

**REPORT
ON THE WATER QUALITY OF RIVERS/STREAMS AT
THE IMMERSION SITES OF THE IDOLS
OCTOBER, 2022**



**Meghalaya State Pollution Control Board
Shillong 'Arden', Lumpyngngad,
Shillong - 793014, Meghalaya**

1. MONITORING OF RIVERS USED AS IMMERSION SITES

The Meghalaya State Pollution Control Board, Shillong, in pursuance to the Revised Guidelines for Idol Immersion published by Central Pollution Control Board, Delhi, conducted the monitoring of the rivers located in Shillong, Tura and Jowai where Immersion sites are located. The monitoring was conducted with the aim of assessing the environmental impact due to such immersion.

SAMPLING METHODOLOGY

The sampling procedure used during collection of samples from the selected sites is the 'Grab Sample' method.

The monitoring was conducted in six phases:

- Phase 1 -Pre-immersion monitoring, conducted on the 30th October 2022.
- Phase 2-Immersion Day monitoring, conducted on the 5th October 2022.
- Phase 3-Post-immersion monitoring:
 - Third day after immersion on 7th October 2022
 - Fifth day after immersion on 9th October 2022
 - Seventh day after immersion on 11th October 2022
 - Ninth day after immersion on 13th October 2022

The monitoring was conducted at three Immersion sites:

- i. **Shillong, East Khasi Hills District:** The Immersion site is located along the river Umkhras at Polo, Shillong. The three (3) sampling points selected along the stretches of the river for collection of water samples are:
 - (i) 1st sampling point - approximately 100 meters upstream of the immersion site
 - (ii) 2nd sampling point - Immersion site.
 - (iii) 3rd sampling point - approximately 100 meters downstream of the site.
- ii. **Jowai, West Jaintia Hills District:** The Immersion Ghat is located along the river Myntdu at Lynter Archaka, Syntu Ksiar. The three (3) sampling points selected along the stretches of the river for collection of water samples are:
 - (i) 1st sampling point - approximately 100 meters upstream of the immersion site
 - (ii) 2nd sampling point - Immersion site

(iii) 3rd sampling point - approximately 100 meters downstream of the site.

iii. **Tura, West Garo Hills District:** The Immersion Ghat is located along the river Babupara-Rongkhon at Babupara. The three (3) sampling points selected along the stretches of the river for collection of water samples are:

(i) 1st sampling point - approximately 100 meters upstream of the immersion site

(ii) 2nd sampling point - Immersion site

(iii) 3rd sampling point - approximately 100 meters downstream of the site

PARAMETERS ANALYZED

- The quality of water at the selected sampling points have been examined in terms of Temperature, pH, Conductivity, Dissolved Oxygen, Turbidity, Total Dissolved Solids, Bacteriological Oxygen Demand, Chemical Oxygen Demand, Hardness, Alkalinity, Total Suspended Solids, Chromium, Copper, Lead and Zinc among the Physico-Chemical parameters.
- The analysis was carried out in accordance with the standard procedures APHA-AWWA-WEF (American Public Health Association, American Water Works Association, Water Environment Federation) – 23rd Edn.
- The analysis result of the rivers Umkhrah, Myntdu and Babupara-Rongkhon is presented in Table 1, 2 & 3 respectively.

FINDINGS

From the analysis data (**Table 1, Table 2 & Table 3**), it was observed that there was no significant changes in the concentration of parameters analyzed during the three phases of monitoring at the monitored water bodies so as to characterize any alteration in their characteristics as a result of immersion of idols into the water systems.



**Senior Scientist
MSPCB, SHILLONG**



**Chief Scientist
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TABLE 1: WATER QUALITY DATA OF RIVER WAH UMKHRAH DURING PRE-IMMERSSION, IMMERSION & POST-IMMERSION DAY, KALI PUJA FESTIVAL 2022

	Site I (100m Upstream of Immersion Ghat)						Site II (Site of Immersion Ghat)						Site III (100 m downstream of Immersion Ghat)					
	Pre-Immersion Day	Immersion Day	Post Immersion				Pre-Immersion Day	Immersion Day	Post Immersion				Pre-Immersion Day	Immersion Day	Post Immersion			
	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)
Date of Sampling ➡	1/1/22	1/10/22	1/19/22	1/28/22	1/37/22	1/46/22	1/2/22	1/11/22	1/20/22	1/29/22	1/38/22	1/47/22	1/3/22	1/12/22	1/21/22	1/30/22	1/39/22	1/48/22
Time	12:15	12:00	2:15	1:30	1:20	12:30	12:30	12:15	2:30	1:45	1:35	12:45	12:45	12:30	2:45	2:00	1:50	1:00
Weather	Clear	Clear	Clear	Raining	Clear	Rainy	Clear	Clear	Clear	Raining	Clear	Rainy	Clear	Clear	Clear	Raining	Clear	Rainy
Colour	Brown	Greyish	Brown	Brown	Clear	Clear	Brown	Greyish	Brown	Brown	Clear	Clear	Brown	Greyish	Brown	Brown	Clear	Clear
Temperature (°C)	18.0	17.0	14.0	14.0	15.0	16.0	18.0	17.0	14.0	14.0	15.0	16.0	18.0	17.0	15.0	14.0	16.0	16.0
pH	7.1	7.2	7.3	6.9	6.8	6.8	7.3	7.2	7.2	6.8	6.8	6.9	7.3	7.2	7.2	6.9	6.7	6.8
Conductivity µS/cm	255.0	252.0	218.0	288.0	255.0	261.0	268.0	260.0	232.0	290.0	268.0	275.0	280.0	254.0	224.0	285.0	250.0	268.0
Chloride mg/L	28.0	26.0	16.0	28.0	20.0	19.0	27.0	25.0	20.0	29.0	21.0	20.0	28.0	26.0	18.0	30.0	21.0	21.0
Total Hardness mg/L	80.0	76.0	108.0	70.0	68.0	68.0	70.0	70.0	106.0	78.0	70.0	68.0	74.0	70.0	120.0	70.0	64.0	70.0
Alkalinity mg/L	126.0	118.0	110.0	56.0	64.0	66.0	134.0	120.0	112.0	62.0	68.0	66.0	136.0	118.0	106.0	62.0	60.0	64.0
Dissolved Oxygen mg/L	2.6	3.6	2.9	2.2	2.3	2.4	3.4	3.0	2.4	2.5	2.7	2.8	2.4	3.4	2.7	2.5	2.5	3.6
BOD (mg/L)	13.0	9.4	12.5	14.5	14.0	13.5	14.0	16.0	19.0	18.8	17.0	16.5	19.0	14.0	18.0	18.5	18.5	15.0
COD (mg/L)	20.0	20.0	20.0	30.0	30.0	40.0	40.0	30.0	40.0	40.0	30.0	40.0	50.0	40.0	30.0	50.0	40.0	30.0
Turbidity (NTU)	12.5	16.5	17.8	14.2	20.5	15.9	14.3	27.3	20.2	15.9	21.9	19.5	15.9	18.9	18.9	15.4	22.6	17.6
Total Dissolved Solids mg/L	176.0	174.0	150.0	199.0	176.0	180.0	185.0	179.0	160.0	200.0	185.0	190.0	193.0	175.0	154.0	197.0	172.0	185.0
Total Suspended Solids mg/L	17.0	20.0	22.0	17.0	24.0	20.0	18.0	30.0	30.0	19.0	27.0	25.0	19.0	20.0	25.0	18.0	29.0	21.0
Chromium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Lead mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Manganese mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL



(Senior Scientist)

TABLE 2: WATER QUALITY DATA OF RIVER MYNTDU DURING PRE-IMMERSSION, IMMERSION & POST-IMMERSION DAY, KALI PUJA FESTIVAL 2022

	Site I (100m Upstream of Immersion Ghat)						Site II (Site of Immersion Ghat)						Site III (100 m downstream of Immersion Ghat)					
	Pre-Immersion Day	Immersion Day	Post Immersion				Pre-Immersion Day	Immersion Day	Post Immersion				Pre-Immersion Day	Immersion Day	Post Immersion			
Date of Sampling ➡	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)
Sample Code	I/4/22	I/13/22	I/22/22	I/31/22	I/40/22	I/49/22	I/5/22	I/14/22	I/23/22	I/32/22	I/41/22	I/50/22	I/6/22	I/15/22	I/24/22	I/33/22	I/42/22	I/51/22
Time	11:00	12:15	1:00	12:16	1:00	11:20	11:15	12:30	1:15	12:30	1:15	11:30	11:30	12:45	1:30	12:45	1:30	11:40
Weather	Clear	Clear	Clear	Clear	Clear	Cloudy	Clear	Clear	Clear	Clear	Clear	Cloudy	Clear	Clear	Clear	Clear	Clear	Cloudy
Colour	Clear	Clear	Clear	Clear	Clear	L. Brown	Clear	Clear	Clear	Clear	Clear	L. Brown	Clear	Clear	Clear	Clear	Clear	L. Brown
Temperature (°C)	16.0	15.0	15.0	16.0	16.0	18.0	16.0	15.0	16.0	15.0	15.0	18.0	16.0	15.0	16.0	15.0	15.0	18.0
pH	7.1	6.7	6.8	6.8	6.7	6.6	6.8	6.8	6.7	6.7	6.6	6.7	6.7	6.7	6.8	6.7	6.7	6.7
Chloride mg/L	9.0	6.0	7.0	10.0	6.0	6.0	5.0	8.0	8.0	7.0	7.0	5.0	5.0	6.0	8.0	5.0	8.0	5.0
Total Hardness mg/L	22.0	10.0	12.0	10.0	12.0	10.0	20.0	12.0	12.0	12.0	12.0	12.0	14.0	14.0	14.0	12.0	12.0	12.0
Alkalinity mg/L	20.0	20.0	16.0	16.0	14.0	14.0	18.0	18.0	14.0	12.0	12.0	16.0	14.0	20.0	18.0	18.0	16.0	12.0
Conductivity µS/cm	45.0	42.0	39.0	42.0	38.0	40.0	42.0	45.0	41.0	44.0	37.0	43.0	40.0	40.0	38.0	46.0	40.0	41.0
Dissolved Oxygen mg/L	6.2	6.8	7.4	7.6	7.0	7.4	6.4	7.4	7.6	7.2	4.2	7.4	6.8	7.1	7.8	8.0	7.8	7.8
BOD (mg/L)	2.1	1.9	2.1	1.2	1.9	1.4	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.7	1.4	1.4	1.3	1.3
COD (mg/L)	8.0	8.0	10.0	5.0	6.0	5.0	10.0	8.0	8.0	7.0	5.0	6.0	12.0	12.0	6.0	6.0	5.0	5.0
Turbidity (NTU)	6.5	5.9	3.9	4.3	4.5	3.7	5.5	11.9	4.7	4.9	3.9	3.9	5.2	6.8	4.2	5.7	4.9	4.1
Total Dissolved Solids mg/L	31.0	29.0	27.0	29.0	26.0	28.0	29.0	31.0	28.0	30.0	25.0	30.0	28.0	28.0	26.0	32.0	28.0	28.0
Total Suspended Solids mg/L	12.0	10.0	8.0	9.0	8.0	7.0	10.0	16.0	8.0	10.0	7.0	8.0	9.0	12.0	10.0	12.0	13.0	9.0
Chromium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Lead mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc mg/L	BDL	BDL	BDL	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Manganese mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL



(Senior Scientist)

TABLE 3: WATER QUALITY DATA OF RIVER BABUPARA-RONGKHON DURING PRE-IMMERSSION, IMMERSION & POST-IMMERSION DAY, KALI PUJA FESTIVAL 2022

	Site I (100m Upstream of Immersion Ghat)						Site II (Site of Immersion Ghat)						Site III (100 m downstream of Immersion Ghat)					
	Pre- Immersion Day	Immersion Day	Post Immersion				Pre - Immersion Day	Immersion Day	Post Immersion				Pre- Immersion Day	Immersion Day	Post Immersion			
Date of Sampling ➡	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)	30.09.2022	5.10.2022	7.10.2022 (3 rd)	9.10.2022 (5 th)	11.10.2022 (7 th)	13.10.2022 (9 th)
Sample Code	I/7/22	I/16/22	I/25/22	I/34/22	I/43/22	I/52/22	I/8/22	I/17/22	I/26/22	I/35/22	I/44/22	I/53/22	I/9/22	I/18/22	I/27/22	I/36/22	I/45/22	I/54/22
Time	11:10	6:11	10:15	9:45	10:55	9:25	11:30	6:35	10:10	9:40	10:20	9:25	4:40	6:50	10:10	10:05	11:20	10:15
Weather	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Colour	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Temperature (°C)	25.8	24.0	24.0	24.0	24.0	24.0	25.0	24.0	25.0	24.5	25.0	24.5	26.0	25.0	25.1	25.0	25.0	25.0
pH	6.8	6.7	6.7	6.8	6.7	6.8	6.7	6.6	6.8	6.7	6.8	6.7	6.7	6.6	6.7	6.6	6.8	6.7
Conductivity µS/cm	89.0	94.0	94.0	93.0	86.0	87.0	92.0	103.0	103.0	102.0	88.0	89.0	90.0	97.0	100.0	97.0	84.0	88.0
Chloride mg/L	6.0	6.0	5.0	5.0	5.0	6.0	6.0	7.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0	6.0	5.0	5.0
Total Hardness mg/L	26.0	36.0	36.0	28.0	26.0	36.0	32.0	40.0	38.0	30.0	30.0	38.0	34.0	38.0	42.0	32.0	32.0	40.0
Alkalinity mg/L	38.0	44.0	40.0	30.0	32.0	40.0	38.0	40.0	42.0	36.0	34.0	42.0	40.0	42.0	42.0	32.0	32.0	42.0
Dissolved Oxygen mg/L	7.6	7.8	7.2	6.9	7.3	7.6	7.3	7.4	6.8	7.2	7.3	7.4	7.1	7.6	7.3	7.5	7.6	7.8
BOD (mg/L)	1.7	1.4	1.3	1.9	1.4	1.3	1.6	1.7	1.9	1.6	1.9	1.6	1.3	1.9	1.5	1.3	1.5	1.4
COD (mg/L)	6.0	5.0	5.0	7.0	5.0	5.0	5.0	6.0	7.0	6.0	7.0	6.0	5.0	7.0	6.0	5.0	6.0	5.0
Turbidity (NTU)	4.4	5.2	5.0	4.9	3.8	4.0	5.0	12.7	6.8	5.8	5.2	5.6	5.3	8.9	5.4	5.2	4.7	4.9
Total Dissolved Solids mg/L	61.0	65.0	65.0	64.0	59.0	60.0	63.0	71.0	71.0	70.0	61.0	61.0	62.0	67.0	69.0	67.0	58.0	61.0
Total Suspended Solids mg/L	8.0	11.0	11.0	9.0	8.0	9.0	11.0	16.0	4.0	13.0	12.0	12.0	13.0	14.0	12.0	11.0	9.0	8.0
Chromium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Lead mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Manganese mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL



(Senior Scientist)