPs) in Cox's Bazar district for their adherence to government standards for sewage discharge into the environment. Many of the existing FSTPs in the district have a system in place to monitor the effectiveness of the treatment process and the adherence to effluent standards, but this has so far not been monitored by the government, as there has been no analysis and monitoring capacity. The DPHE FSL is an official government monitoring laboratory that will regularly conduct analyses from all FSTPs to check the compliance with government standards and to ensure that the environment and public health are protected.

Applicable government standards for discharge of wastewater effluent:

Parameter	Unit	The Environment Conservation Rules, 1997, Ministry of Environment and Forest. Schedule 9 – Standards for Sewage Discharge	Department of Environment Guidelines update 5 March 2023, Schedule 3 – Standards for Sewage Discharge
pH	-	-	6-9
BOD (At 20°C)	mg/L	40	30
COD	mg/L	-	125
Nitrate (NO ₃)	mg/L	250	50
Phosphate (PO ₄)	mg/L	35	15
Suspended Solids	mg/L	100	100
Temperature	°C	30	30
Total Coliform	CFU/100mL	1000	1000
Oil & Grease	mg/L	-	10

The latest government directive (DoE guidelines, 2023, marked in green above) will be applicable for the operation of the DPHE FSL. All parameters will be analysed by the DPHE laboratory and compared against the government standards.



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FSTPs in Cox's Bazar district:

There are currently about 191 FSTPs located in the camps, out of which 167 were operational (data from August 2023). Outside the camps, there is at four operational FSTPs in Cox's Bazar district. The FSL is expected to monitor all FSTPs in and outside of the camps within the district.

Provision of laboratory results by FSTP Operators:

Each organization which is operating one or more than one FSTP will be asked by DPHE to provide their existing laboratory results (from their own or from an external laboratory) for effluent quality data on a regular basis (**every four months**). FSTP operators which currently do not have any effluent quality data available are urgently requested by DPHE to start testing the quality of the effluent as soon as possible, and to provide the data to the DPHE FSL. A standard reporting form will be shared with all FSTP operators / WASH partners, which should be completed for each FSTP once every 4 months and sent directly to the DPHE FSL e-mail address (dphefslcoxsbazar@gmail.com).

Selection of FSTPs to be sampled:

DPHE Faecal sludge laboratory will cover all the operational faecal sludge treatment plants in Rohingya camps along with host community.

Sampling frequency:

The objective is to sample each FSTP at least **once every 4 months**. With approximately 200 FSTPs in total, this means that on average at least 12 FSTPs have to be sampled every week in order to achieve the triennial sampling frequency.

Note: The DPHE FSL is able to handle more than 12 samples per week. The actual capacity of the FSL is 36 samples per week.

Sampling procedure:

The sampling of the FSTPs will be conducted by the DPHE FSL staff (sample collectors) with their own vehicle and equipment. No fees will be charged to the FSTP operators for the sampling or analysis process.

Communication with FSTP operators for sampling:

The DPHE FSL team will inform each FSTP operator by phone at least one day before a planned sampling visit to the respective FSTP. The operator is expected to facilitate the sampling of their FSTP by providing information related to its operation, location, accessibility and should provide one staff on site during the sampling day to facilitate the access and the sampling process.



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Feedback to FSTP operators after analysis of samples:

The DPHE FSL will only contact an FSTP operator if some of the tested parameters are not within the acceptable range for effluent discharge according to the government standards.

The following procedure will be applied by the DPHE FSL, depending on the severity of the non-conformity to the effluent standards:

1. **Direct feedback to FSTP operator by phone**, informing them which parameters are not within the acceptable range, and asking them to review and improve the treatment process of the respective FSTP. A deadline of 1 month to fix the FSTP process will be given to the operator, and a follow-up sampling visit to the FSTP will be organized by the DPHE FSL in the following months.
2. **Written feedback from DPHE (Executive Engineer)** to the FSTP operator, informing them in writing about the testing results of the respective FSTP, asking them to review and improve the treatment process. A deadline of 1 month to fix the FSTP process will be given to the operator, and a follow-up sampling visit to the FSTP will be organized by the DPHE FSL in the following months.
3. **Closure of FSTP:** In case of a very serious non-conformity of an FSTP to the governmental effluent discharge standards, DPHE may decide to officially inform the respective FSTP operator to temporarily stop the operation of the FSTP until the treatment process has been improved and the operator can provide evidence to DPHE that the FSTP is operating effectively.

FSTP Analysis Report (Sewage Discharge)

To be submitted to the DPHE Faecal Sludge Laboratory (FSL)

Date of report:

Organization			
Contact person			
Phone number			
Sample Type	Effluent		
FSTP Technology			
Location of FSTP	FSTP's ID		Camp
	Block		Sub Block
Date of sample collection			

S/N	Test Parameters	unit	Results	Remarks
1	pH Value	-		
2	Biochemical Oxygen demand (BOD)	mg/l		
3	Chemical Oxygen Demand (COD)	mg/l		
4	Total Suspended Solid (TSS)	mg/l		
5	Nitrate	mg/l		
6	Phosphate	mg/l		
7	Temperature (During sample collection)	mg/l		
8	Total Coliform	°C		
9	Faecal Coliform (E. Coli)	CFU/100 ml		
10	Oil and Grease	mg/l		

Comments (If Any):

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Tested By

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Checked By (In-Charge)

Note: This completed form has to be submitted to the DPHE FSL e-mail address (dphefslcoxsbazar@gmail.com), on a quarterly basis, for each FSTP which is operational.