



Faecal Sludge Laboratory

DPHE, Cox's Bazar

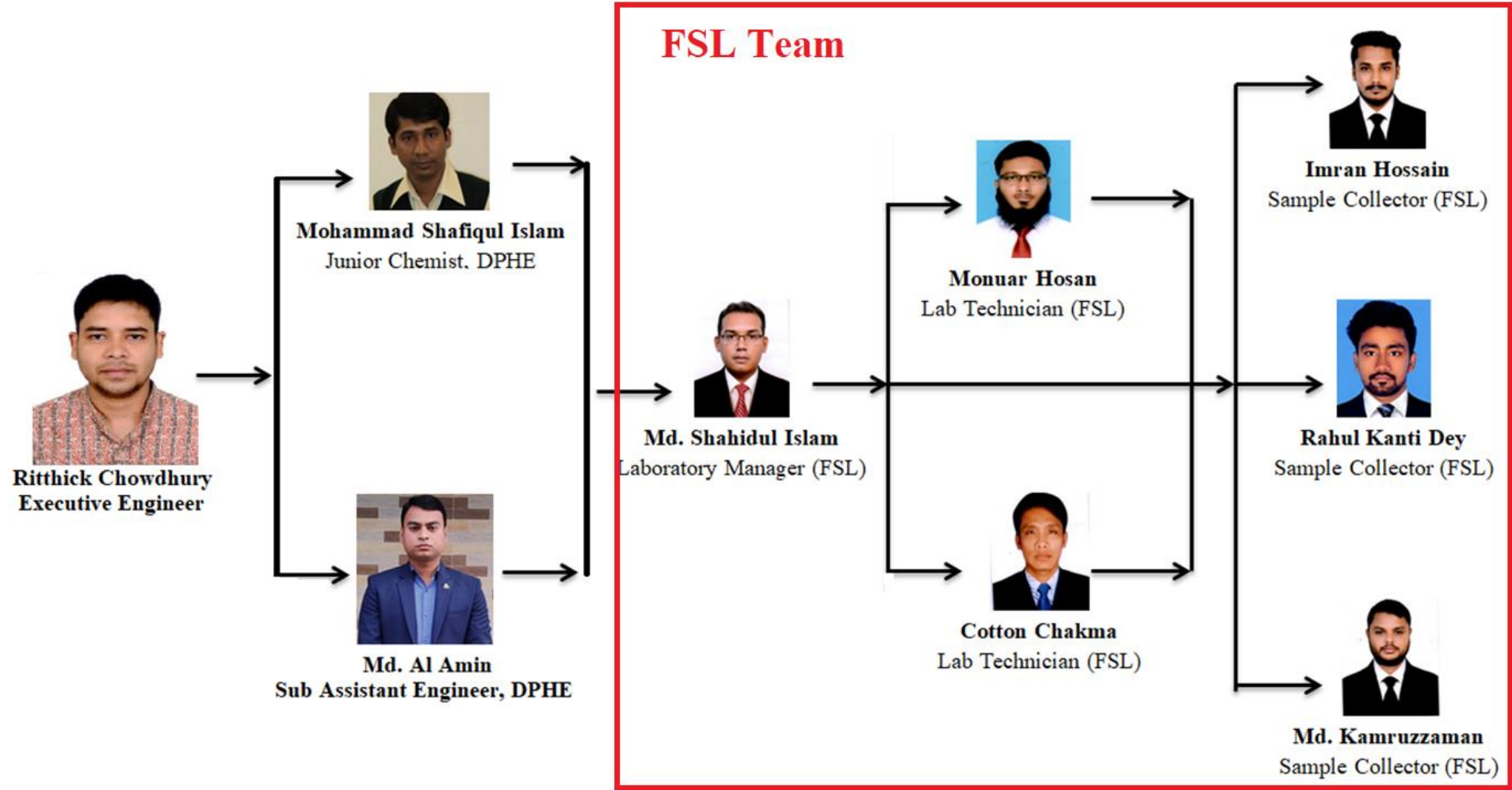
Implemented By



Overview of Faecal Sludge Laboratory

- Since the Rohingya influx, DPHE has been involved in many initiative to ensure water supply and sanitation for FDMN's (Forcibly Displaced Myanmar Nationals) and also established one water testing laboratory in Cox's Bazar.
- In 2021, DPHE established a new Faecal Sludge Laboratory (FSL) in Cox's Bazar with the support of Embassy of Switzerland in Bangladesh (SDC).
- The FSL has started its operation in January 2022.
- The laboratory 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.
- The latest applicable Government Standards (DoE, 2019) are used.
- DPHE FSL aims to test the effluent of each FSTP in Cox's Bazar district regularly, about once every 3 months.

Organogram and Staffs of FSL-DPHE



Photos of FSL-DPHE



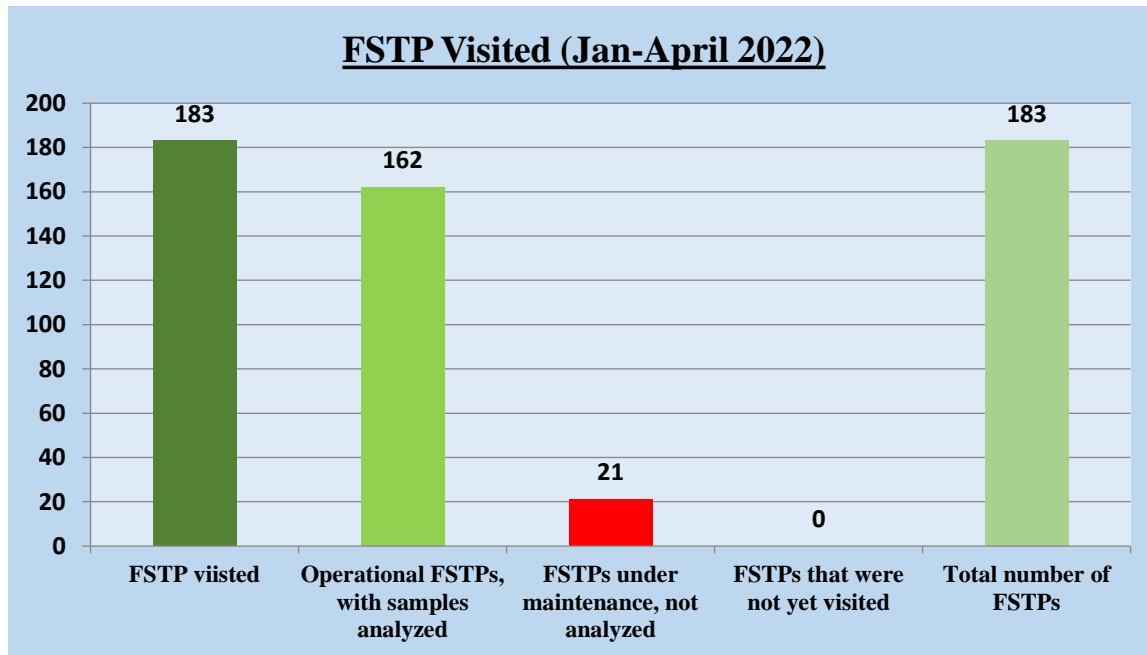
Sample Collection from Field



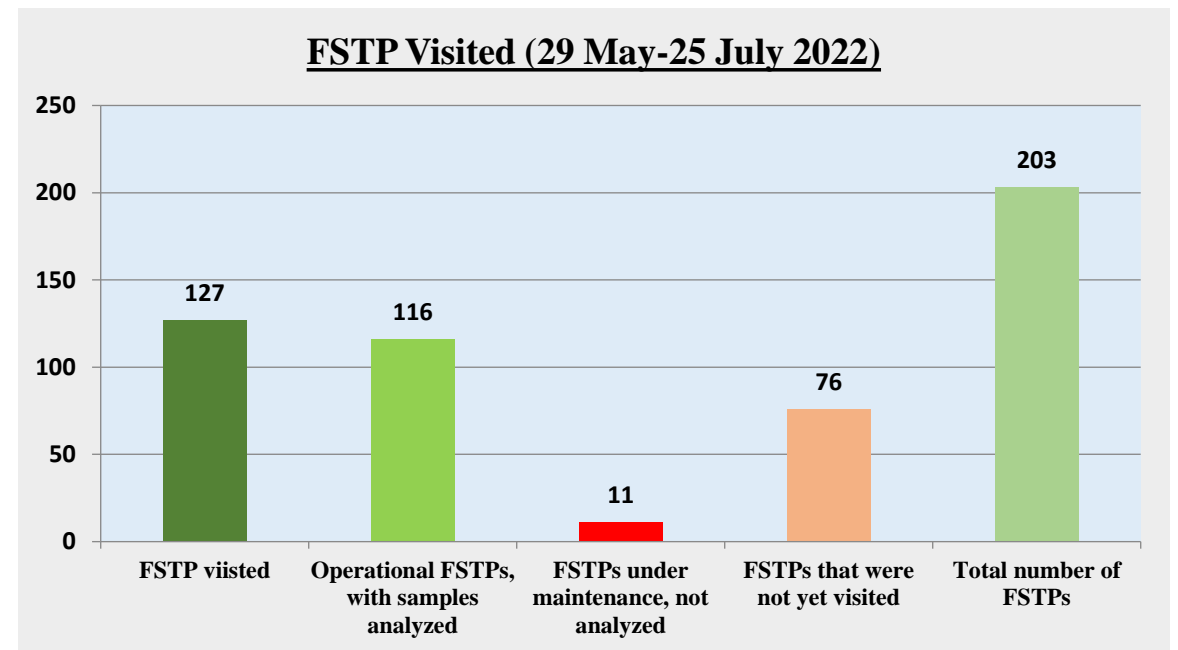
Applicable government standards for discharge of wastewater effluent:

Parameter	Unit	The Environment Conservation Rules, 1997, Ministry of Environment and Forest. Schedule 9 – Standards for Sewage Discharge	Department of Environment Guidelines update 2019, Schedule 7 – Standards for Sewage Discharge
pH	-	-	6-9
BOD	mg/L	40	30
COD	mg/L	-	200
Nitrate	mg/L	250	250
Phosphate	mg/L	35	35
Total Nitrogen	mg/L	-	15
Suspended Solids	mg/L	100	100
Temperature	°C	30	30
Coliform	CFU/100mL	1000	1000
Oil & Grease	mg/L	-	10

Overview of Samples/FSTP analyzed



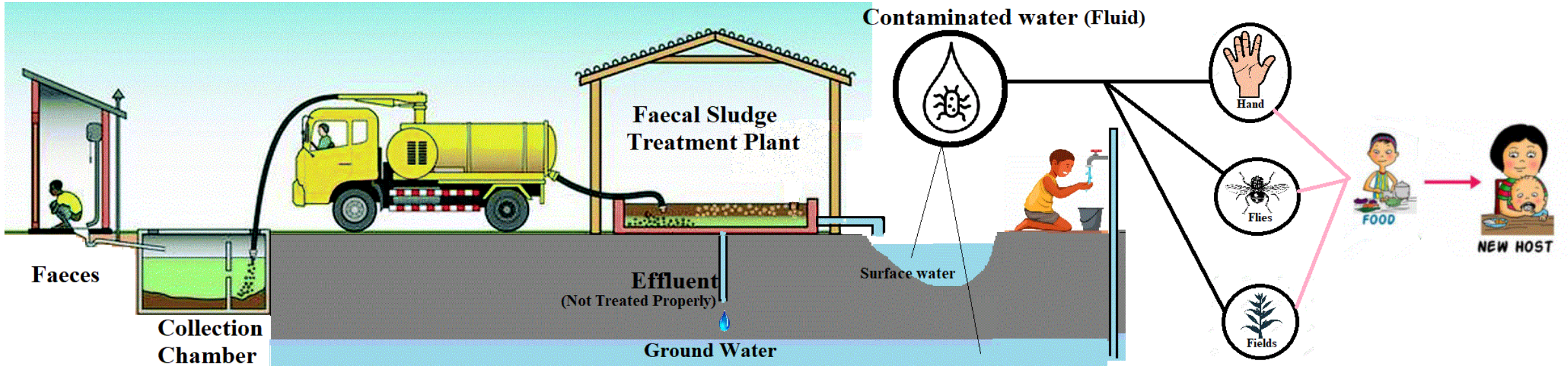
First Round



Second Round

Objectives of Faecal Sludge Management

1. Protect Public Health
2. Environmental Safety
3. Resource Recovery



F-diagram, showing pathways of fecal–oral disease transmission

Comparisons of 2nd Round with respect to 1st Round

Summary of FSTP Effluent analysis by DPHE FSL	Round	Parameters									
		pH	Temp (Degree C)	BOD (mg/l)	COD (mg/l)	Total Nitrogen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)	Total Suspended Solids (mg/l)	Total Coliforms (cfu/100 ml)	E. Coli (cfu/100 ml)
Minimum	1st	6.1	19.6	11	48	10	4	0	6	0	0
	2nd	7.5	27	3	17	38	3	0	22	0	0
Maximum	1st	12.3	36.4	4,554	17,438	2160	623	108	1090	44.7 M	39.5 M
	2nd	11.5	36.5	850	2165	1760	575	586	6220	3.8 M	2.1 M
Govt Std (DoE 2019)		6 to 9	30	30	200	15	250	35	100	1,000	N/A
% of FSTPs above limit	1st	6%	7%	97%	92%	99%	2%	18%	57%	98%	
	2nd	4%	62%	89%	89%	100%	3%	65%	57%	76%	

Technologies of FSTP in Rohingya Camps

- Anaerobic Lagoons
- LSP: Lime Stabilization Pond
- UFF: Up flow Filter
- CW: Constructed wetland
- ABR: Anaerobic Baffled reactor
- ODP: Open Desludging Pond
- WSP: Waste Stabilization Pond
- ASTT: Anaerobic Settling Thickening Tank
- SSU: Solid Separation Unit
- DEWATS: Decentralized waste water treatment system
- ADS: Anaerobic Digester system

Technology wise comparison (1st Round)

Technology Type	Qty	Average of pH	Average of TN (mg/l)	Average of Nitrate (mg/l)	Average of Phosphate (mg/l)	Average of BOD (mg/l)	Average of COD (mg/l)	Average of E.Coli (cfu/100 ml)	Average of Total Coliform (Cfu/100 ml)	Average of TSS (mg/l)
ABR	33	7.9	700.2	37.6	29.8	250	789	9,56,752	16,70,879	209.0
ADS	1	8.2	289.0	32.7	12.2	37	303	300	610000	51.7
Anaerobic Lagoon	2	8.3	242.8	147.0	7.3	29	160	400	71050	33.6
ASTT	1	8.0	940.0	28.3	16.3	258	745	42,00,000	62,00,000	70.0
CW	1	7.8	1575.0	21.9	18.8	347	686	20000	70000	180.0
DEWATS	12	7.9	1143.4	19.7	29.1	255	1015	21,12,283	30,50,042	271.5
LSP	27	8.8	781.2	28.9	18.3	390	872	8,57,104	21,76,481	279.7
ODP	7	7.8	407.3	21.7	47.6	380	1015	9,00,000	38,71,429	261.9
SSU	32	8.2	394.5	17.3	11.2	309	621	27,65,913	44,64,059	148.7
UFF	33	7.7	567.0	71.2	27.4	424	1335	48,38,708	70,01,885	246.6
WSP	13	7.8	333.6	48.4	9.9	190	517	3,51,25,133	4,06,76,900	162.7
Overall	162	8.1	615.6	39.0	22.3	318	874	49,09,854	67,11,965	215.6

For Further inquiries please contact in the followings:



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Thank You

