JOINT COMMITTEE REPORT

IN THE HON'BLE NGT MATTER OA NO. 60/2021 (WZ)

[ARYAVART FOUNDATION V/S HEMANI INDUSTRIES LTD. & ORS.]

IN REFERENCE TO ORDER DATED 02.02.2022

MATTER RELATED WITH DAHEJ INDUSTRIAL AREA

Jointly Prepared By:

CENTRAL POLLUTION CONTROL BOARD

GUJARAT POLLUTION CONTROL BOARD

May 2022

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1.BACKGOUND

The Hon'ble NGT matter OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.] is related with wastewater management by the industries and Gujarat Infrastructure Development Corporation (GIDC) in the Dahej industrial area. Hon'ble NGT vide order dated 04.10.2021 directed CPCB and GPCB for joint inspection of Red category industries discharging wastewater in the drainage network maintained by GIDC (Respondent no. 4). Accordingly, a joint report was submitted by GPCB. After submission of the joint report, Hon'ble NGT (vide order dated 02.02.2022) directed state of Gujarat and State PCB for compliance of the order and also directed following to the joint committee of CPCB and GPCB:

"*…..7. The report of the joint Committee shows gross continued violation of environmental norms and failure of the statutory regulators to enforce the law by way of closures, prosecution, recovery of compensation for past violations. Compensation formula adopted is not compliant with the law laid down by the Hon'ble Supreme Court inter alia in MC Mehta, (1987) 1 SCC 595, Sterlite, (2013) 4 SCC 575, Goel Ganga (2018) 18 SCC 257 and order of this Tribunal dated 24.01.2022 in O.A No. 64/2016 (WZ), Akhil Bhartiya Mengela Samaj Parishad & Ors. v. Maharashtra Pollution Control Board & Ors, so as to be linked to the financial capacity of the violator, apart from other factors and not merely days of violation at a fixed rate irrespective of the financial capacity and magnitude of violations. Deterrent element has also to be included and cost of restoration assessed….*

……Comprehensive Environmental Pollution Index (CEPI) should be assessed particularly immediately with regard to the water and soil component. Such assessment may be done through credible mechanism under the supervision and monitoring of the Joint Committee. The assessment should be holistic to cover all the categories of industries, assessing groundwater quality, soil characteristic and coastal water analysis…

….The Committee may particularly, address the issues of (i) addressing and prohibiting illegitimate and non-complying discharges into the pipeline/pumping station; (ii) immediate action on the non-complying industries discharging high COD waste into CETP/pipeline ultimately culminating to pumping Stations A and C. Such industries may not be allowed to operate till they comply with the consent conditions. Closure should be effective which need to include disconnection of water and electricity supply and not discharging into the GIDC effluent conveyance system; (iii) Not permitting discharging of the effluents in the inter-tidal zone and ensuring proper mode of disposal of treated effluents as applicable and in case of marine disposal, laying submarine pipeline with diffuser system ensuring the proper dilution and no damage to the marine eco-system; (iv) the environmental damage caused in terms of soil and groundwater and other components need to be restored for which executable and

monitorablemechanism should be in place; (v) for immediate actions, visible action should be taken which may include lifting of spilled over and discharged waste (solid and liquid) should be taken to the appropriate sites for proper management (vi) CETP of 40 MLD is underutilized and this CETP needs to be commissioned properly and the member industries need to meet the inlet standards as well as the outlet of the CETP to conform to the standards and all the treated effluents may be disposed as consented; (vii) the existing capacity for management of hazardous waste should be assessed in terms of its adequacy and compliance with environmental norms; (viii) the Committee and the State Government should also ensure that the health conditions of the villagers and other safeguards are taken to protect human health as well as the flora and fauna of the entire area including recipient coastal water…."

Accordingly the joint committee convened a meeting on 14.02.2022 at CPCB RD Vadodara to discuss methodology to complete the task as per the directives of Hon'ble NGT particularly with respect to the scope of the joint committee. Following officials of CPCB-RD Vadodara and GPCB-RO Bharuch are part of the joint committee.

Central Pollution Control Board, RD Vadodara	**Gujarat Pollution Control Board, RO Bharuch**
Shri Amit R Thakkar, Scientist D	Shri Falgun M. Modi, RO Bharuch
Shri Manoj K Sharma, Scientist B	Shri B.D. Prasad, DEE
----	Shri Niraj Patel, DEE
	Shri Rajendrasinh Gaekwad, AEE
	Shri Ajay Vasava, AEE

Sampling, Monitoring and analysis of Soil Samples, Surface water samples, Ground water samples, sediment samples and Ocean Water samples were carried out for three rounds (Round 1 on 18-19.04.2022, Round 02 on 20-21.04.2022 and Round 03 on 04.05.2022) by a team of GEMI (Gujarat Environment Management Institute) under supervision of the joint committee. The joint committee also interacted with officials of GIDC Dahej on 05.05.2022 at Dahej and requested for information regarding steps taken by GIDC after directions of Hon'ble

NGT in the area. The information collected in the matter, observations during inspection of the area are detailed aspect wise in subsequent paragraphs of the joint report.

2. Status based on Findings and Observations

The basic information about the Dahej Industrial Area was provided in the joint report submitted during November 2021. The weblink of the said report is provided below (https://greentribunal.gov.in/sites/default/files/news_updates/Joint%20Committee%20Report%20in%20O.A.No_.%2060-2021%20(page%20nos.%201630-1929).pdf).

As per paragraph 07 of the order dated 02.02.2022, Hon'ble NGT directed the joint committee to address the following specified issues. Status based on findings and observations of specified issues are mentioned below:

2.1. "(i) addressing and Prohibiting illegitimate and non-complying discharges into the pipeline/pumping station."

STEPS TAKEN BY GIDC

GIDC has initiated the work of providing express discharge lines for the member industries connected with Pumping station A and Pumping station C. The work of providing express lines for industries discharging to Pumping station A is almost complete. Earlier, there were 15 industries which were conveying wastewater through underground drainage network systems to Pumping Station A. Now, GIDC has provided two new pumping stations PS A1 and PS A2, wherein the industries allocated have direct free fall discharge through Express Line (above the ground). The wastewater received at PS A1 and PS A2 is pumped through separate express lines to PS A. As informed, laying down the express line of 03 industries connecting to pumping station A is under progress. Similarly, GIDC initiated the work of providing express line connection to the industries connected with pumping station C. The work of providing express lines is under progress. The express line will help in eliminating the ghost connection from the old underground lines, effective surveillance of individual industry at the respective pumping station itself, ease of identification of non-compliance by individual industries etc.

GIDC has also provided four new pumping stations PS1, PS2, PS4 and PS5 in Dahej II Area. The wastewaters received at the above stations are pumped to CETP. The remaining wastewater drainage networks from PS-A, PS-C (PS-E), CETP, individual direct discharge etc. to the final pumping station (FPS) remain the same. The wastewater from FPS is pumped to the disposal point into the Gulf of Khambhat. Wastewater from pumping station D is meeting the disposal line from FPS to final disposal point through T-joint at SEZ-II area.

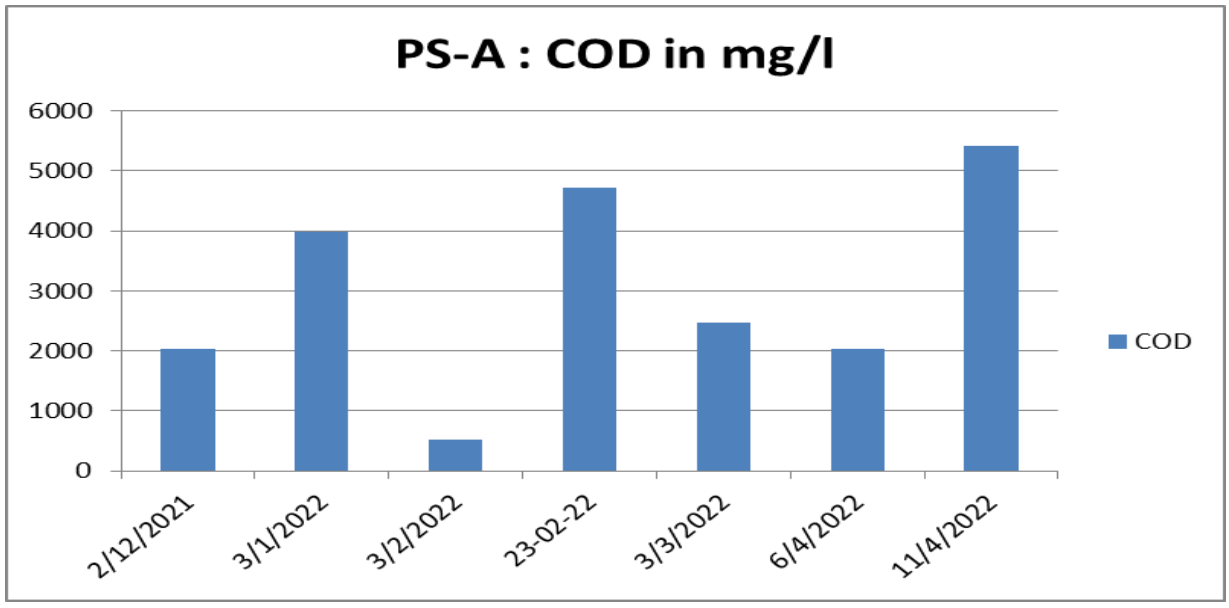
GIDC also collected random samples from the final discharge of individual industries into the drainage network through third party. GIDC issues letters to respective industries exceeding the GPCB prescribed discharge standards with a copy to GPCB. GPCB issued Show Cause Notice to such industries.

STEPS TAKEN BY GPCB

GPCB collected samples from all pumping stations in addition to random inspection of industries in the area which also includes night monitoring. Based on the observations of monitoring data of wastewater drainage network from December 2021 to April 2022, the observations pumping station wise is mentioned in the subsequent paragraphs.

Observations with respect to Pumping Station A:

The pumping station A has 15 drainage connections. It was observed during the last 05 years that regular gross non-compliance with respect to discharge standards from the wastewater samples collected from Pumping Station A. Similar continuous trend of gross non-compliance is found from the analysis results of wastewater sample collected by GPCB from pumping station A from December 2021 to April 2022 (Graph 01).



Graph 1.0: Variation in concentration of COD at Pumping Station - A

During three rounds of monitoring of the area, samples of Pumping station A are also collected and analyzed by GEMI. The compiled sheet of analysis results of the sample of Pumping Stations is annexed as **Annexure - I.** The analysis results reveal that concentration of TSS, COD, BOD, Ammonical Nitrogen, Nitrate, TKN, Phenol, Sulphide, & Cyanide exceeds the discharge standards as mentioned in the CCA. The exceedance factor shows gross non-compliance. The physical condition of the outlet of pumping station A at Final Pumping station is shown in Photograph below taken on 04.05.2022.

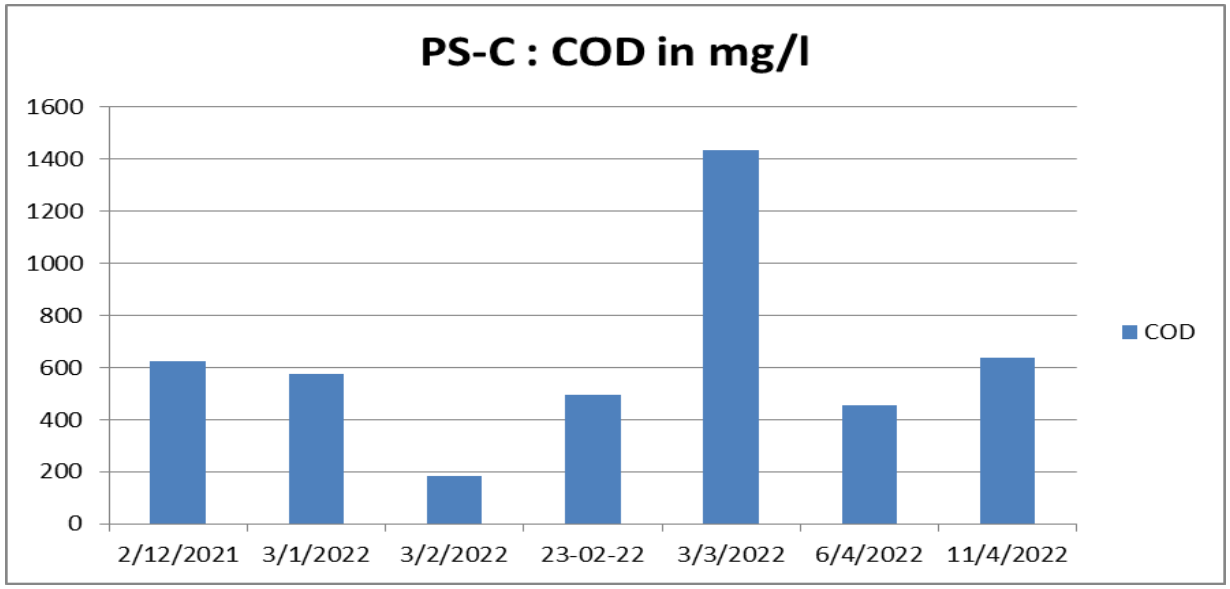
Condition of wastewater from Pumping Station A at FPS on 04.05.2022

Observations with respect to Pumping Station C:

The pumping station C has 15 drainage connections. Presently the pumping station C is not in operation and GIDC has provided a temporary station namely Pumping Station E. Wastewater from member industries through gravity (underground drainage) reaches to the chamber of pumping station E from where the wastewater is pumped to Final Pumping Station along with the CETP Dahej discharge line.

It was observed from the past monitoring results of GPCB that the COD of wastewater from pumping station C shows regular non-compliance with respect to discharge standards. Similar continuous trend of non-compliance is found from the analysis results of wastewater sample

collected by GPCB from pumping station C (Pumping station E) during December 2021 to April 2022 (Graph 02).



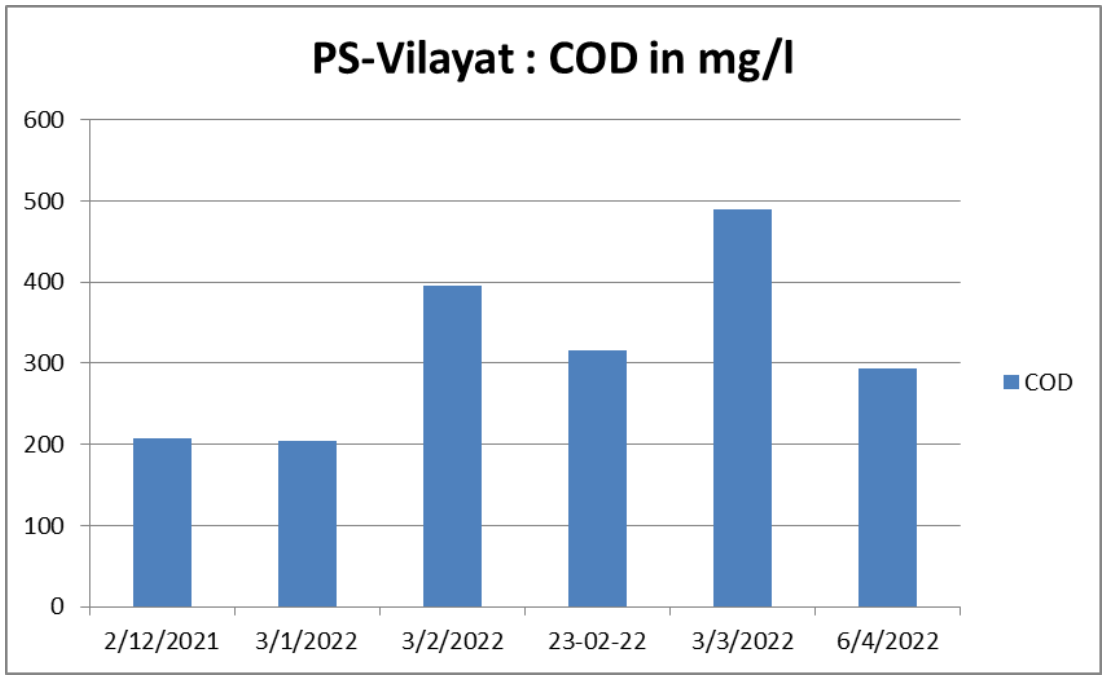
Graph 2.0: Variation in concentration of COD at Pumping Station - C

During three rounds of monitoring of the area, samples of Pumping station C (pumping station E) are also collected and analyzed by GEMI. The compiled sheet of analysis results of the sample of Pumping Stations is annexed as **Annexure - I.**The analysis results reveal that concentration of TSS, COD, BOD, Ammonical Nitrogen, Nitrate, TKN, Sulphide, Phenol, Iron and residual chlorine exceeds the discharge standards as mentioned in the CCA. The exceedance factor shows gross non-compliance. The present condition of the pumping station is shown in Photograph taken on 04.05.2022.

Condition of wastewater from Pumping Station C (E) on 04.05.2022

Observations with respect to Vilayat Pumping Station:

Vilayat pumping station has 03 drainage connections (comprising discharge from 08 industries). The drainage network from Vilayat Pumping station to FPS passes through GIDC Saykha. Presently GIDC has not provided a separate drainage network for discharging of wastewater from Saykha GIDC. It is gathered that wastewater from industries located at GIDC Saykha which discharges the wastewater into the Saykha CETP (the CETP is presently not operational, however CCA is granted by GPCB) is connected to the drainage network from Vilayat Pumping station to FPS. Wastewater from (underground drainage) reaches to Vilayat pumping station from where the wastewater is pumped to FPS at Ambetha, Dahej.



Graph 3.0: Variation in concentration at Pumping Station - Vilayat

Graph 03, plotted for variation of concentration of COD from the samples collected by GPCB during December 2021 to April 2022 reveals that some instances of compliance are observed with respect to discharge standards of COD. During three rounds of monitoring of the area, samples of Pumping station - Vilayat were also collected and analyzed by GEMI. The compiled sheet of analysis results of the sample of Pumping Stations is annexed as **Annexure - I.** The analysis results show that concentration of TSS, COD, TKN, Nitrate, Sulphide and Iron exceeds the discharge standards as mentioned in the CCA. The exceedance factor shows non-compliance. However, less contaminated discharge as compared to the gross non-compliance of pumping station A and C (Pumping station E). Similar trends were observed from the last five

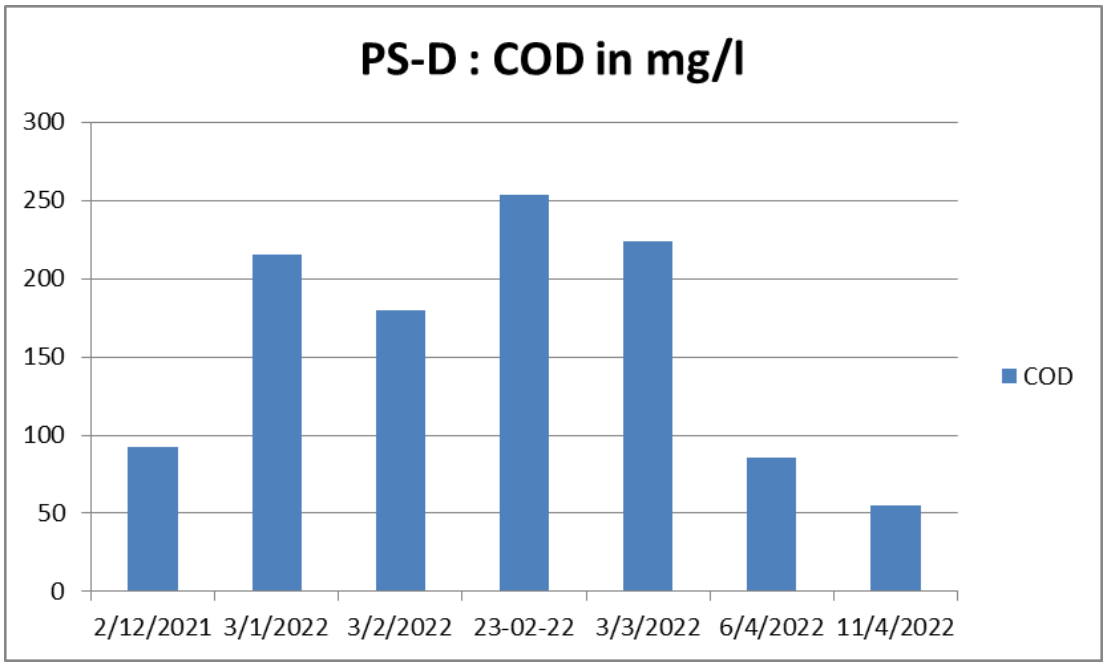
year results. The present condition of the Vilayat Pumping station is shown in Photograph taken on 04.05.2022.

Condition of wastewater at Vilayat Pumping Station on 04.05.2022

Observations with respect to Pumping Station D:

The pumping station D has 17 drainage connections (comprising 15 Red category industries and 02 orange category industries) located in SEZ-II. Wastewater from member industries through gravity (underground drainage) reaches to the chamber of pumping station D from where the wastewater is pumped to T-joint into the drainage line from FPS to final disposal point.

It is observed that the booked quantity was found higher than that of the hydraulic pumping capacity. From the past 5 years monitoring results of GPCBsamples of pumping station D some non-compliance with respect to discharge condition was observed. The recent GPCB monitoring results of the sample collected during December 2021 to April 2022 of pumping station Dshows that the pumping station D almost meets GPCB discharge standards with respect to concentration of COD. The variation of concentration of COD is shown in the graph (Graph: 4.0).



Graph 4.0: Variation in concentration of COD at Pumping Station D

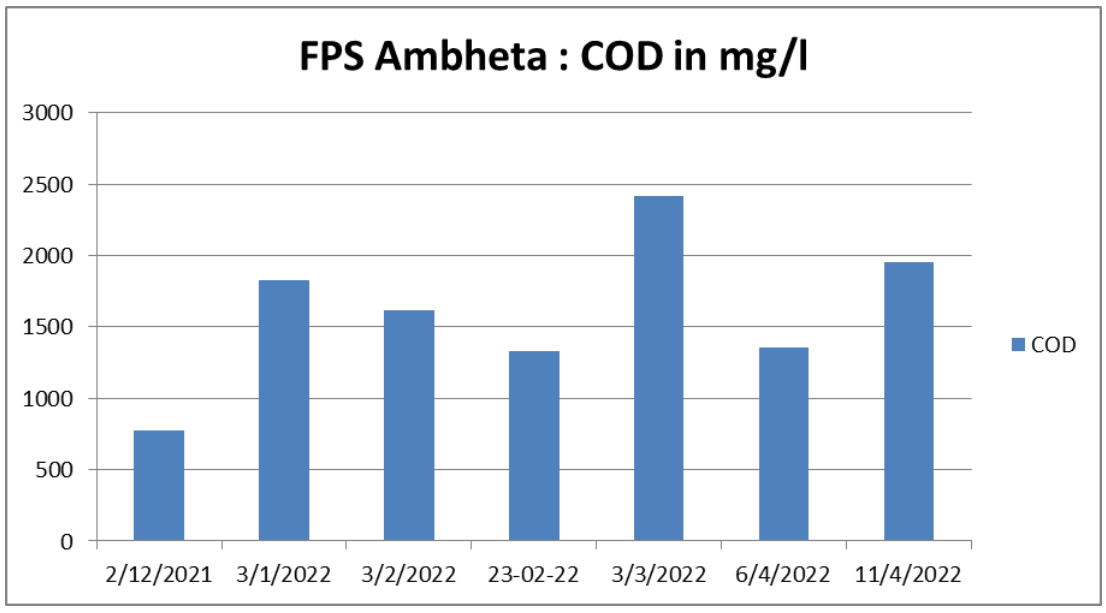
During three rounds of monitoring of the area, samples of Pumping station D were also collected and analyzed by GEMI. The compiled sheet of analysis results of the sample of Pumping Stations is annexed as **Annexure - I.** The analysis results of samples collected from pumping station D reveal that the concentration of TSS, Nitrate, TKN & Residual Chlorine exceeds the discharge standards mentioned in the CCA. The remaining analyzed parameters found meeting the discharge standards. The pumping station D though non-compliance however less polluted as compared to the gross non-compliance condition of pumping station A and C.

Observations with respect to Final Pumping Station:

The final pumping station located at Ambetha, Dahej receives wastewater from Vilayat Pumping Station, Pumping Station A, Pumping Station C (PS-E), CETP and directly from 08 industries through drainage connections. Industry wise HDPE storage tanks are provided before discharge from member industries to FPS. The final pumping station is provided with a pumping arrangement to discharge the wastewater to the final disposal point through a pipeline having a hydraulic capacity of 90,000 KLD (90 MLD). As per records of GIDC, average wastewater discharged in last five years is about 40 MLD. The final pumping station has collection sump and also provided with three sludge drying beds. Heavy sludge deposition was observed on the walls of collection sumps.

Photographs of deposition as observed on 04.05.2022 at final pumping station

From the graph (Graph: 5.0) plotted for concentration of COD from the samples collected by GPCB during December 2021 to April 2022 from final pumping station indicates continual non-compliance with respect to discharge standards.



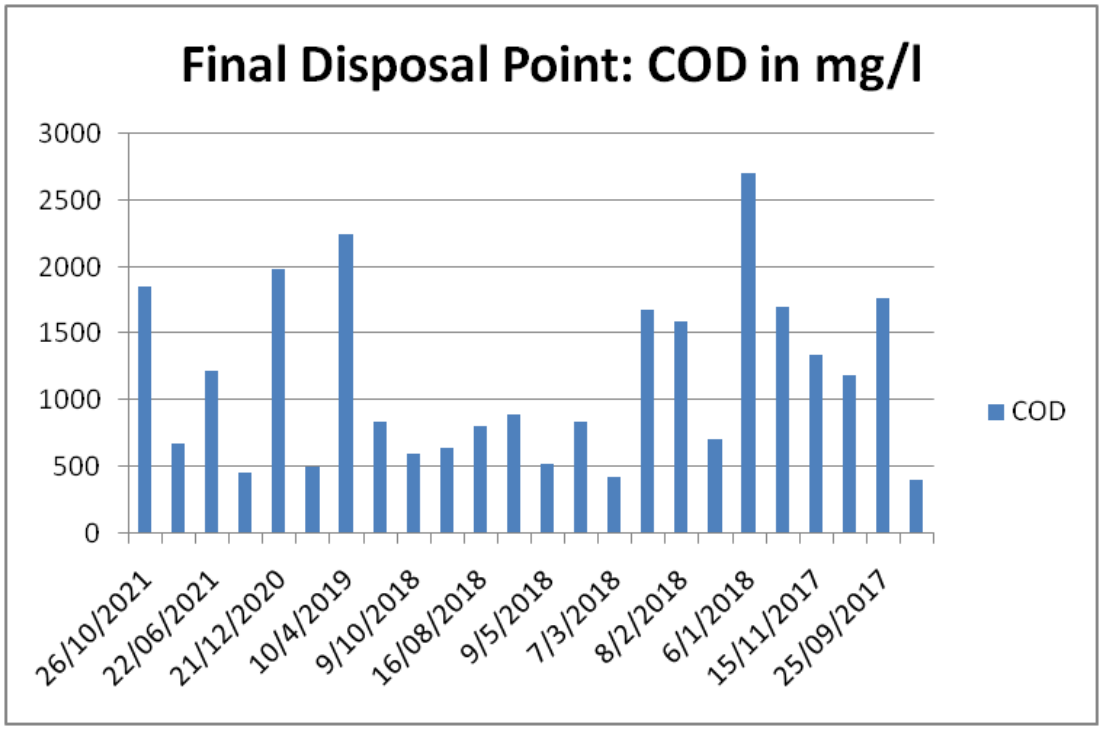
Graph 5.0: Variation in concentration of COD in FPS

During three rounds of monitoring of the area, samples of Final Pumping station were also collected and analyzed by GEMI. The compiled sheet of analysis results of the sample of Pumping Stations is annexed as **Annexure - I.**The analysis results reveal that the concentration

of pH, TSS, Ammonical Nitrogen, COD, BOD, Nitrate, TKN, Sulphides, Phenol, Cyanide & Iron exceeds the discharge standards mentioned in the CCA. The exceedance factor shows gross non-compliance.

The wastewater from the final pumping station and Pumping station -D is discharged from the final disposal point. The final disposal point is located near Petronet LNG jetty. The 4.5 KM offshore pipeline was choked and wastewater was being discharged through a 600 meter offshore disposal pipeline provided as an alternate arrangement. Presently discharge from this 600m pipeline is stopped and GIDC has laid 800m of new offshore disposal pipeline (interne arrangement) from which waste water is discharged in the intertidal zone in CRZ Area.

In addition to monthly monitoring of the final pumping station by GPCB, samples from the final disposal point (in CRZ Area) were also collected randomly during 2017 to 2022. The graph plotted for variation of COD of the final pumping station is shown below (Graph 06). The concentration of COD at final disposal point also indicates continual violation of discharge condition.



Graph 6.0: Variation in concentration of COD at Final Disposal Point

During three rounds of monitoring of the area, samples of the final disposal point were also collected and analyzed by GEMI in Round - 1 & 3. The sample in round - 2 was not collected because of the tidal positions. The compiled sheet of analysis results of the sample of Pumping

Stations is annexed as **Annexure - I.** The analysis results reveal that the concentration of TSS, Ammonical Nitrogen, COD, BOD, Nitrate, TKN, Sulphides & Phenol at the final disposal point exceeds the discharge standards mentioned in the CCA. The exceedance factor shows gross non-compliance. It is observed from the analysis results of the samples collected by GPCB during past and recent monitoring that the condition of gross non-compliance at pumping station A, Pumping station C impacts the non-compliance of the final outlet is still continuous. The photograph taken during sampling at final disposal point is shown below.

Condition of wastewater at Final Disposal Point

2.2 "(ii) Immediate action on the non-complying industries discharging high COD waste into CETP/pipeline ultimately culminating in pumping Stations A and C. Such industries may not be allowed to operate till they comply with the consent conditions. Closure should be effective which need to include disconnection of water and electricity supply and not discharging into the GIDC effluent conveyance system"

STEPS TAKEN BY GPCB

GPCB issued directions and show cause notice as deemed necessary to the non-complying industries reported by the joint team. The same is attached as **Annexure II.**

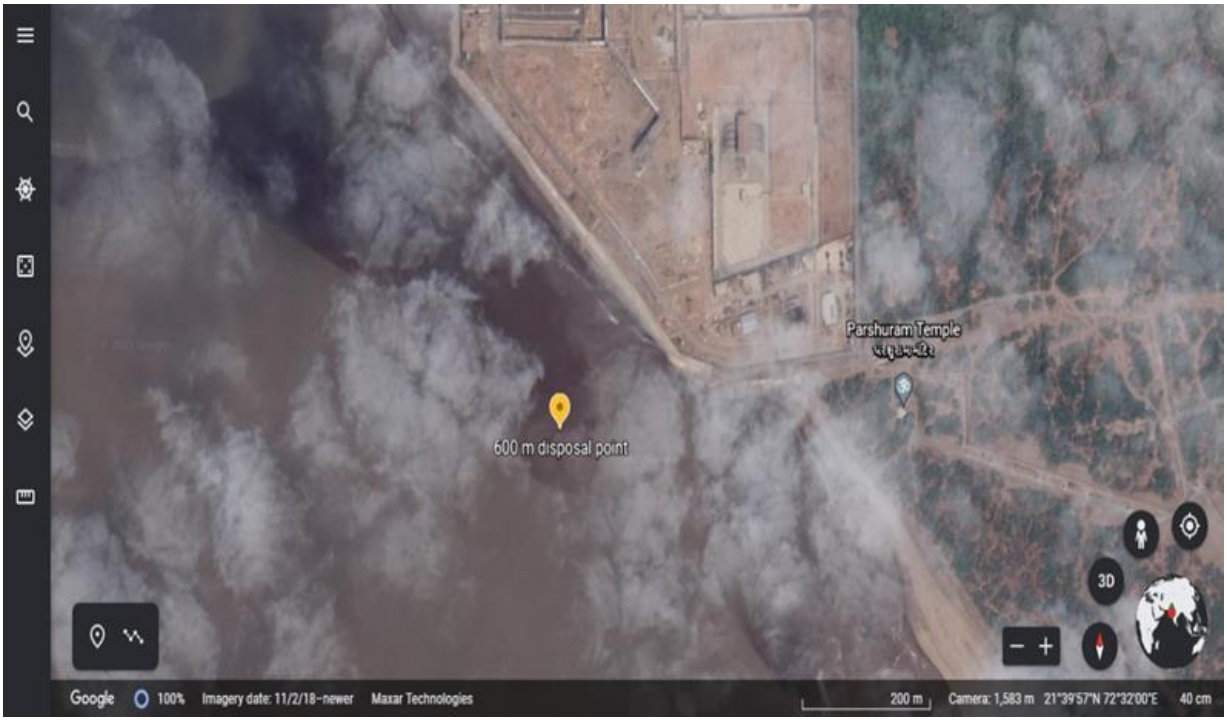
2.3 "(iii) Not permitting discharging of the effluents in the inter-tidal zone and ensuring proper mode of disposal of treated effluents as applicable and in case of marine disposal, laying submarine pipeline with diffuser system ensuring the proper dilution and no damage to the marine eco-system"

STEPS TAKEN BY GPCB

GPCB issued directions as deemed necessary to GIDC. Copy of direction issued to GIDC is attached as **Annexure III.**

STEPS TAKEN BY GIDC

GIDC has stopped the discharge from the old pipeline which was discharging at CRZ 1 B Area. As an interim arrangement, the GIDC has now laid a 1000 mm dia HDPE pipeline length of 800 meter from Landfall Point (LFP). The present location also falls in the intertidal zone under CRZ Area however differs from the past location. The wastewater is being discharged into the sea through the 800 m diverted pipeline from the existing drainage system. Previous and Present google earth location is shown below:



Previous location

Present Location

As informed, GIDC has published the Online Tender (3rd Invitation) for execution of 40.50 km on shore + 4.5 Kms Offshore effluent disposal pipeline with diffuser at an estimated cost of Rs 474 cr. Two bidders participated and the agency will be finalized by mid of June-2022. It was informed that the work will be completed within a time limit of 24 months.

2.4 "(iv) The environmental damage caused in terms of soil and groundwater and other components need to be restored for which executable and monitorable mechanism should be in place"

Samples of Soil and Groundwater are collected from following villages located in the Dahej PCPIR Region viz. Luvara village, Pakhajan village, Atali village, Dahej village, Jolva Village, Ambheta Village, Saykha Village, Vilayat village, Bhersam village, Bhensali Village, Vadadala Village, Kadodara Village, Samantpor village, Suva Village and Lakhigam village from the available locations by GEMI under supervision of the joint committee. All these villages are located near the coastline.In addition, Soil samples are also collected from 06 locations (out of 11 identified locations where spillages/deposits in the industrial area). The sampling location coordinates for soil monitoring and ground water monitoring is shown in the Google image and detailed in the table below.

Google image indicating the Ground Water Monitoring Loactions

Table 1 : Sampling location coordinates for ground water monitoring

Sr.No.	Sample Code	Sampling Location (Ground Water)	Geo-Coordinates
1	LU-GW	Luvara village	21°40'23.6"N 72°33'13.0"E
2	GW-PK	Pakhajan village	21°47'35.5"N 72°44'16.9"E
3	GW-AT	Atali village	21°43'25.0"N 72°42'09.5"E
4	GW-DA	Dahej village	21°42'35.0"N 72°34'59.0"E
5	GW-JLV	Jolva Village	21°42'49.0"N 72°39'06.0"E
6	GW-AMB	Ambheta Village	21°41'13.7"N 72°35'29.9"E
7	GW-SK	Saykha Village	21°47'24.6"N 72°48'43.1"E
8	GW-VT	Vilayat village	21°45'53.4"N 72°52'50.8"E

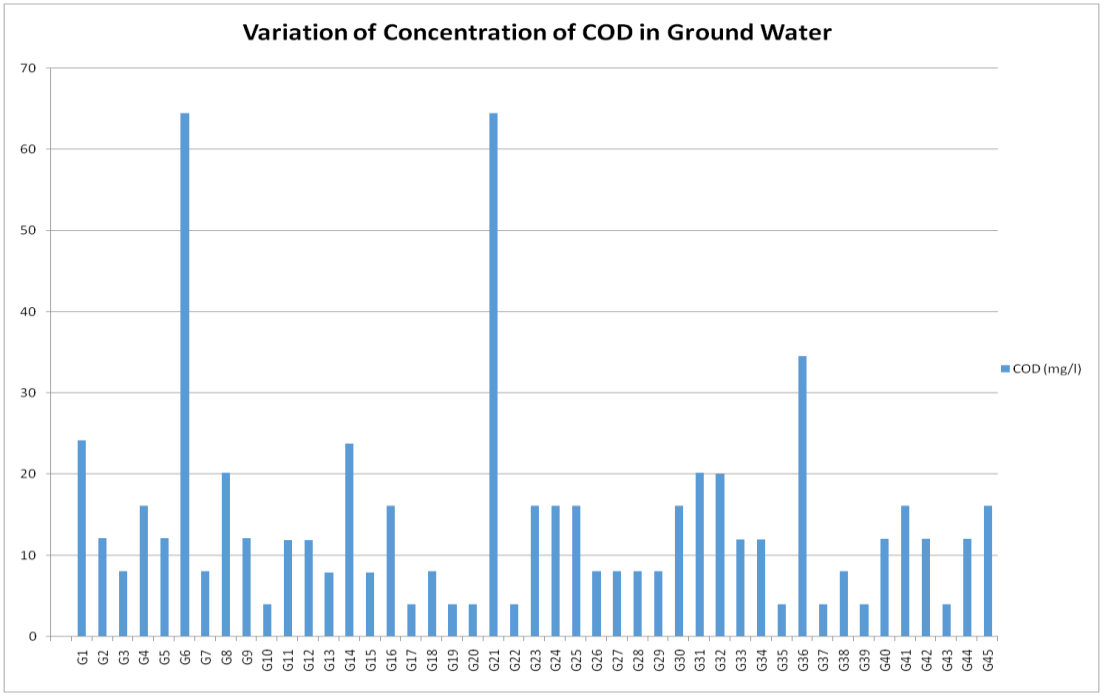
9	GW-BS	Bhersam village	21°46'43.4"N 72°51'24.0"E
10	GW-BHE	Bhensali Village	21°43'28.0"N 72°45'09.2"E
11	GW-VD	Vadadala Village	21°43'49.8"N 72°37'58.3"E
12	GW-KD	Kadodara Village	21°45'54.8"N 72°38'45.7"E
13	GW-SP	Samantpor village	21°44'55.2"N 72°40'11.5"E
14	GW-SUV	Suva Village	21°41'20.0"N 72°39'17.3"E
15	LA-GW	Lakhigam village	21°41'40.3"N 72°33'13.0"E

Observations with respect to monitoring results of Groundwater Samples:

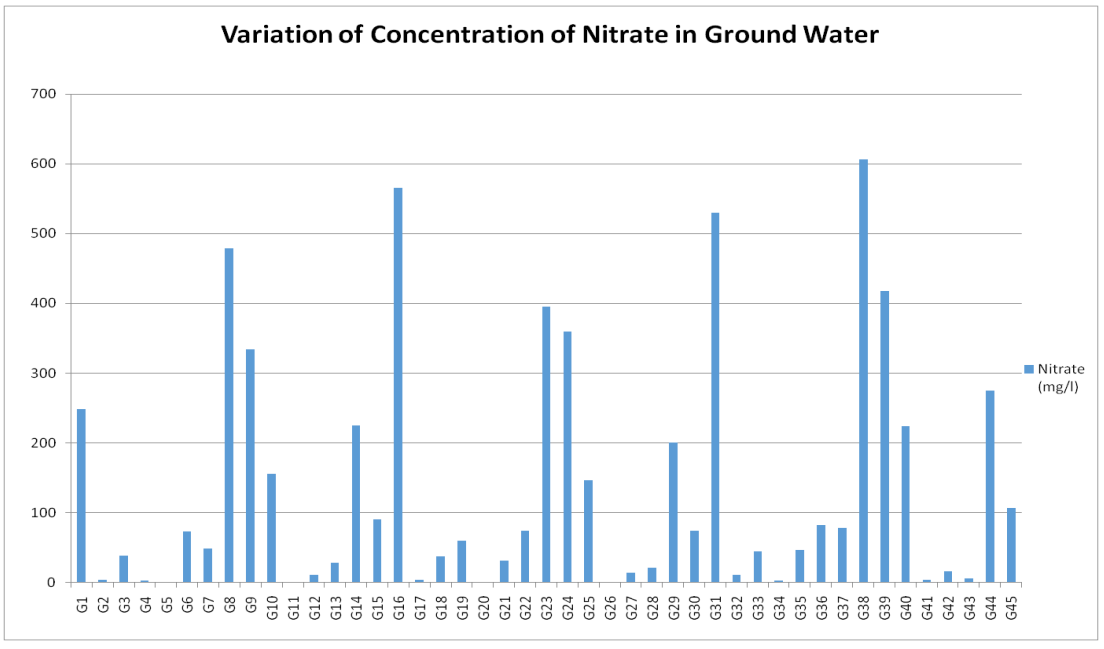
The groundwater monitoring locations are selected in the villages where sources of ground water sampling (borewell/open well) are available. The source of groundwater are used for domestic purposes like bathing, washing or for construction work etc. The groundwater monitoring results are compared with the Indian Standards (IS 10500:2012) for drinking water. Total 45 samples of groundwater are collected during three rounds of monitoring and are analyzed by GEMI. The compiled sheet of analysis results of ground water samples are provided in **Annexure – IV.**

It is found from the comparison of analysis results of ground water samples with the drinking water standards that all the groundwater samples are non-complying for one or other measured parameters and are not fit for drinking water. The graphs 07 to 10 shows variation of concentration of COD, Phenol, Fluoride and Nitrate respectively in the area. The average concentration of following 03 critical parameters are Phenol: 1.08 mg/l (Standard Level < 0.001 mg/l), fluoride: 1.26 mg/l (standard level: 1 mg/l), Nitrate: 137.40 mg/l (standard level: 45 mg/l). The concentration of COD in groundwater was found to be varying between 64.51 mg/l (max) to 4.03 mg/l (min).

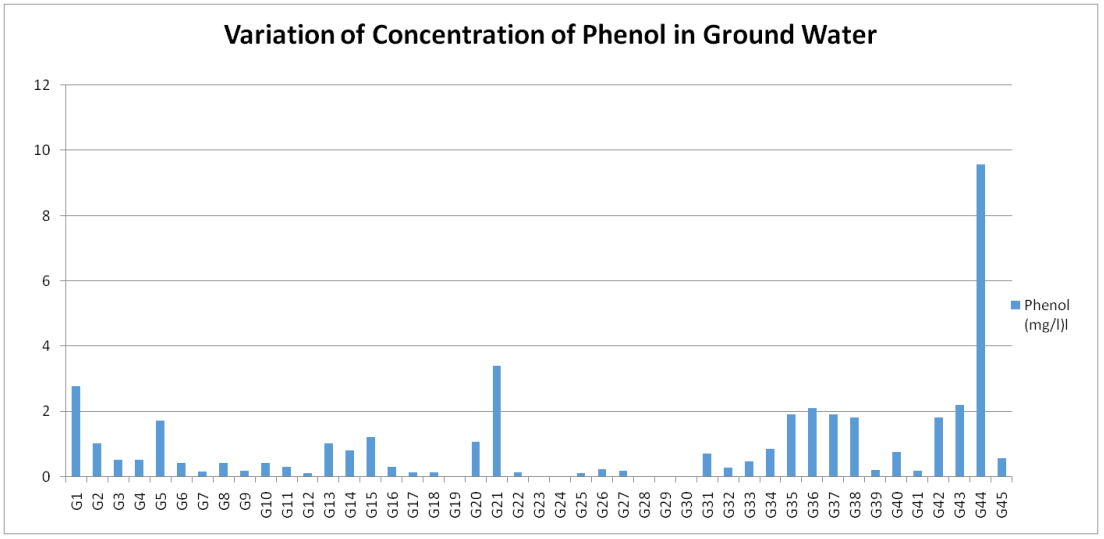
A sample of ground water by the way of constructing a piezo-well at pumping station C is also collected. The analysis results of following critical parameters are COD: 96 mg/l, Phenol: 5mg/l, fluoride: 1.327 mg/l, Nitrate: 5.1mg/l.



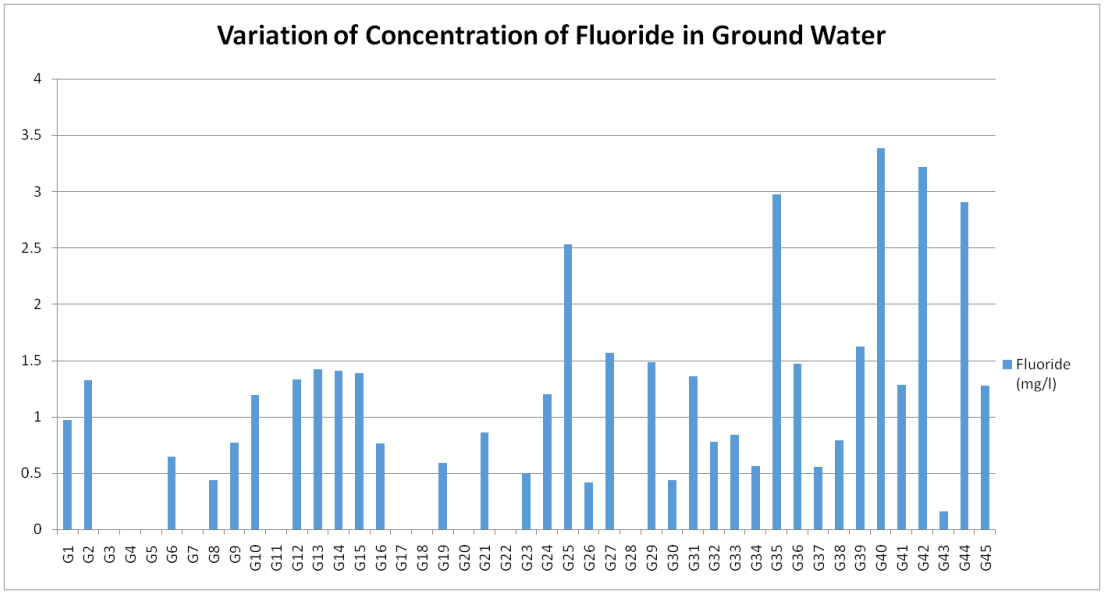
Graph 7.0: Variation in concentration of COD in Groundwater



Graph 8.0: Variation in concentration of Nitrate in Groundwater



Graph 9.0: Variation in concentration of Phenol in Groundwater



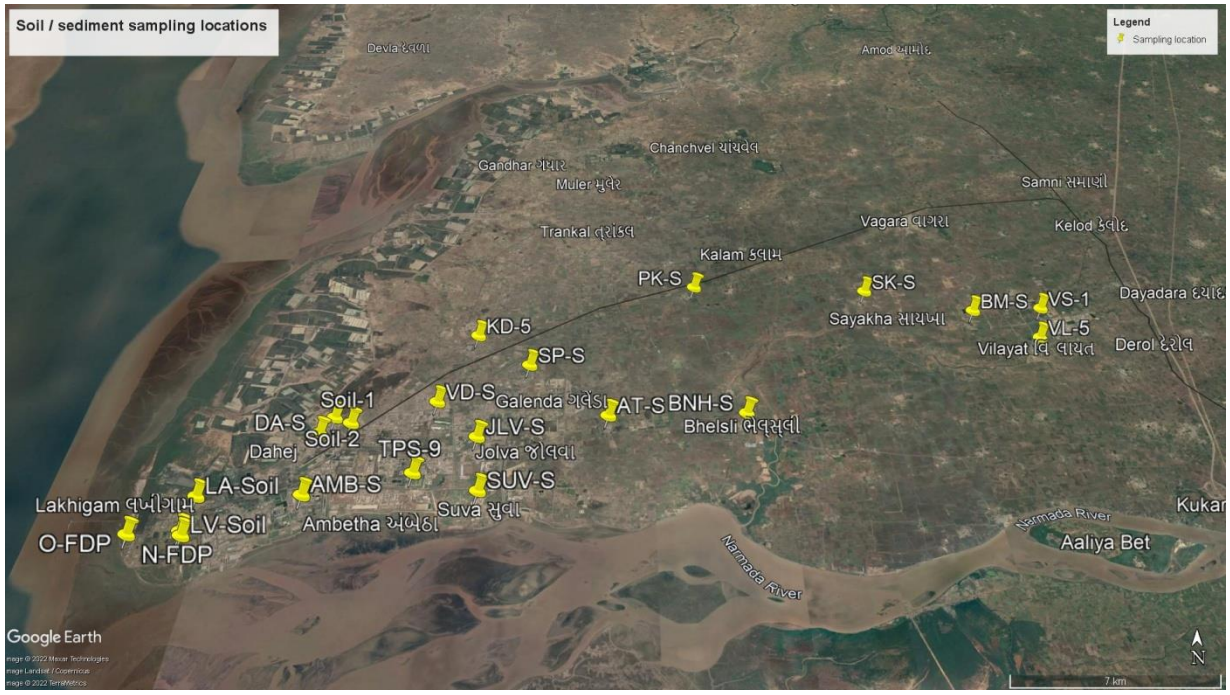
Graph 10.0: Variation in concentration of Fluoride in Groundwater

The overall status of ground water in the area indicates contamination. There may be various reasons for such conditions of groundwater contamination which may include percolation of accumulated wastewater from the industrial area due to unauthorized discharges from the industries, overflow from the drainage chambers/manholes, leakages from the drainage

network/manhole/chambers, dumping of removed sludge from the drainage network during maintenance, unauthorized dumping of sludge/waste etc.

Observations with respect to monitoring results of Soil Samples:

The soil samples are collected from the villages near groundwater sampling locations and from the industrial area. The analysis results of soil samples analyzed by GEMI are provided in **Annexure - V.**The Google image indicating the soil/sediment sampling locations of the area.



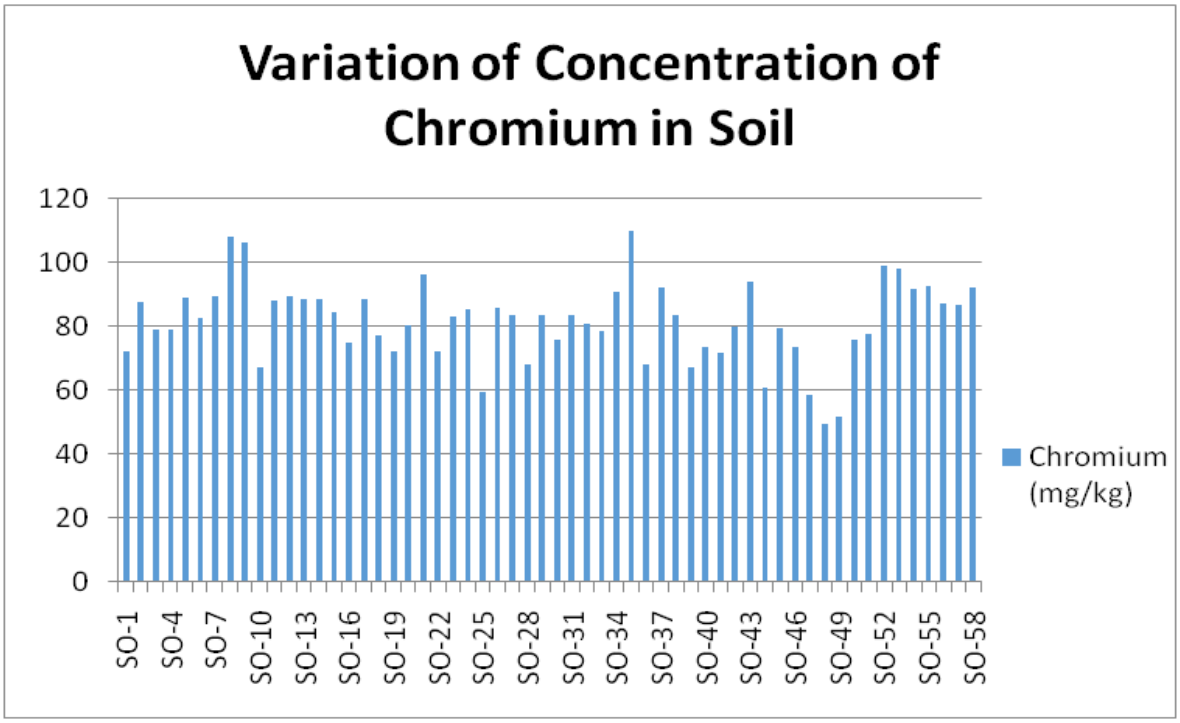
The Google image indicating the soil/sediment sampling locations of the area.

Table 2 : Sampling location coordinates for soil monitoring

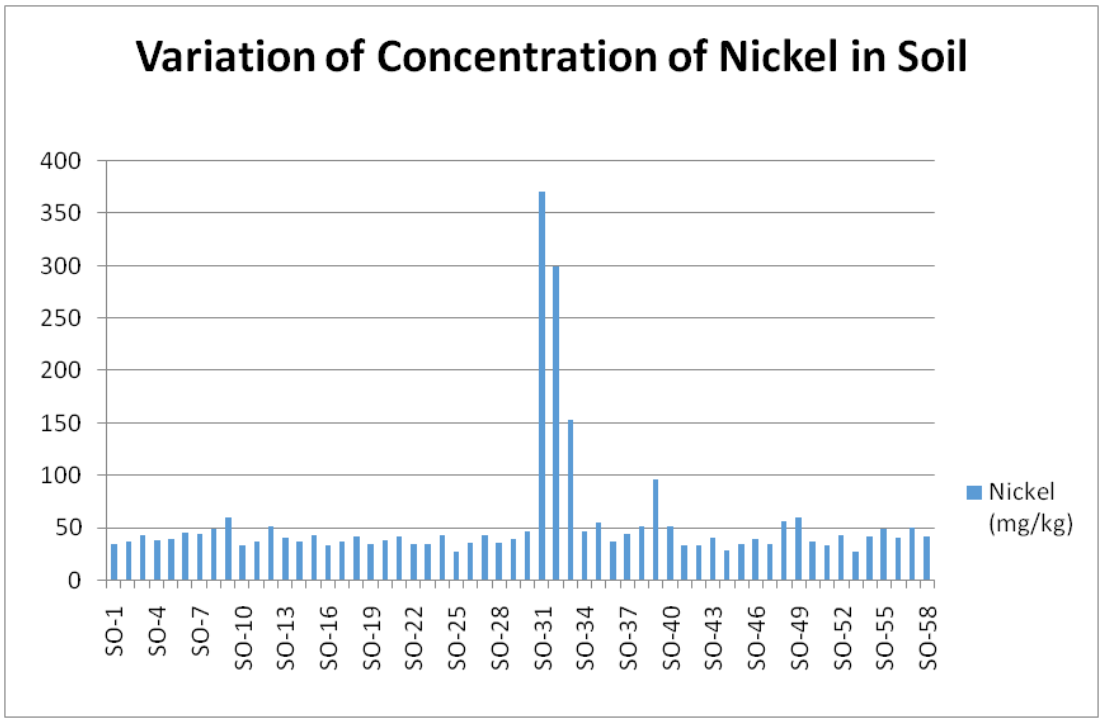
Sr.No.	Sample Code	Sampling Location (Soil)	Geo-Coordinates
1	LA-Soil	Lakhigam Village	21°41'14.7"N 72°33'07.2"E
2	BM-S	Bhersam Village	21°46'44.8"N 72°51'24.4"E
3	SK-S	Saykha Village	21°47'25.9"N 72°48'44.2"E
4	SP-S	Samantpor Village	21°44'55.7"N 72°40'08.4"E

5	VD-S	Vaddala Village	21°43'48.5"N 72°38'01.9"E
6	LV-Soil	Luvara Village	21°40'17.7"N 72°33'04.9"E
7	KD-S	Kadodara Village	21°45'53.0"N 72°38'48.0"E
8	SUV-S	Suva Village	21°41'22.9"N 72°39'13.1"E
9	VL-S	Vilayat Village	21°45'50.2"N 72°52'51.4"E
10	BNH-S	Bhensali Village	21°43'29.0"N 72°45'17.6"E
11	DA-S	Dahej	21°42'55.2"N 72°35'26.6"E
12	PK-S	Pakhajan Village	21°47'34.5"N 72°44'17.2"E
13	AT-S	Atali Village	21°43'24.5"N 72°42'03.7"E
14	JLV-S	Jolva Village	21°42'48.5"N 72°39'03.6"E
15	AMB-S	Ambheta Village	21°41'16.8"N 72°35'23.9"E
16	TPS-9	Top soil from open land near temporary pumping station-E	21°41'50.4"N 72°37'44.0"E
17	Soil-1	Top soil from open plot near GIDC storm water drain (opp BEIL@ DahejAmod Road)	21°43'11.8"N 72°36'06.8"E
18	Sediment-2	Top soil from storm water drain, near Bharat Rasayan	21°43'21.2"N 72°35'42.6"E
19	VS-1	Top Soil from storm water drain near Grasim Cellulosic Ltd.	21°46'50.1"N 72°53'10.5"E
20	Sediment-6	Top Soil Near M/s OPAL	21°41'24.1"N 72°35'57.5"E
21	Sediment-5	Top soil Beside SEZ-1 main road near M/s Shiva Pharma	21°41'58.0"N 72°36'23.4"E

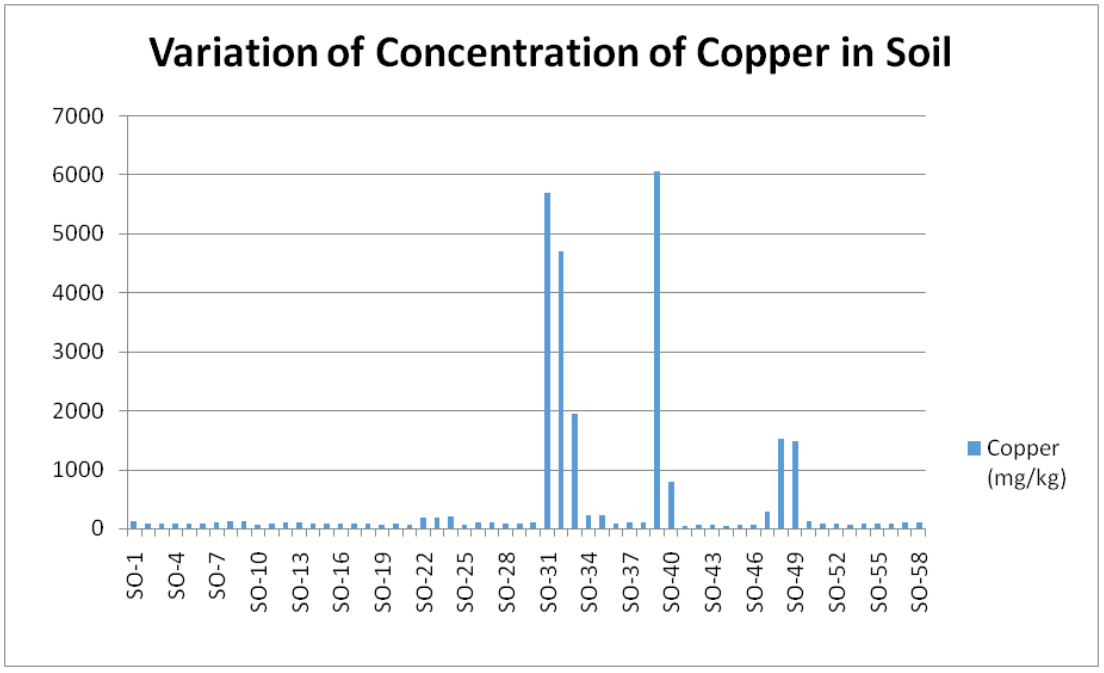
The analysis results of soil samples collected are compared with the screening level available for measured parameters as mentioned in the Guidance Document for assessment and remediation of contaminated sites in India, MoEF& CC, 2015. The graphs of variation of concentration of Chromium, Nickel and Copper in the area is plotted and shown in the Graph 11 to Graph 13 respectively. The Average concentration of following 03 critical parameters viz. chromium: 81.69 mg/kg (Screening Level: 64 mg/kg), Nickel : 53.46 mg/kg (screening level : 50 mg/kg), copper : 470.23 mg/kg (screening level : 63 mg/kg) found exceeding the screening level. It is worth to mention here that the screening level used for comparison is based on the above mentioned guidance document. It is also observed that, the concentration of almost all measured parameters including heavy metals like chromium and copper are found maximum from the soil/sediment samples collected from the industrial area (Sr. 16 to 21 in Table 02).



Graph 11.0: Variation in concentration of Chromium in Soil



Graph 12.0: Variation in concentration of Nickel in Soil



Graph 13.0: Variation in concentration of Copper in Soil

There may be various reasons for such conditions of top soil contamination specially in the industrial area which may include accumulated wastewater from the industrial area due to unauthorized discharges from the industries, overflow from the drainage chambers/manholes, leakages from the drainage network/manhole/chambers, dumping of removed sludge from the drainage network during maintenance, unauthorized dumping of sludge/waste etc. Thus, it is suggested that a GIDC in coordination with GPCB need to develop and implement the detailed action plan which may include

- Immediate short term action like dredging of topsoil/sediments from the identified industrial area where contaminations are observed & its safe disposal, completion of work of providing express line with identified industry specific discharge, providing boundary and CCTV in pumping stations, hotspots etc.
- GIDC may develop a mechanism for receiving complaints regarding leakages in the drainage network. The complaints may be received by GIDC in the form of photographs with location details etc. through whatsapp. The GIDC need to frame immediate action for addressing such leakage, mechanism to collect the spilled out wastewater/sludge during maintenance & its safe disposal etc.
- Time bound action is required to make CETP operational and functional to achieve discharge norms covering all techno-feasibility aspects. Such action plans may be formulated by GIDC and GPCB in coordination with the industries in the area to achieve effective implementation.
- GIDC needs to expedite the process of allocation of the project of providing the final disposal line as per the point suggested by NIO as the present disposal point is still in the CRZ area.
- More vigilance and strict action against the non-complying industries in the area.
- Long term action plans may include assessment of status of soil in the villages from the Agriculture department, development of green belt, rainwater harvesting in the school buildings, panchayat office, government office etc. in the nearby villages need to be initiated to recharge the groundwater, assessment and routine monitoring of groundwater quality (pre and post monsoon) in the area to develop trends and to frame action plans to restore the groundwater quality, Hazardous waste management, Incorporation of recommendations after completion of health study by NIOH and marine ecological impact study by NIO etc.

2.5. "(v) For immediate actions, visible action should be taken which may include lifting of spilled over and discharged waste (solid and liquid) should be taken to the appropriate sites for proper management"

STEPS TAKEN BY GPCB AND GIDC

GPCB and GIDC carried out a survey of the area on 23.02.2022 and identified the following 11 locations wherein accumulation of wastewater, contamination etc. were observed. GIDC

initiated the work of lifting wastewater from such sites. It was informed by GIDC that the wastewater were pumped and disposed of through the existing drainage network. Samples of available surface water and sediments (from locations where spilled over surface water found dried) from all the identified locations are collected and analyzed by GEMI. The joint committee also visited the sites on 11.04.2022 and 04.05.2022. Sampling location details with indicative photographs are tabulated in **Table - 3.**

Table 3: Spilled over and discharged waste Site

<table>
<tr><th>Sr.No</th><th>Spilled over and discharged waste Site</th></tr>
<tr><td>1</td><td>GIDC Storm Water Drain & accumulation in nearby area (in the stretch of drain behind Hemani Industries Ltd. to BEIL, Dahej-Amod Road) & near M/s Chlorides India Ltd.
Coordinates :21°43’11.8”N 72°36’06.8”E</td></tr>
<tr><td colspan="2"> 
Surface water Sample Code: SW01 
Sample Code: Soil 01</td></tr>
<tr><td>2</td><td>Storm Water Drain (beside M/s. Bharat Rasayan Ltd. to M/s Khaitan Fertilizers upto ponding near Salt pan area.)
Coordinates : 21°43’50.5”N 72°35’13.2”E</td></tr>
</table>

 Surface water Sample Code: SW02	 Sediment Sample Code: Sediment 02
3	GIDC Storm Water drain (near Indofil Industries Ltd., Unit-3 to M/s. PPG Asian Paint) Coordinates: 21°43’35.2”N 72°36’34.0”E
	 Surface water Sample Code: SW03
4	Accumulated ponding in the premises of M/s Universal Chemicals and connecting GIDC Storm Water drains (near M/s Universal Chemicals & Opp. M/s. Meghmani Organics Ltd.) Coordinates: 21°43’16.0”N 72°36’32.2”E

Surface water Sample Code: SW04

5	Accumulated Ponding beside SEZ-1 main road near M/s. Shiva Pharma Coordinates: 21°41’58.1”N 72°36’23.1”E

Surface water Sample Code: SW05

Sample Code: Sediment 05 (found dried during third round of monitoring)

6	Storm Water Drain near M/s OPAL and accumulated Ponding beside M/s OPAL Coordinates: 21°41’23.3”N 72°35’54.9”E
 Surface water Sample Code: SW06	 Sample Code: Sediment 06 (found dried during third round of monitoring)
7	SEZ Storm Water drain & nearby Open area (Opp. M/s Meghmani Organics Ltd. (Unit-8) & near M/s. Meghmani LLP (Unit-2)) Coordinates: 21°42’24.0”N 72°37’56.4”E
	 Surface water Sample Code: SW07
8	SEZ Storm Water drain & nearby Open area (near M/s. Insecticides India Ltd – SEZ1) Coordinates: 21°41’52.5”N 72°38’02.9”E

	 Surface water Sample Code: SW08
9	Accumulated Ponding near Temporary Pumping Station E and nearby storm water drain Coordinates: 21°41’50.4”N 72°37’44.1”E
	 Sample Code: TPS-9

10	Storm Water drain (near Kothia road beside CETP Saykha) Coordinates: 21°47’06”N 72°48’34”E
	 Surface water Sample Code: SW10
11	Accumulated Ponding beside M/s. Grasim Cellulosic Ltd. and nearby Storm Water Drain Coordinates: 21°46’57”N 72°53’37”E
	 Sample Code: VS-1

Samples of surface water were collected from the following locations and were analyzed for physico-chemical, heavy metals, pesticides etc. The compiled sheet of analysis report of Surface water samples is attached as **Annexure - VI.** The google image showing the sampling location of surface water in the area.

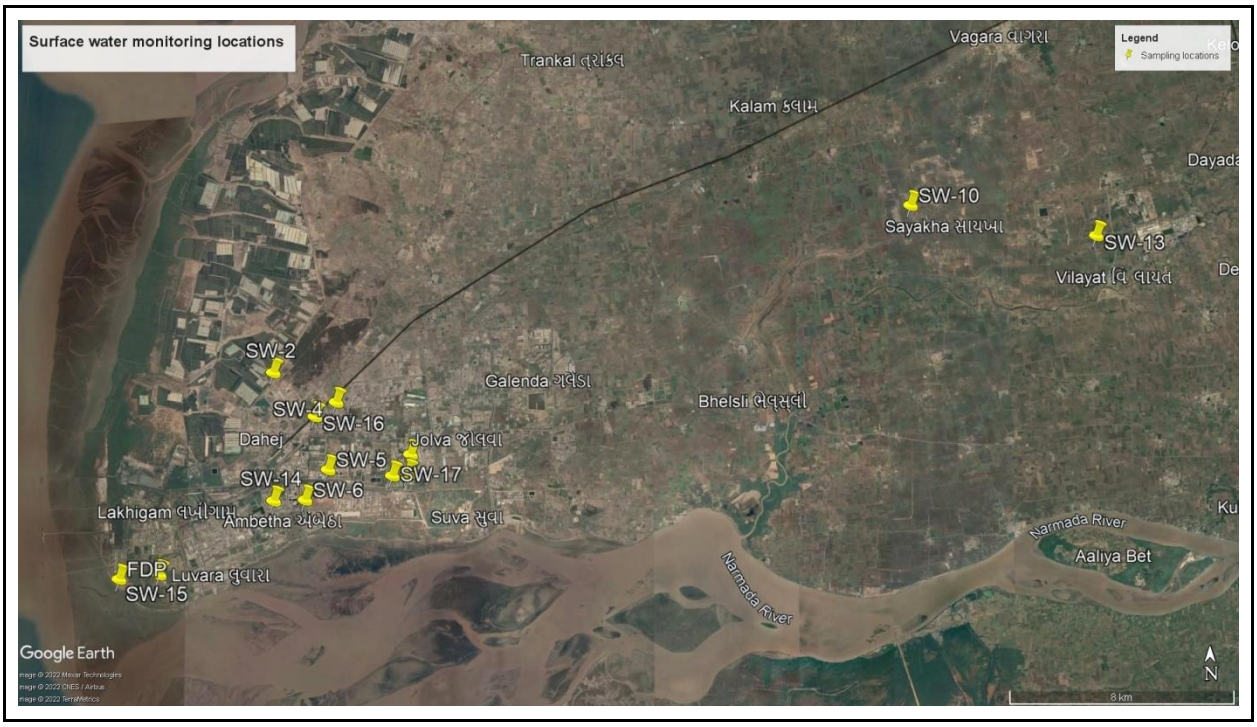


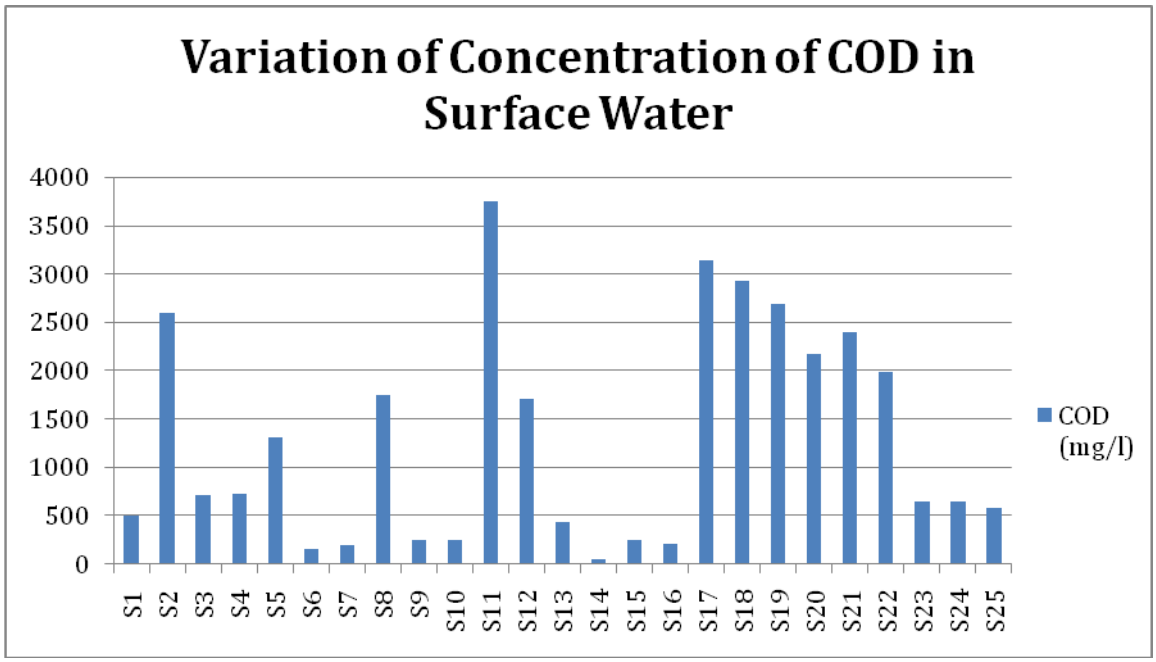
Table 4 : Sampling location details of surface water monitoring

S.N.	Sample Code	Location Description (Surface Water)	Geo-Coordinates
1	SW-1	From SWD in the stretch of drain behind Hemani Industries Ltd. to BEIL, Dahej-Amod Road	21°43'11.8"N 72°36'06.8"E
2	SW-2	From Storm water drain (Bharat Rasayan Ltd. to M/s Khaitan Fertilizers upto ponding near Salt pan area.)	21°43'50.5"N 72°35'13.2"E
3	SW-3	From GIDC Storm Water drain (near Indofil Industries Ltd., Unit-3 to M/s. PPG Asian Paint)	21°43'35.2"N 72°36'34.0"E

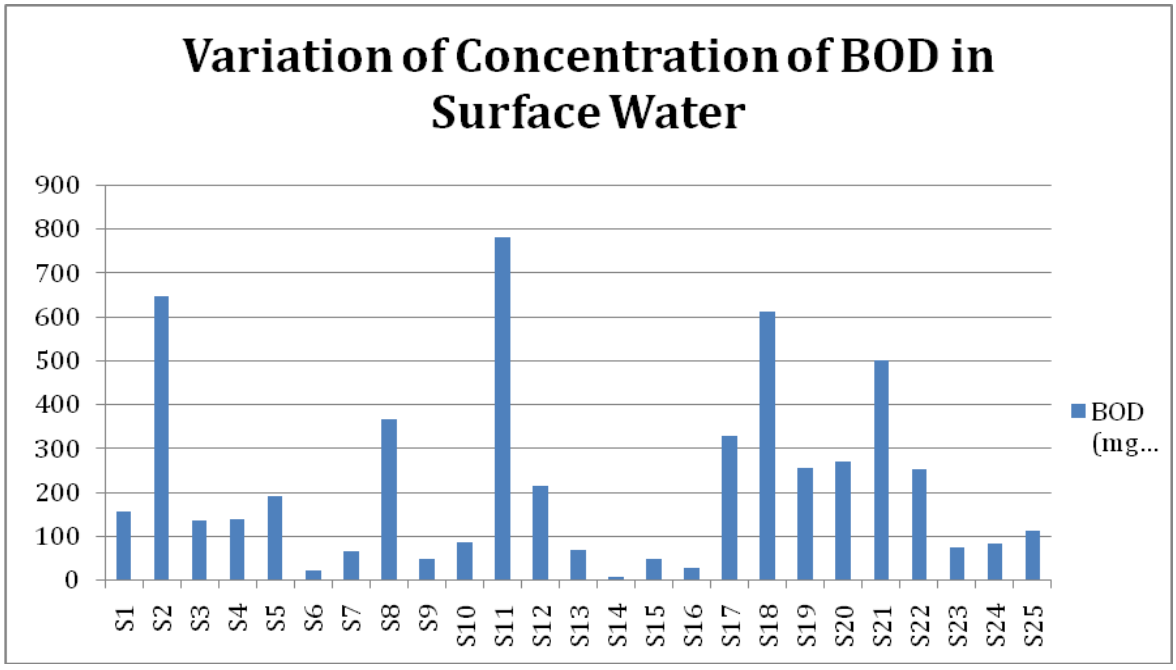
4	SW-4	From GIDC Storm Water drain (near M/s Universal Chemicals & Opp. M/s. Meghmani Organics Ltd.)	21°43'16.0"N 72°36'32.2"E
5	SW-5	Accumulated Ponding beside SEZ-1 main road near M/s. Shiva Pharma	21°41'58.1"N 72°36'23.1"E
6	SW-6	From accumulated ponding beside M/s OPAL	21°41'23.3"N 72°35'54.9"E
7	SW-7	From SEZ Storm Water drain & nearby Open area (Opp. M/s Meghmani Organics Ltd. (Unit-8) & near M/s. Meghmani LLP (Unit-2))	21°42'15.4"N 72°38'05.4"E
8	SW-8	From SEZ Storm Water drain & nearby Open area (near M/s. Insecticides India Ltd – SEZ1)	21°41'52.8"N 72°38'02.2"E
9	SW-10	From Storm Water drain (near Kothia road beside CETP Saykha)	21°47'04.2"N 72°48'32.8"E

It is found from the comparison of analysis results with respect to acceptable (Class C) criteria as per Water Quality parameters, requirement and classification that all the surface water samples are non-complying for one or other measured parameters. The graphs of variation of concentration of COD, BOD, TKN & Phenol in the area is plotted and shown in the Graphs 14 to 17 respectively. The concentration of COD in surface water was found to be varying between 3753.6 mg/l (max) to 56.45 mg/l (min). The high concentration of COD found at SW-04 (S-11 indicated in the Graph).

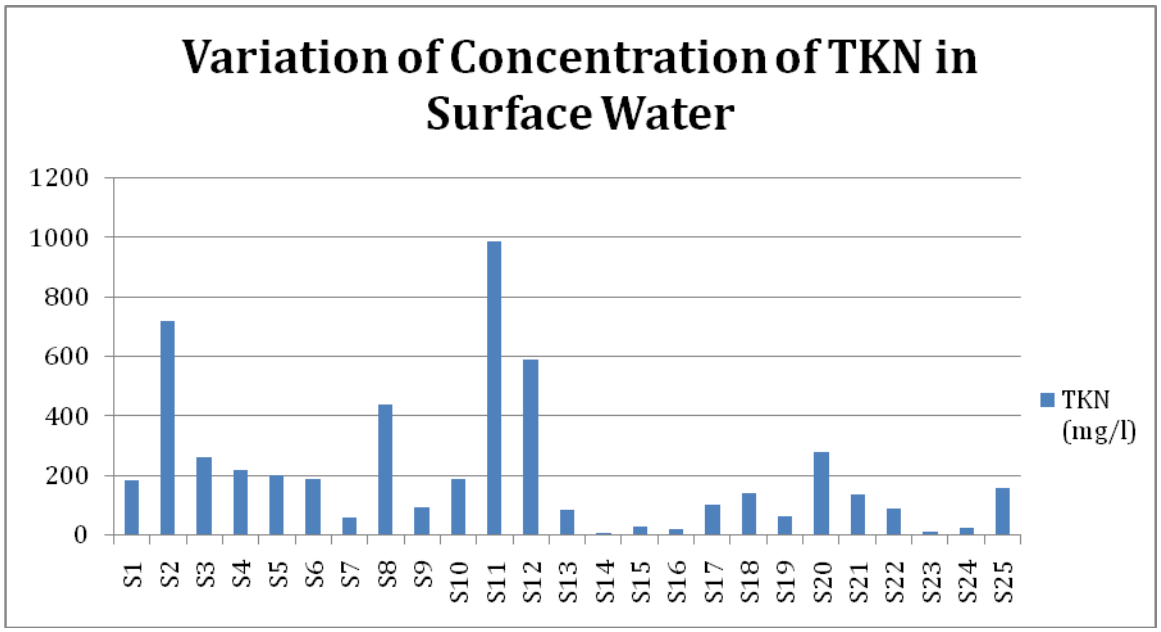
The Average concentration of following 03 critical parameters considered for surface water analysis are BOD: 218.33 mg/l (Standard Level < 8 mg/l), TKN: 208.19 mg/l (standard level: 3 mg/l), Phenol: 8.23 mg/l (standard level: 0.01 mg/l).



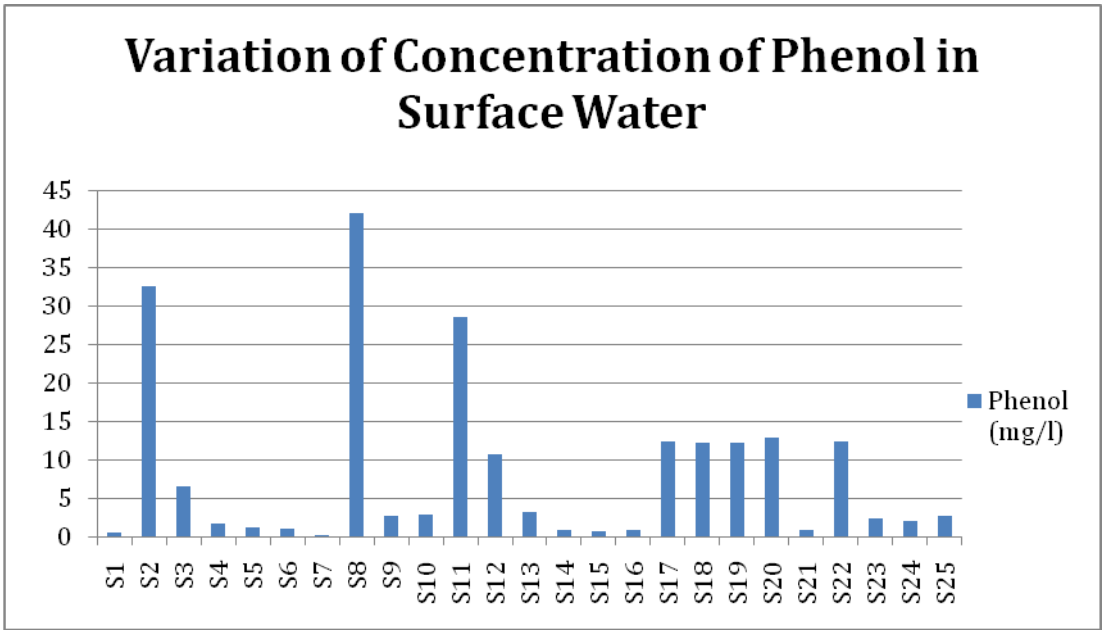
Graph 14.0: Variation in concentration of COD in Surface Water



Graph 15.0: Variation in concentration of BOD in Surface Water



Graph 16.0: Variation in concentration of TKN in Surface Water



Graph 17.0: Variation in concentration of Phenol in Surface Water

It was observed that the in spite of the facts that the GIDC has lifted wastewater, temporarily diverted the flow of such streams, wastewater also gets partially gets evaporated due to high temperature of summers or percolated in ground then too during visit many such locations were found still having contaminated wastewater, deposited contamination on the soil, contaminated sediments in the drain etc. Lifting of contaminated soil and its disposal is still not initiated by GIDC. Considering the onset of monsoon in a month period, GIDC may take steps for removal and save disposal of contaminated soil and sediments from the drains/sites.

It is also observed that there are kutcha drains which meet the main storm water drain of GIDC. Such drains were also found to contain contaminated wastewater. GIDC may provide proper drainage network connectivity of storm water in the GIDC with proper gradients so as to keep the drain flowing during rains and dry during off rains. GIDC may also carry out a stimulation survey of the GIDC drainage network.

2.6 "(vi) CETP of 40 MLD is underutilized and this CETP needs to be commissioned properly and the member industries need to meet the inlet standards as well as the outlet of the CETP to conform to the standards and all the treated effluents may be disposed as consented"

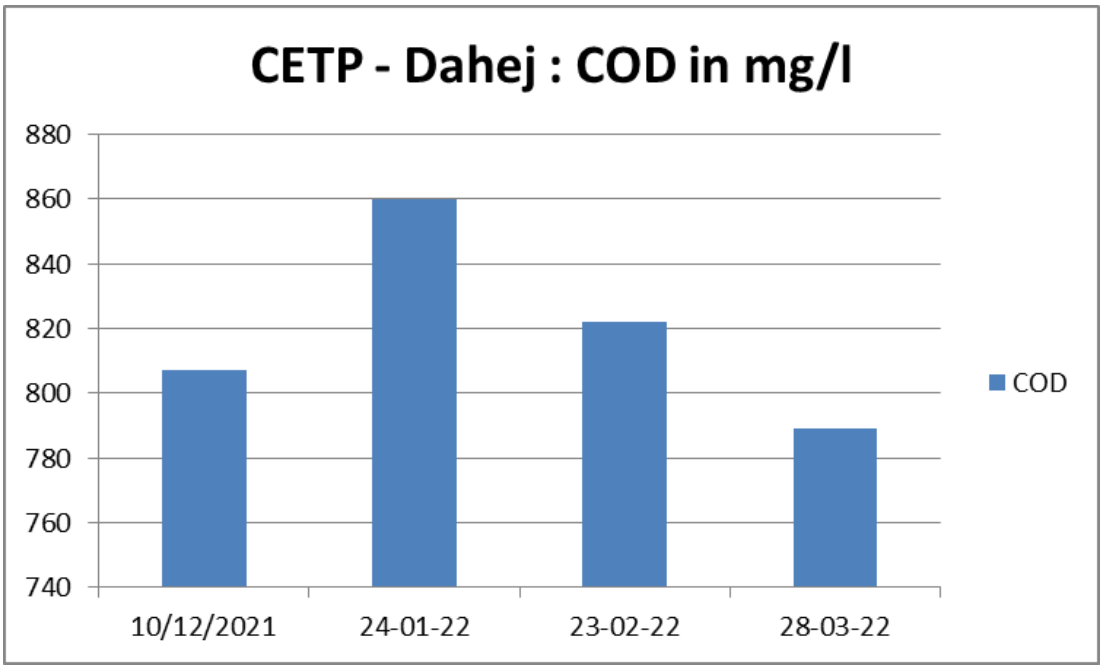
STEPS TAKEN BY GPCB

Observations with respect to CETP Dahej:

The Common Effluent Treatment Plant (CETP) Dahej has installed capacity 40 MLD. The total area of CETP is 549732 Sqm. The project got finance of about 50 Cr. by industries commissionerate and GIDC has invested about 197.72 Cr. in the CETP. The CETP has obtained Environmental clearance and has obtained CTE from GPCB on dated 11.12.2017. The CTE was amended on 19.07.2018, which is valid up to 27.06.2024. The CETP has obtained CCA from GPCB via order no: AWH-107883 which is valid up to 14.01.2025. As informed, the CETP was conceptualized mainly for small scale and medium scale industries in the area located in Dahej - II and Dahej III area having wastewater discharge less than 1MLD. The Dahej II and Dahej III area is presently not fully developed with respect to the number of operational industries in the available plots.

Presently, the CETP is receiving wastewater from industries located in Dahej-II and from Dahej-III area of the Estate. GIDC informed that provisional membership has now been given to 76 industries with a total booked quantity of about 7.84 MLD. Presently, the CETP is receiving about 1.5 MLD flow out of installed 40 MLD capacity. The number of member industries of CETP also includes discharge from a few large scale industries like M/s SRF, M/s Mehali Papers etc.

Variation in concentration of COD during December 2021 to April 2022 based on sampling carried out by GPCB from the outlet of CETP is shown in the Graph 18. It is observed from the monitoring results of GPCB that the CETP is discharging wastewater with concentration of COD exceeding GPCB discharge norms.



Graph 18.0: Variation in concentration of COD in CETP

Condition of wastewater at Equalization Tank of CETP

The CETP provided seems to have good infrastructure. However, the CETP has not yet started functioning. The wastewater simply flows from the inlet chamber to the final discharge storage tank without any treatment. The non-operational condition of CETP since inception shows the non-utilization of huge investment and also installed plant, Machinery and sensors will get defunct due to non-functioning since long.

The joint committee visited the CETP on 04.05.2022. It was found that the present flow received at CETP from the member industries remains the same in the range of 1 to 1.5MLD. The other conditions of operation and maintenance also remain the same. It was informed that the GIDC initiated steps for development of culture (MLSS) in the aeration tank of CETP. During the visit, it was observed that the culture is yet to develop in the system for treating such high organic contaminated wastewater.

In addition, steps are initiated by GIDC in the way of writing letters to industries in the area for obtaining membership of CETP. It was informed by the GIDC officials that discussion regarding diversion of wastewater and drainage systems to CETP to start 20 MLD (out of 40 MLD) in the first phase. As there is complexity of wastewater characteristics and large scale industries have to treat the individual wastewater stream to meet the General Discharge Standards as per CCA, the industries connected with Pumping station A and C are more critical therefore GIDC in coordination with GPCB needs to assess the feasibility of connecting industries with CETP in terms of design load and other factors such that the CETP becomes operational and treats the wastewater to achieve discharge norms.

2.7 "(vii)The existing capacity for management of hazardous waste should be assessed in terms of its adequacy and compliance with environmental norms"

Hazardous waste generated from the industries are categorized as Incinerable Hazardous waste, Direct Landfillable Hazardous waste, Landfill after treatment (LAT), Utilizable HW, recyclable HW as per the classification based on the characterization of waste. In the state of Gujarat, the industries can obtain membership of Common Infrastructure facilities in the state to facilitate safe disposal of HW like Common Hazardous Waste Treatment, Storage & Disposal Facilities (CHWTSDF), Common Hazardous Waste Incineration Facility, Integrated common facility, pre-processing facility for blending of HW for utilization in kilns as alternate fuel and raw material (AFR). In addition, some of the large scale industries are having captive facilities for indiginous hazardous waste management. Therefore the existing capacity of management of Hazardous waste for the industries located in the Dahej GIDC (Bharuch Region) is correlated with the management of hazardous waste in the state of Gujarat.

Key information collected from the GPCB regarding hazardous waste management is given in Table-5:

Table 5: Key Information of Hazardous Waste Management

Sr. No.	Particulars	Quantity of HW/Number of industries in Gujarat	Quantity of HW/Number of industries in Bharuch
1	Number of industries authorized to generate Hazardous Waste (HW) under the Hazardous & Other Waste (Management and Trans-boundary movement) Rules 2016 (hereby called as the HW Rules)	20,433 nos.	392 nos.
2	Number of industries actually submitted Annual Return to GPCB in compliance of the HW Rules	9622 nos.	301 nos.
3	Authorized quantity of HW to be generated by the industries in the FY 2020-2021	1,26,56,180 MT	22,80,590 MT
4	Actual quantity of HW generated based on annual returns submitted by industries to GPCB in compliance of the HW Rules	31,93,378 MT	5,37,870 MT
5	Number of Captive TSDF (Landfill)	53 nos.	05 nos.

The hazardous waste management is based on the categories of Hazardous waste generated from the industry and its disposal pathway as per authorization. The hazardous waste management varies from utilization under Rule 09, captive disposal or disposal to common hazardous waste management facilities which includes Common Hazardous Waste Treatment Storage and Disposal Facilities (CHWTSDF) for disposal of Landfillable HW, Common Hazardous Waste Incineration Facility (CHWI), co-processing facility & Pre-processing facility etc. GPCB has developed and implemented a mechanism “XGN-System for Hazardous Waste Management” for online tracking of hazardous waste management.

Presently, there are 06 Common Hazardous Waste Treatment Storage and Disposal Facilities (CHWTSDF) for disposal of Landfillable HW operational in the state of Gujarat. Some of the CHWTSDF are now exhausted or capped. The existing remaining capacity of CHWTSDF disposal for landfillable hazardous waste is 3.0 Million MT. The remaining capacity of landfillable hazardous waste is for all the hazardous waste generating industries in the state of Gujarat including the industries of Dahej Area. It is gathered that 06 new/expansion of CHWTSDF are proposed in the state.

The existing remaining capacity of the captive landfill facility for 05 large scale industries in the Dahej Area is about 4,60,716 MT.

Presently, there are 04 Common Hazardous Waste Incinerator facilities operational in the state of Gujarat for management of incinerable Hazardous Waste. In addition, in the Dahej area 12 industries have provided captive hazardous waste incinerators for disposal of incinerable hazardous waste generated indigenously.

The existing operational CHWIF including thermal capacity is detailed in Table 6:

Table 6: Existing operational CHWIF in Gujarat

Sr. No.	Operator of CHWI Facility	Existing Thermal Capacity
1.	M/s Bharuch Enviro Infrastructure Ltd. Plot no: 9701-16, 9801-28, 9901-28, 9601-9604, 10001-10008,G-7&8, 7924-27, 9401-9412, 9501-9506, 7905 E TO H, GIDC Estate, Tal: Ankleshwar. Dist: Bharuch	6.5 million kcal/Hr
2	M/s SaurashtraEnviro Projects Pvt. Ltd. Survey No: 415,417,418, JunaKatariya, Tal: Bhachau, Dist: Kutch.	7.50 million kcal/Hr
3	M/s Gujarat Maritime Board Plot No: 325/1-1, Alang, Vill: Manar, Tal-Talaja, Dist- Bhavnagar.	2.5 Million Kcal/hr
4	M/s Detox India Private Ltd Plot No: D-2/CH-135, GIDC Dahej II, Tal-Vagra, Dist-Bharuch.	10 Million kcal /Hr

STATUS OF COMPLIANCE:

It is observed that overall about 47% of hazardous waste generating industries in the state submit Annual Returns of HW (Form 04) to GPCB. About 76% of industries located in the Bharuch Region submits HW Annual Return. GPCB may frame a guiding mechanism and action framework for the industries in the state not submitting the HW annual returns to GPCB timely.

During earlier inspection of the industries in the area it was found that mismanagement of various types of hazardous waste in terms of stored quantity of hazardous waste in open area, storage of hazardous waste in open and dilapidated drums, leakages of drums containing HW etc. All the industries in the state should comply with the HW storage guideline for safe storage and also to maintain proper records.

2.8 "(viii)The Committee and the State Government should also ensure that the health conditions of the villagers and other safeguards are taken to protect human health as well as the flora and fauna of the entire area including recipient coastal water."

The health study of the surrounding villages of the Dahej area is to be assigned to NIOH, Gandhinagar by GPCB. The detailed proposal of the health study is annexed as **Annexure - VII**. Issuance of work order to NIOH is under process.

Similarly, GIDC has assigned a project of detailed study of impact of flora and fauna including recipient coastal water to NIO. Copy of work order issued by GIDC to NIO is annexed as **Annxure- VIII.**

The joint team identified following two locations for collection of samples for monitoring of coastal water based on current location of discharge point.

Table 7: Coastal Water Sampling Locations

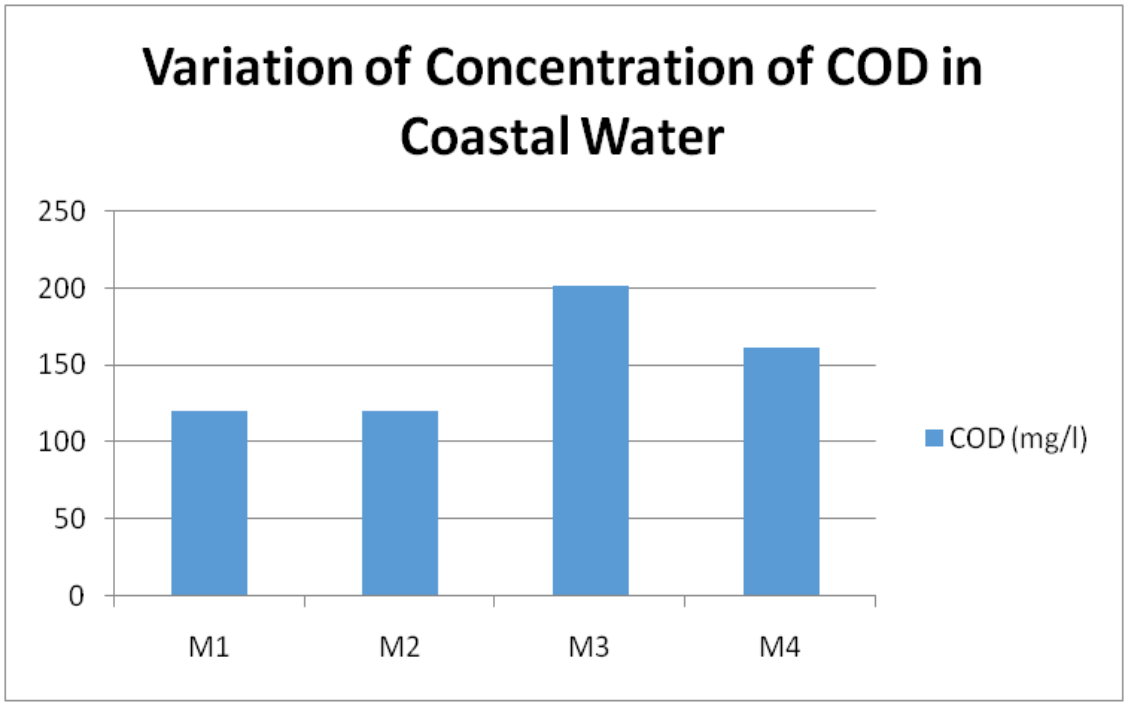
Sr. No.	Sample Code	Location Description	Geo-coordinates
1	MWS-1	Near final disposal point, near LNG Jetty (Surface sample)	21°39'41.5"N 72°31'16.6"E
2	MWD-1	Near final disposal point, near LNG Jetty (Depth sample)	21°39'41.5"N 72°31'16.6"E

The coastal water samples were collected and analysed by GEMI for physico-chemical, heavy metals etc. parameters. The analysis report of Coastal water samples is attached as **Annexure - IX.**

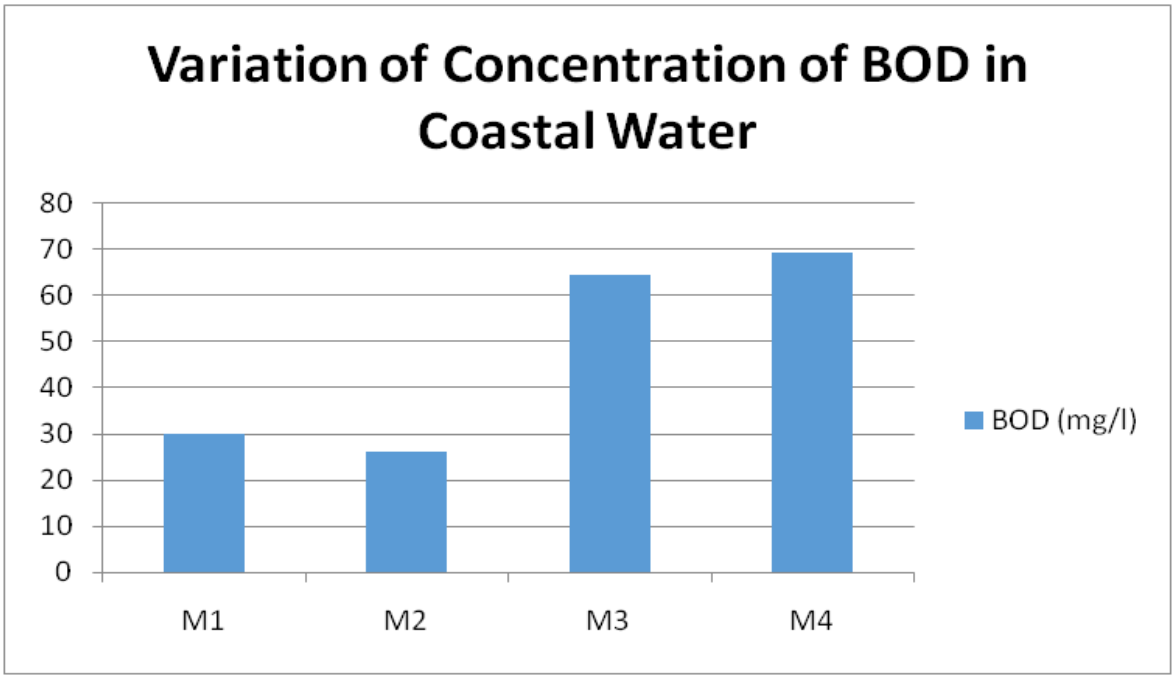
It is found from the comparison of analysis results that all the samples for the measured parameters that all coastal water samples are non-complying for one or other parameters. The graphs of variation of concentration of COD, BOD, Phenol and Iron in the area are plotted and shown in the Graph 19 to Graph 22 respectively.

The Average concentration of following 03 critical parameters are BOD: 47.54 mg/l (Standard Level < 5 mg/l), Iron: 5.45 mg/l (standard level: 0.5 mg/l), Phenol: 1.425 mg/l (standard level: 0.01 mg/l). The concentration of COD in coastal water was found to be varying between 64.51 mg/l (max) to 4.03 mg/l (min).

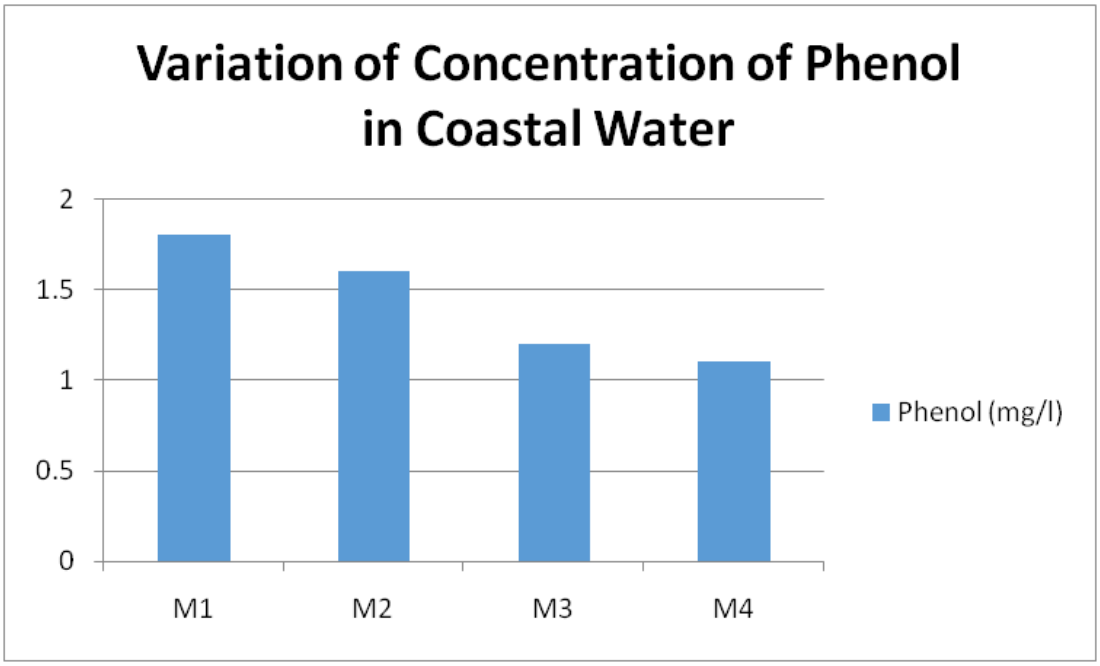
In addition samples of Coastal sediments are also collected from the old final disposal point (600 m in CRZ IB area) and the new disposal point. The sediment samples are analyzed for physico-chemical, heavy metals etc. The compiled sheet of analysis report of Coastal water samples is attached as **Annexure - X.** The concentration of COD in coastal sediment was found to be varying between 85.09 mg/l (max) to 39.57 mg/l (min).



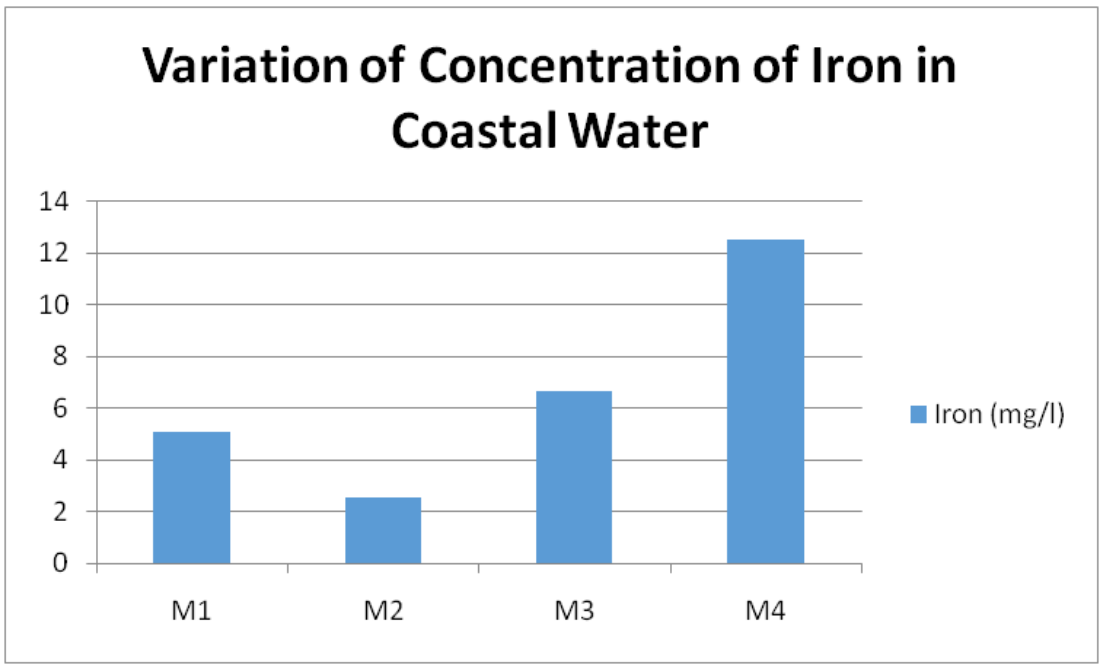
Graph 19.0: Variation in concentration of COD in Coastal Water



Graph 20.0: Variation in concentration of BOD in Coastal Water



Graph 21.0: Variation in concentration of Phenol in Coastal Water



Graph 22.0: Variation in concentration of Iron in Coastal Water

3. The Comprehensive Environmental Pollution Index (CEPI) should be assessed particularly immediately with regard to the water and soil component. Such assessment may be done through credible mechanism under the supervision and monitoring of the Joint Committee. The assessment should be holistic to cover all the categories of industries, assessing groundwater quality, soil characteristic and coastal water analysis

Comprehensive Environmental Pollution Index (CEPI) is a tool developed by Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT) Delhi. The tool was developed for evaluation of the Ambient Air Index / Surface Water Index / Ground Water Index after calculating four components as Source: A, Pathway: B, Receptor: C and Additional High Risk Element: D. The Sub index scores are to be calculated for each of the individual environmental components that is, Air Environment, Surface Water Environment, and Soil & Ground Water Environment separately using Sub-Index Score = (A + B + C + D) on a scale of 0-100 and The aggregated CEPI Score can be calculated as.

$CEPI = i_m + \{(100 - i_m)*(i_2/100)*(i_3/100)\}$

Where, im: maximum sub index; and i2 and i3 are sub-indices for other media

The detailed CEPI methodology is available on CPCB webpage http://cpcb.nic.in/divisionsofheadoffice/ess/NewItem_151_Final_Book1.pdf

Further, the joint committee referred the mechanism developed by the Ministry of Environment Forests and Climate change for environmental management in Critically Polluted Area/ severely polluted areas in compliance of Hon'ble NGT order dated 23.08.2019 in the matter of OA 1038 of 2018. It is mentioned in the mechanism that the CEPI score assessment may be used as warning tool by the state government, SPCBs and other concerned to understand the severity of pollution existing in the area and to formulate appropriate action plan, to carry out pre-monsoon and post monsoon monitoring of such area by concerned SPCBs etc. The issue of concern in the matter is pertaining to violation of wastewater norms as well as adverse impact on recipient water bodies. Therefore, the joint committee worked on the immediate assessment of sub-index of components in accordance with the specific mention of the same in the order passed by the Hon'ble NGT by referring to the credible mechanism to assess the CEPI. The sub-index is annexed as **Annexure – XI.** which indicates the immediate status of particular component based on present monitoring only. As the CEPI is comprehensive index for all components including air component and also requires health data etc. Thus, the joint committee is in the view that comprehensive CEPI may needs to be assessed by concerned authority considering all aspects.

4. ENVIRONMENT DAMAGE COMPENSATION:

Hon'ble NGT has also directed the joint committee to reassess the Environment Damage Compensation. In view of above, the committee referred various orders of Hon'ble Supreme Court of India and Hon'ble NGT and gathered that in a case where pollution is continuous, violations of environmental laws and norms are consistent and Industries for their own benefit are carrying on their commercial activities without showing any legal, social and ethical obligations, responsibilities and duties toward society, i.e., preservation, protection and maintenance of purity of environment, any technical plea to take advantage of their own wrong or own practical problems for the reason that the factum of causing pollution by violating environmental norms is sufficient to attract Principle of Polluters Pay and since violation is for commercial interest of industries, they must be considered to pay in terms of overall treatment cost which has been saved due to discharge of wastewater beyond the standards.

In the earlier report, the Environmental Compensation was assessed based on the following two aspects viz. EC1 and EC2.

EC = EC1 + EC2

Where, EC1 is environmental compensation for violation of CCA conditions and EC2 for environmental compensation for violation of HW Rules. It was also mentioned in the earlier report that *"the Environmental Damage compensation was calculated for the visited non-complying industries. However, the overall condition of wastewater management in the area is*

not limited to the visited industries. The other industries in the area may also contribute to the condition"

Now, as per direction of Hon'ble NGT, the Environment compensation is being revised considering the magnitude of violation, avoided cost, deterrent factor etc. It is observed from the recent monitoring results from December 2021 to April 2022 that the condition in terms of flow and non-compliance is still continuous as the samples collected from the final pumping station still have a varied degree of non-compliance as detailed in above sections of the report. The joint committee reassessed the Environment Damage Compensation (EDC), for all the industries in the area discharging into the GIDC drainage network, CETP and GIDC. The EDC relates with the magnitude of violations and distributed holistically among the non-complying industries in the area.

The EDC is being assessed in following three category:

- **Category-1: EDC = EC1(New)** for all non-complying industries (based on past 5 years records of monitoring results of GPCB and flow records of GIDC) in the area discharging into GIDC drainage network.
- **Category-2: EDC = EC1(Revised) + EC2** for earlier visited non-complying industries in the area. EC1(Revised) is calculated for the earlier visited non-complying industries. EC1(Revised) is the sum of the EC1 (earlier calculated based on violation of CCA conditions) and additional cost (based on magnitude of violation as detailed in the present report). Thus the EC1 (Revised) is either equal or higher than EC1(old). The EC2 earlier calculated for the industry wherein improper management of HW was observed during the inspection of the joint teams and therefore for the present case it is considered the same as calculated earlier. It is again specified that the quantum of HW considered for calculation of EC2 were stored outside the storage shed, stored outside in drums wherein leakages from the drums or drums in dilapidated conditions etc. were observed.
- **Category-3: EDC = EC1 (Old)** {based on non-compliance of CCA conditions for GIDC. The GIDC has provided infrastructure in the Dahej area and as per CCA issued by GPCB, one of the conditions is to discharge the treated wastewater at the point suggested by NIO, which is grossly and continuously violated by GIDC.

The joint committee examine following records and considered for calculation and further distribution of Environmental Damage Compensation as per the categories mentioned above using steps detailed in the table below:

- Flow records collected from GIDC for the last 5 years (Calendar year 2017 to 2021). EC1 (Revised/New) is calculated till December 2021. The Flow records include the total

volume of wastewater discharged from individual industries into the GIDC drainage system in the span of the last 5 years.

- GPCB monitoring results for the last five years for the monthly monitoring of Final Pumping Station, random monitoring carried out for the industries in the area discharging into the drainage network, sampling carried out at the outlet of CETP Dahej, monitoring results of final disposal point.

METHODOLOGY ADOPTED FOR CALCULATION OF ENVIRONMENTAL DAMAGE COMPENSATION

STEP 01: CALCULATION OF "*TOTAL-EC1 (NEW)*"

Total-EC1 (New) is calculated based on the avoided cost which is related with the treatment cost saved due to excess load discharged in the span of the last 5 years (2017 to 2021) through the GIDC drainage network in the CRZ Area.

- Total volume of wastewater discharged through GIDC disposal pipeline in CRZ area: **Vt (in KL) : 56007016.81 KL**
- Average organic concentration in terms of COD : **CA : 1019.1 (in mg/l)** (the Average COD is calculated based on all the monitoring results of GPCB for Final Pumping Stations and Final Disposal Point during 2017-2021)
- **Excess Organic Load (EOL)** discharged untreated EOL=Vt × (CA-250)/1000 (in kg) (where COD discharge standard is 250 mg/l)

Total Treatment cost saved (Avoided Cost) by the industries due to excess organic load discharged untreated

Total-EC1(New) = EOL × 62.5 (in Rupee) (The amount of Rs. 62.5/Kg of COD is taken based on the treatment cost of such organic contaminated wastewater by GPCB in consultation with GIDC)

STEP 02: CALCULATION OF PERCENTAGE DISTRIBUTION

Based on the past records of non-compliance, it is observed by the joint committee that the industries connected with different pumping stations showed different levels of non-compliance. It is evidence that the Pumping station A is grossly violating compared to other pumping stations. Thus, the EC1(New) calculated in the Step 01 is distributed pumping station wise based on the degree of violation. There are broadly 06 stations viz. PS-A, PS-C, PS-Vilayat, PS-D, CETP and Others (industries discharging directly). Based on the flow and maximum organic concentration in terms of COD, the percentage distribution is calculated as;

% distribution for ith station= (Fi x Ci)/∑(Fi x Ci)

Fi = Booked quantity (Kl/day) i^{th} station, (i =1,2,3,4,5 & 6 for 06 stations viz. PS-A, PS-C, PS-Vilayat, PS-D, CETP and Others)

Ci= Maximum concentration of Organics in terms of COD (mg/l) as per records of GPCB in the last five years for the i^{th} station.

Using the above method % distribution is calculated for PS-A, PS-C, PS-Vilayat, PS-D, CETP and Others

STEP 03 : DISTRIBUTION OF TOTAL EC1(NEW) AMONG THE 06 CLASSES VIZ. PS-A, PS-C, PS-VILAYAT, PS-D, CETP AND OTHERS AS PER PERCENTAGE DISTRIBUTION CALCULATED IN STEP 02.

The ***Total-EC1(New)*** as calculated in Step 01 is distributed among the pumping stations using following formula:

EC1(New) for ith station = % distribution of ith station x Total EC1(New)

Using the above mentioned steps, EC1-(New) is distributed respectively for PS-A, PS-C, PS-Vilayat, PS-D, CETP and Others

Stations	Station Wise EC	Magnitude of Non-compliance(% Distribution)
Pumping Station A	EC1-(New)-A	Critical (62.84%)
Pumping Station C (PS-E)	EC1-(New)-E	Severe (16.20 %)
Pumping Station Vilayat	EC1-(New)-V	Significant (6.64%)
Pumping Station D	EC1-(New)-D	Significant (3.69 %)
CETP	EC1-(New)-C	Significant (2.15 %)
Others	EC1-(New)-O	Significant (8.48%)

STEP 04 : CALCULATION OF EC1 (NEW) OF INDIVIDUAL NON-COMPLYING INDUSTRIES IN THE AREA DISCHARGING INTO GIDC DRAINAGE NETWORK

The EC1(New) for i^{th} stationcalculated in step 03 is further distributed among the respective non-complying industries discharging in that i^{th} station.

- **Actual Volume of wastewater discharge by individual industries (j)** as per records of GIDC for last five years (2017 -2021) : **Vj (Kl)**
- **Total Actual volume of wastewater discharge into i^{th} station** as per records of GIDC for last five years (2017 -2021) by all the industries connected with ith station: **Vi (Kl)**
- Ratio of Wastewater discharge by individual industry (j) **Rvj : Vj/Vi**
- Ratio of Failed Samples of individual industry (j) as per records of GPCB **Rfj = Number of Sample Failed/ total number of sample** in last five years
- Non-compliance factor of individual industry (j) **NCj = Rvj x Rfj**
- **Deterrent Factor** for individual Non-complying industry Dfj =NCj/∑NCj

  The Deterrent factor will be zero for the complying industry.

- **EC1(New) for individual non-complying industry in ith station = Station wise EC x Dfj**
- **EC1(revised) = EC1(Old) or EC1(New) whichever is higher.**

STEP 05: CALCULATION OF EDC

Final EDC is calculated for individual non-complying industries, CETP and GIDC as mentioned below:

- **EDC for all other non-complying industries = EC1(New)**
- **EDC for earlier visited non-complying industries in the area = EC1(Revised) + EC2**
- **EDC for GIDC = EC1 (old)**

The calculation of EDC using the above step is annexed as **Annexure – XII.** The summary of EDC (in Rupee) for non-complying industries, CETP and GIDC is tabulated in Table 8.

Table 8: Summary of EDC (in Rupee) for non-complying industries, CETP and GIDC

Sr.No.	Name of Industry	Address	EDC (in Rupees)
1	M/s. Indofil Industries Ltd.	Plot No. Z-8, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	1,82,60,057
2	M/s. Firmenich Aromatics Production India Pvt. Ltd.	Plot No. Z-10, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	3,08,82,973
3	M/s. Meghmani Industries Ltd.	Plot No. Z-6, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	13,46,32,638
4	M/s. Aries Color Chem Pvt. Ltd.	Plot No. Z-29 & Z-30, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	3,52,40,000
5	M/s. Meghmani Organics Ltd. (Unit-8)	Plot No. Z-31 & Z-32, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	20,03,74,182
6	M/s. Sigachi Industries Pvt. Ltd.	Plot No. Z-16, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	16,98,428
7	M/s. Accent Microcell Pvt. Ltd.	Plot No. Z-59, Z-63 & Z-64, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	4,11,60,000
8	M/s. Sun Pharmaceuticals Pvt. Ltd.	Plot No. Z-15, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	85,75,669
9	M/s. Meghmani LLP (Unit-2)	Plot No. Z-34, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	5,34,57,711
10	M/s. Shiva Pharmachem Ltd.	Plot No. Z-88 & Z-88/4, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	3,10,50,000
11	M/s. Ramdev Chemical Industries	Plot No. Z-19 & Z-20, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	1,19,10,588

Sr.No.	Name of Industry	Address	EDC (in Rupees)
12	M/s. Rallis India Ltd.	Plot No. Z-110, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	62,29,815
13	M/s. FermentaBoitech Ltd.	Plot No. Z-109B & 109C, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	1,02,73,459
14	M/s. TatvaChintanPharmaChem Pvt. Ltd.	Plot No. Z-103/F/1 & 103/F/2, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	2,47,228
15	M/s. Thermax Limited.	Plot No. Z-96/C, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	7,71,67,679
16	M/s. YashashviRasayan Pvt. Ltd.	Plot No. Z-96/E, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	13,88,532
17	M/s. BenzoChem Industries Pvt. Ltd.	Plot No. Z-103/D, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	39,07,937
18	M/s. Hemani Industries Ltd.	Plot No. CH-5, E-362, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	67,33,19,147
19	M/s. Meghmani Organics Limited.	Plot No. CH-1, CH-2/A, D-2/CH 10/A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	88,33,46,029
20	M/s. Meghmani Limited Liability Partnership	Plot No. CH-3, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	4,57,58,773
21	M/s. Insecticides India Ltd	Plot No. CH-21, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	4,73,40,000
22	M/s. Bharat Rasayan Ltd.(Old Name:Siris Crop Science Limited)	Plot No. CH-42/4, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	6,04,43,805

Sr.No.	Name of Industry	Address	EDC (in Rupees)
23	M/s. Tagros Chemicals India Ltd.	Plot No. CH-43/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	7,60,57,302
24	M/s. Sun Farben Incorporation(old name - alex industries)	Plot No. CH-11, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	1,73,46,745
25	M/s. The DharamsiMorarji Chemical Company Limited	Plot No. CH-5/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	57,83,068
26	M/s MeghmaniNovotech Pvt. Ltd. (Old Name: M/s MeghmaniSpeciality Chemicals LLP)	Plot No. CH-22, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	4,22,08,628
27	M/s. Gujarat Fluorochemicals Ltd.	Plot No. 12/A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	5,19,00,000
28	M/s. NOCIL Ltd.	Plot No. 12/A/1 & 13/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	57,64,927
29	M/s. Deepak Nitrite Limited	Plot No. 12/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	2,17,32,351
30	M/s. Sterling Auxillaries Pvt. Ltd.	Plot No. 12/A/2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	1,69,777
31	M/s. Deepak Phenolics Limited	Plot No. 12/B/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	99,33,021
32	M/s. SRF Ltd.	Plot No. D-II/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	2,67,59,944
33	M/s. Gujarat Narmada Valley Fertilizers and Chemicals Ltd	Plot No. D-II/8, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	2,60,51,563

Sr.No.	Name of Industry	Address	EDC (in Rupees)
34	M/s. Mehali Papers Pvt. Ltd.	Plot No. D-II/11/B/2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	9,38,25,899
35	M/s. UPL Limited. (Unit 12)	Plot No. D-III/6, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	7,52,521
36	M/s. Xenon Chem LLP.	Plot No. CH-46, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	8,35,458
37	M/s. AnaghaChem	Plot No. D-II/CH-318, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	11,42,616
38	M/s. Green Paradise Pigments LLP.	Plot No. D-II/CH-31, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	82,39,037
39	M/s. Gumandev Chemicals Pvt. Ltd.	Plot No. D-II/CH-82, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	21,49,346
40	M/s. PPG Asian Paints Pvt. Ltd.	Plot No. D-II/CH-21A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	9,12,596
41	M/s. Tridev Industries Pvt. Ltd.	Plot No. D-II/CH-134, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	10,03,178
42	M/s. TejrajParasmaljiBalar	Plot No. D-II/CH-126, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	2,46,704
43	M/s. Meghmani LLP (Unit-3)	Plot No. D-II/CH-5, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	55,40,338
44	M/s. Thirumalai Chemicals Limited	Plot No. D-II/CH-171/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	5,30,713
45	M/s. KetulChemPvt.Ltd	Plot No. D-II/CH-132, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	1,98,277

Sr.No.	Name of Industry	Address	EDC (in Rupees)
46	M/s. Viswaat Chemical Ltd.	Plot No. D-III/10, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	10,20,000
47	M/s. Rossari Biotech Ltd.	Plot No. D-III/24/3, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	35,49,595
48	M/s. Jubilant Infrastructure Ltd. (SEZ Developer)	Plot No. 5, GIDC Vilayat, Ta.Vagra, Dist. Bharuch.	14,53,389
49	M/s. Grasim Cellulosic (A Unit Of Grasim Ind. Ltd)	Plot No. 1, GIDC Vilayat, Ta.Vagra, Dist. Bharuch.	17,70,33,167
50	M/s. Hemani Crop Care Private Limited	Plot No. DP-73 & DP-74, GIDC Saykha, Ta.Vagra, Dist. Bharuch.	21,94,221
51	M/s PragnaPharma Private Limited	Plot No. D-II/CH-224, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	84,40,000
52	CETP Dahej	Plot No. D-2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	3,32,75,484
53	GIDC		6,19,80,000

The EDC tabulated above is calculated for the period between 2017 to 2021 for all non-complying industries in the area using the GIDC drainage network contributed for non-compliance one or many times and distributed accordingly. The total EDC of Rs. 306,46,94,515/- (In words: Rupees Three Hundred and Six Crores, forty six lakhs, ninety four thousand five hundred and fifteen) is calculated. The present situation of non-compliance remains the same. It is worth mentioning that there are 47 complying industries out of total industries using GIDC drainage network and EDC for such industry is NIL.

5. CONCLUSIONS

In the matter of Hon'ble NGT OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.] related with wastewater management by the industries and Gujarat Industrial Development Corporation (GIDC) in the Dahej industrial area, joint teams of CPCB and GPCB had carried out inspection of industries located in the area which were discharging wastewater into the GIDC drainage system. After submission of the report, Hon'ble NGT passed an order dated 02.02.2022 wherein joint committee was directed to submit a report addressing the identified issues. As per the order, state of Gujarat and State PCB were directed for compliance of the order.

Based on the scope of the Joint Committee, aspect wise status is detailed in the report. The sampling and monitoring of the area was assigned to Gujarat Environment Management Institute by GPCB to cover water and soil component in line with the order. Based on the availability of ground water bore well/open well, the joint committee selected the locations for sampling to have a representative assessment of the entire area. Detailed sampling covering about 58 soil/sediment samples, 45 groundwater samples and 01 Piezowell, 25 surface water samples, 09 coastal water/sediments samples are collected in three rounds of sampling and analyzed by GEMI. In addition samples of wastewater from Pumping Station A, Pumping Station C, Pumping Station D, Vilayat Pumping Station, Final Pumping Station and final disposal point are also collected and analyzed. Results are discussed in detail and compared with the available references and notified standards.

GPCB along with GIDC carried out a survey of the area and identified 11 locations/sites wherein accumulation of wastewater, residue deposits etc. was found. GIDC informed that lifting of accumulated wastewater has been initiated. However, during visit of the area, the joint committee observed that conditions of accumulation of contaminated wastewater in such sites still persist. The analysis results of samples of accumulated wastewater show high organic contamination. The concentration of COD was found varying between 3753.6 mg/l (max) to 56.45 mg/l (min). It was observed that Lifting of contaminated soil & its disposal is still not initiated by GIDC. It is also observed that there are kutcha drains having accumulated wastewater which meet the main storm water drain of GIDC. GIDC may provide proper drainage network connectivity of storm water in the GIDC with proper gradients so as to keep the drain flowing during rains and dry during off rains. GIDC may also carry out a stimulation survey of the GIDC drainage network.

GPCB issued directions as deemed necessary to non-complying industries and GIDC in the area. GIDC informed about the action taken, which include an interim arrangement for final disposal of wastewater. The joint committee has visited the final disposal point and found that the

present main disposal line is re-routed for final disposal through a separate pipeline near the shore with extension limited to about 800 m into the Sea. The present location of the disposal line is different, however, falls between High Tide Level (HTL) & Low Tide Level (LTL) into CRZ-IB Area. The present location is also not as per the point suggested by NIO and the exceedance factor of the sample collected shows continual gross non-compliance with respect to prescribed standards. It was informed by GIDC that the tender for laying of pipeline as per point suggested by NIO is under process. GIDC also informed that impact study on marine ecological monitoring and assessment around the GIDC discharges locations at Dahej, Gujarat is assigned to CSIR-NIO, Mumbai.

GIDC initiated laying of the express line with arrangements of identifying industry wise discharge at respective pumping stations. The work of express line for pumping station A is almost completed and for pumping station C is under progress. The express line will help in eliminating the ghost connection from the old underground lines, effective surveillance of individual industry at the respective pumping station itself, ease of identification of non-compliance by individual industries etc. GIDC has also initiated reporting of non-compliance of third party monitoring results of individual industries to respective industries with a copy to GPCB. GPCB issued show cause notices to such industries.

The joint committee has also collected recent monitoring results of pumping stations from GPCB. The analysis results of the sample collected during December 2021 to April 2022 from the pumping station A and Pumping station C indicates continual gross non-compliance in terms of wastewater discharge standards. The contribution of gross non-compliance of pumping station A and C compared to other pumping stations in the area is reflected in the past and as well as in the recent monitoring. The non-compliance of the discharge standard of wastewater at the final disposal point is still continuous.

The joint committee examined the analysis results of ground water samples, surface water samples and coastal water samples. It is found that contamination of phenolic compounds and other organics in all the three components of water indicates the impact of continual non-compliance discharges, mismanagement of wastewater and sludge (HW) in the area etc.

The present operational status of CETP is still underutilized as only 1-1.5 MLD out of 40 MLD hydraulic capacity is received. GIDC informed that letters are issued to all the industries in the area to become members of CETP. As there is complexity of wastewater characteristics and large scale industries have to treat the individual wastewater stream to meet the General Discharge Standards as per CCA, the industries connected with Pumping station A and C are more critical therefore GIDC in coordination with GPCB needs to assess the feasibility of

connecting industries with CETP in terms of design load and other factors such that the CETP becomes operational and treats the wastewater to achieve discharge norms.

The overall non-compliances are of discharge standards at Final disposal point, heavy sludge deposition at FPS, overflowing of manholes due to choking / leakage problems of GIDC drainage lines, frequent overflowing of wastewater from manholes and pumping stations, contaminated runoff from industries etc. is leading to storm water drain / surface drains. The drains ultimately carry wastewater to the estuary of River Narmada & to the Sea. Improper management might have resulted in the Soil contamination in the Dahej industrial area and groundwater contamination. Thus, it can be inferred that there are continual lapses on part of treatment of and management industrial wastewater in the area.

The joint committee has also collected flow records of discharge of individual industries in the area for the span of the last five years (2017 - 2021) and past analysis results of individual industries in the area and records of analysis results of final pumping station/final disposal point from GPCB. As per order of Hon'ble NGT, the environmental damage compensation is reassessed incorporating the avoided cost, deterrent factor etc. and distributed holistically among all non-complying industries in the area using GIDC drainage network, CETP and GIDC based on actual flow and degree of violation in the last five years. The amount calculated for non-complying industries, CETP and GIDC is summarized in Table 8 of the report.

Action taken by the authorities in the area need to be more effective considering the fact that the condition of gross non-compliance with respect to discharge standards is still continuous. Further, it is suggested that a GIDC in coordination with GPCB may develop and implement the detailed action plan considering the Dahej as critically polluted area which may include

- Immediate short term action like dredging of topsoil/sediments from the identified industrial area where contaminations are observed & its safe disposal, completion of work of providing express line with identified industry specific discharge, providing boundary and CCTV in pumping stations, hotspots etc.
- GIDC may develop a mechanism for receiving complaints regarding leakages in the drainage network. The complaints may be received by GIDC in the form of photographs with location details etc. through whatsapp. The GIDC need to frame immediate action for addressing such leakage, mechanism to collect the spilled out wastewater/sludge during maintenance & its safe disposal etc.
- Time bound action is required to make CETP operational and functional to achieve discharge norms covering all techno-feasibility aspects. Such action plans may be formulated by GIDC and GPCB in coordination with the industries in the area to achieve effective implementation.

- GIDC needs to expedite the process of allocation of the project of providing the final disposal line as per the point suggested by NIO as the present disposal point is still in the CRZ area.
- More vigilance and strict action against the non-complying industries in the area.
- Long term action plans may include assessment of status of soil in the villages from the Agriculture department, development of green belt, rainwater harvesting in the school buildings, panchayat office, government office etc. in the nearby villages need to be initiated to recharge the groundwater, assessment and routine monitoring of groundwater quality (pre and post monsoon) in the area to develop trends and to frame action plans to restore the groundwater quality, Hazardous waste management, Incorporation of recommendations after completion of health study by NIOH and marine ecological impact study by NIO etc.

*****

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ANNEXURE - I : Pumping Station Results

Round	Sampling Location	Location Code	Geo co-ordinates	Date	pH	Colour	Conductivity	Chloride as Cl^-	Total Dissolved Solids	Total Suspended Solids	Ammoniacal Nitrogen NH_3-N	Chemical Oxygen Demand	Dissolved Oxygen	Biochemical Oxygen Demand	Oil & Grease	Sulphate	Nitrate	Total Phosphorous	Sodium Adsorption Ratio	Total Kjeldahl Nitrogen	Hexavalent Chromium	Sulphides
					-	Hazen	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	milimole/L	mg/L	mg/L	mg/L
1	Final Disposal Point	FDP	21°40'53.0"N 72°33'05.9"E"	4/19/2022	7.17	500	21700	2099.35	17804	48	10.68	456	BDL	85.71	BDL	8407	67.85	4.05	30.71	14.01	BDL	12.26
3		FDP	21°39'53.0"N 72°32'05.9"E	5/4/2022	7.63	1500	32060	10746.7	19014	480	192.92	1585.37	BDL	331.12	BDL	690.2	283	2.78	49.58	238.17	BDL	2.66
1	Final Pumping Station - Ambheta	SW-14	21°41'22.4"N 72°35'15.9"E	4/18/2022	7.34	875	28200	5748.21	22108	132	160.27	1280	BDL	161.29	BDL	5988	234.8	3.95	49.08	203.99	BDL	14.8
3		SW-14	21°41'22.4"N 72°35'15.9"E	5/4/2022	7.42	1000	23700	3698.85	16114	404	65.3	810.56	1	168.92	BDL	69.68	149.4	2.61	64.98	103.67	BDL	4.13
2		SW-14	21°41'22.4"N 72°35'15.9"E	4/20/2022	3.82	750	22900	3448.93	14610	76	96.16	1088.64	BDL	205.48	BDL	6983	325	3.03	58.7	106.48	BDL	7.71
1	Pumping Station - A	SW-16	21°42'59.5"N 72°36'05.9"E	4/18/2022	7.25	500	17100	5798.2	10646	182	16.62	459.65	1.8	57.47	BDL	455	71.3	0.73	28.37	23.54	BDL	BDL
2		SW-16	21°42'59.5"N 72°36'05.9"E	4/20/2022	8.09	2000	29600	9547.04	18926	222	69.45	1632.96	BDL	306.12	BDL	1153	309.5	2.84	68.41	98.07	BDL	4.39
3		SW-16	21°42'59.5"N 72°36'05.9"E	5/4/2022	7.26	2000	35900	11946.3	22678	550	187.57	2237.76	BDL	607.48	BDL	983.8	496.75	1.97	74.82	288	BDL	8
1	Pumping Station - C	SW-17	21°41'50.9"N 72°37'43.0"E	4/18/2022	6.24	2000	26500	5598.26	18240	266	296.8	4536	BDL	555.56	BDL	2378	1275	5.96	63.65	333.44	BDL	5.2
2		SW-17	21°41'50.9"N 72°37'43.0"E	4/20/2022	6.72	375	8040	1549.52	4696	222	80.13	583.36	0.5	109.49	BDL	1618.2	144	1.56	16.76	112.08	BDL	4.78
3		SW-17	21°41'50.9"N 72°37'43.0"E	5/4/2022	7.48	500	6220	1149.64	4192	154	127.62	497.76	1.5	114.12	BDL	49.58	199.3	1.72	11.33	134.49	BDL	BDL
1	Pumping Station - Vilayat	SW-13	21°46'27.8"N 72°52'26.0"E	4/18/2022	7.24	500	25800	874.73	24474	112	1.18	645.12	BDL	80.64	BDL	12956	247.8	3.34	70.86	16.25	BDL	9.86
2		SW-13	21°46'27.8"N 72°52'26.0"E	4/20/2022	7.3	175	13490	799.75	8804	44	2.96	261.89	BDL	40.98	BDL	3139	21.48	4.89	48.17	5.604	BDL	14.63
3		SW-13	21°46'27.8"N 72°52'26.0"E	5/4/2022	7.39	250	19480	1149.64	15990	318	4.74	363.12	BDL	45.38	BDL	8651	46.6	8.63	66.36	61.69	BDL	BDL
1	Pumping Station - D	SW-15	21°39'58.2"N 72°32'55.5"E	4/18/2022	8.14	100	20900	2799.13	14462	14	24.34	161.28	5.6	20.16	BDL	5717	19.8	BDL	65.38	30.26	BDL	1.33
2		SW-15	21°39'58.2"N 72°32'55.5"E	4/20/2022	7.68	100	15920	2299.29	10694	22	25.52	134.91	4.6	23.18	BDL	4345	74.5	BDL	29.38	67.24	BDL	BDL
3		SW-15	21°39'58.2"N 72°32'55.5"E	5/4/2022	8	100	17600	3049.05	12180	282	19.58	155.9	5.1	29.24	BDL	171.52	48.2	0.249	59.88	25.77	BDL	BDL

Round	Location Code	Phenol	Cyanide	Anionic Surfactant (MBAS)	Arsenic	Boron	Cadmium	Copper	Iron	Lead	Nickel	Manganese	Mercury	Selenium	Total Chromium	Zinc	Total Hardness	Calcium Hardness	Magnesium Hardness	Chlorine Residual	Fluoride	Nitrite	Odour	Vanadium	Total Coliforms	Faecal Coliforms
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TON	mg/L	MPN/100 ml	MPN/100 ml
1	FDP	3.3	0.028	2.4	BDL	0.504	BDL	0.04258	2.507	BDL	0.03134	0.21936	BDL	BDL	0.08137	1.385	1260	960	300	BDL	BDL	0.29	17	0.10493	1600	1600
3	FDP	27.1	0.194	6.8	BDL	2.29	BDL	0.48046	1.55	0.00551	0.0484	0.55362	BDL	BDL	0.02108	BDL	2600	2300	300	BDL	0.867	0.145	35	0.15079	1600	1600
1	SW-14	20.6	0.092	5.8	BDL	0.488	BDL	0.46933	2.32	BDL	0.04752	0.35275	BDL	BDL	0.09002	0.651	2300	1950	350	BDL	BDL	0.13	70	BDL	1600	9
3	SW-14	13.6	0.332	3.4	BDL	0.432	BDL	0.32749	2.15	0.00552	BDL	0.35449	BDL	BDL	0.06436	1.687	1400	1150	250	BDL	0.132	0.002	50	0.02831	1600	350
2	SW-14	16.3	BDL	5.8	BDL	0.596	BDL	0.68003	3.71	BDL	0.05517	0.26698	BDL	BDL	0.09623	1.472	1350	1000	350	BDL	BDL	0.095	50	0.1622	1600	1600
1	SW-16	14.4	BDL	0.6	BDL	30.737	BDL	0.16085	1.274	0.00569	0.10014	0.7239	BDL	BDL	BDL	BDL	1600	1400	200	BDL	BDL	0.12	17	BDL	900	900
2	SW-16	37.6	0.108	5.4	0.00628	BDL	BDL	0.05365	0.801	BDL	0.02549	0.09286	BDL	BDL	0.01556	0.527	1400	1100	300	BDL	BDL	0.336	35	0.0851	BDL	BDL
3	SW-16	32.3	1.4	7.4	0.00539	0.497	BDL	1.52898	2.373	0.01188	0.03243	0.50034	BDL	BDL	0.03777	1.703	1700	1400	300	BDL	0.137	0.046	50	BDL	1600	500
1	SW-17	25.1	0.112	>2	BDL	0.785	BDL	0.13414	5.058	0.00571	0.01184	0.40593	BDL	BDL	0.03159	BDL	1150	1000	150	BDL	BDL	0.52	50	BDL	1600	1600
2	SW-17	2.6	BDL	3.8	BDL	BDL	BDL	1.90981	2.098	0.02162	0.11224	0.07757	BDL	BDL	BDL	BDL	850	800	50	BDL	0.244	0.08	17	0.10459	1600	1600
3	SW-17	3.2	BDL	3.2	0.00735	BDL	BDL	1.0167	1.35	0.04414	BDL	0.09178	BDL	BDL	BDL	0.225	1150	1050	100	26.58	1.51	7.65	8	0.11391	1600	80
1	SW-13	1.5	0.024	1.2	BDL	BDL	BDL	0.02738	4.779	0.00564	0.05827	0.5396	BDL	BDL	0.1518	5.141	1300	1000	300	BDL	BDL	0.1	50	0.01227	1600	8
2	SW-13	0.9	BDL	1.2	BDL	BDL	BDL	BDL	1.854	BDL	0.0342	0.17272	BDL	BDL	0.06748	2.745	700	450	250	BDL	0.966	0.19	17	0.04695	1600	17
3	SW-13	0.8	BDL	1.4	BDL	BDL	BDL	0.00616	1.712	BDL	BDL	0.26951	BDL	BDL	0.06481	2.77	1000	750	250	BDL	3.232	1.41	8	0.03302	1600	1600
1	SW-15	1.4	BDL	1	BDL	BDL	BDL	0.01382	0.524	BDL	BDL	0.12487	BDL	BDL	BDL	BDL	850	750	100	BDL	0.6	0.0198	2	BDL	1600	1600
2	SW-15	0.62	BDL	1.4	BDL	BDL	BDL	0.01971	0.237	BDL	BDL	0.17803	BDL	BDL	BDL	BDL	1900	450	1450	1.77	1.037	2.21	1	BDL	1600	170
3	SW-15	1.9	BDL	1.4	BDL	BDL	BDL	0.01839	1.304	BDL	BDL	0.07339	BDL	BDL	BDL	BDL	850	750	100	BDL	2.356	0.236	1	0.07093	1600	350

Round	Location Code	α-BHC	β-BHC	γ-BHC/Lindane	δ-BHC	Aldrin	EBDOSULFAN-I (α)	EBDOSULFAN-II (β)	EBDOSULFAN-Sulfate	4,4'-DDE	4,4'-DDD	4,4'-DDT	Anthracene	Benzo(a) pyrene	Naphthalene
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1	FDP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	FDP	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
1	SW-14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	SW-14	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
2	SW-14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1	SW-16	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	SW-16	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	SW-16	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
1	SW-17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	SW-17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	SW-17	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
1	SW-13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	SW-13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	SW-13	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
1	SW-15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	SW-15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	SW-15	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Meghmani Organic Ltd are operating industrial unit at Plot No. CH-1, CH-2/A, D-2/CH 10/A, GIDC Dahej, Dahej, Tal: Vagra, Dist Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 01/08/2025 for manufacturing of 2,4 D Amine, 2,4 D Acid, Cypermethrin etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 16.11.2021 & 17.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The analysis results of samples of final treated wastewater to GIDC drain exceeds GPCB discharge norms as below:

Parameters (mg/l)	Outlet of ETP to GIDC drain	GPCB Discharge Standards as per CCA
TSS	1248	100
Sulphides	7.2	5
BOD (3 days at 27°C)	880	100
COD	3964	250
Phenolic Compounds	312	5

2) During re-visit, sample was collected from final outlet of ETP and the analysis result of the same again reveals concentration of COD, BOD, TSS, Sulphide, Nitrate nitrogen exceeding discharge norms.
3) During re-visit to the ETP area, it was observed that the industry was diluting treated wastewater in treated wastewater holding tank through fresh raw water from a 4 inch pipeline. The 4 inch pipeline originated from an idle 30 KL tank near the ETP, wherein fresh raw water was being stored through another 2 inch pipeline.
4) The analysis results of accumulated contaminated wastewater in form of ponding on open ground behind ETP even exceeds GPCB discharge norms as below. Such high concentration of organic contamination reveals that the leakages/spillages from HDPE drums containing phenol based wastewater/chemicals and haphazard storage of hazardous waste has led to accumulated contaminated wastewater ponding.

Parameters (mg/l)	Contaminated water ponding behind ETP	GPCB Discharge Standards as per CCA
COD	405	250
Phenolic Compounds	37	5

5) Accumulation of contaminated wastewater with very high concentration of phenol on open land has potential to contaminate soil & groundwater.
6) The industry has stored about 800 MT of hazardous waste in haphazard manner inside the premises out of more than 6000 MT hazardous waste stored inside the industry. The hazardous wastes are stored in open land such as internal roads, open ground etc.

7) About 200 MT of phenol based hazardous waste (Chlorophenol) in more than 1000 HDPE drums were stored on open ground inside the premises of the industry. Leakages from the drums on open ground were observed during visit.
8) Haphazard storage of hazardous wastes (in solid and liquid form) lead to severe contamination of soil and groundwater in the area.
9) The display board was not updated.
10) Intense odour of phenol based VOCs was observed in and around the industry during visit.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall operatephenol recovery plant effectively toreduce phenol concentration in its treated wastewater.
2) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
3) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
4) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
5) Unit shall practice only single treated industrial effluent discharge point.
6) Unit shall immediately remove effluent dilution and bypass arrangements in ETP.
7) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
8) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
9) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
10) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
11) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
12) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
13) Unit shall comply all conditions mentioned in CCA judiciously.
14) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

NO: GPCB/BRCH-B-CCA-20(19)/ID: 11267/ Date: /03/2022

Issued to:
M/s. Meghmani Organic Ltd.
Plot No. CH-1, CH-2/A, D-2/CH 10/A,
GIDC Dahej, Tal: Vagra, Dist Bharuch

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
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Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Hemani Industries Ltd are operating industrial unit at Plot No. CH-5,E-362 GIDC Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 14.07.2025 for manufacturing of CMAC (D. V. Tech), MPBD, Deltamethrin Tech etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The industry is discharging wastewater to GIDC drain without complying with CCA discharge norms as below:

Parameters (mg/l)	Final Outlet to GIDC drain	GPCB Discharge Standards as per CCA
Nitrate Nitrogen	64.1	50
COD	356	250

2) The installed capacity of incinerator is 30 KLD however as per CCA, generation and disposal of 50 KLD of high COD wastewater through incinerator is permitted. The installed capacity of incinerator is less than the permitted quantity.
3) Foaming and scum deposition at the top of clarifier was observed.
4) Huge quantity of Hazardous waste found stored inside the storage shed and also haphazardly stored outside the shed. Stock of about 2500 MT of MEE salt, 200 MT of ETP sludge stored for disposal of CHWTSDF.
5) Drums containing incinerable HW (more than 500 drums) found stored in open area inside the premises. Physical conditions of some of the drums were dilapidated/corroded. In total about 100 MT of hazardous waste were found stored haphazardly at various locations inside the premises of the industry.
6) Acidification of stream of wastewater generating from CMAC plant containing high COD need to be carried out to separate residue (high organic tarry type sludge) in the collection tank. However it was observed that the industry carry out such operation manually.
7) The said tanks when opened emit huge VOCs. The drains carrying such wastewater are also open. VOC odour and eye irritation felt.
8) Manual handling of such high organic residue, addition of acid, working in hazards condition without proper safety needs improvement. One of the VOC meter provided near the area showing 282ppm in the meter and Hydro carbon meter was not operational.
9) Physical condition of collection tank of CMAC plant wastewater was found corroded. Spillage of residue and wastewater observed near the plant.
10) Records for the generation of such high COD wastewater was not maintained by the unit. Records of treatment and disposal of individual such streams at MEE feed tank were also not maintained properly.
11) There was an accident of fire at the MEE feed tank to one 100 KLD MEE. This may be due to high organic/solvent accumulation in the MEE feed tank. Unit is not maintaining proper records of generation and operation of MEE to avoid such accidents in future.

12) The unit has provided hazardous waste storage sheds for storage of MEE salt and ETP sludge. Handling and storage hazardous waste found unsatisfactory in view of spillage of colored wastewater, no proper provision for collection of leachate and runoff from the storage area etc.
13) Leakages from pump glands and spillage observed on floor in MEE area and other plant area inside the premises.
14) It was observed that the industry was sending drums containing HW to CHWTSDF loaded in the truck. It was found that the drums were not labeled with the type, quantity and category of HW.
15) The display board was not updated.
16) As per condition of CCA "the unit shall be required to make storage facilities to store the effluent for atleast 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", However, the industry has provided only one storage tank of 350 KL capacity against the required capacity of 1292 KL (the permitted discharge quantity is 646 KLD).
17) Online connectivity of OCEMS to GPCB/CPCB is not provided.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall enhance capacity of incinerator.
4) Unit shall provide separate flow meters and energy meters for ETP, MEE, incinerator and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
5) Unit shall practice only single treated industrial effluent discharge point.
6) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
7) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
8) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
9) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
10) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
11) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan.
12) Unit shall comply all conditions mentioned in CCA judiciously.
13) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-33(20)/ID:12155/ Date: /03/2022

Issued to:
M/s. Hemani Industries Ltd.
Plot No. CH-5,E-362 GIDC Dahej,
Tal: Vagra, Dist: Bharuch

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Meghmani Industries Ltd are operating industrial unit at Plot No: Z-6, SEZ, Dahej, Tal: Vagra ,Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 22/05/2026 for manufacturing of Petromate Yellow 07, Atrazine, Propanil, Atrazine, Propanil, Tebuconazole etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Unit is not complying to wastewater discharge standards as below:

Parameters	Final Outlet to GIDC drain	Storm water drain discharge	Contaminated water pond	GPCB Discharge Standards as per CCA
pH	7.31	11.13	8.65	5.5-9.0
TSS (mg/l)	24	602	158	100
Ammonical Nitrogen (mg/l)	123.2	1.12	3.36	50
BOD (3 days at 27°C) (mg/l)	35	99	291	100
COD (mg/l)	158	516	1476	250

2) Treated wastewater from final outlet of ETP is not meeting norms even after dilution of treated wastewater through steam condensate of steam received from boilers of two nearby units and cooling water blow down.
3) Run off from the process area/ETP area was finding its way to the open plot leading to formation of pond of contaminated water. The analysis result of sample of pond reveals high organic contamination and even exceeds GPCB wastewater discharge norms.
4) Rainwater runoff from process area, hazardous waste storage and MEE area were flowing to storm water drains. Further, the contaminated water in the storm water drains was being discharged outside the premises to GIDC storm water drain. The GIDC storm water drains ultimately discharge into estuarine zone of River Narmada.
5) Proper provision for collection and treatment of such contaminated water flowing through storm water drain is not provided by unit.
6) The hazardous waste storage facility provided is inadequate. Various types of wastes such as glass wool insulation, solid waste etc. were dumped on the open land besides boundary wall.
7) Formation of contaminated wastewater ponding over open ground due to haphazard way of handling hazardous wastes in the premises of the industry has potential to contaminate soil and groundwater in and around the premises of the industry.

8) Unit has not provided flow meters for stripper condensate and ATFD condensate.
9) Approx.1000 MT of hazardous waste were stored in hazardous waste storage yard.
10) Three way valve to restrict discharge of effluent having parameters beyond standards is non-operational.
11) The chlorine gas tonner/vessel was being used without any covered shed, provision of chlorine gas sensors, and any other requisite safety precautions.
12) Unit has not provided analyzers/devices for OCEMS.
13) Unit has not updated display board having information related with hazardous waste handling and other relevant information at the entrance gate.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall take adequate measures to prevent soil and ground water contamination.
4) Unit shall take adequate measures to prevent leakage/seepage of wastewater or leachate of hazardous wastes flowing to storm water drain.
5) Unit shall provide appropriate facility for pumping and treating contaminated water of storm water drains.
6) Unit shall provide separate flow meters and energy meters for ETP, ATFD and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
7) Unit shall practice only single treated industrial effluent discharge point.
8) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
9) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
10) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
11) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
12) Unit shall provide adequate safety measures for handling and use of Chlorine which is toxic gas.
13) Unit shall provide OCEMS and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
14) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan.
15) Unit shall comply all conditions mentioned in CCA judiciously.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

16) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-26(12)/ID:12286/ Date: /03/2022

Issued to:
M/s. Meghmani Industries Ltd.
Plot No: Z-6,
SEZ, Dahej,
Tal: Vagra , Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s Insecticides India Ltd are operating industrial unit at Plot No. CH-21, GIDC Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 30/03/2026 for manufacturing of Attrazine, Chlorpyriphos etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The industry is discharging wastewater to GIDC drain without complying with CCA discharge norms as below:

Parameters	Final Outlet to GIDC drain	GPCB Discharge Standards as per CCA
Nitrate Nitrogen (mg/l)	128.2	50

2) Both the MEE and incinerator were found not in operation.
3) Installed capacity of existing MEE is less than the high COD wastewater generation mentioned in the CCA.
4) More than 800 drums (200lt capacity each) about 160MT containing incinerable HW/ products/In-process material found stored in open area inside the premises.
5) The drums were kept without proper nomenclature. Seepage observed from bottom of drums at many places.
6) As per condition of CCA, "the unit shall be required to make storage facilities to store the effluent for at least 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", However, the industry has provided only one storage tank of 100 KL capacity against the required capacity of 164 KL (the permitted discharge quantity is 82.2 KLD).
7) The display board was not updated.
8) TOC meter provided at final outlet was found not in operational. Connectivity of OCEMS to GPCB/CPCB is not provided.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall operate ETP effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall enhance capacity of MEEs.
4) Unit shall provide separate flow meters and energy meters for ETP, MEE, incinerator and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.

5) Unit shall practice only single treated industrial effluent discharge point.
6) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
7) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
8) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
9) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan.
11) Unit shall provide OCEMS and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
12) Unit shall comply all conditions mentioned in CCA judiciously.
13) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-19(5)/ID: 13153/ Date: /03/2022

Issued to:
M/s Insecticides India Ltd.
Plot No. CH-21,
GIDC Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Gujarat Fluorochemicals Ltd are operating industrial unit at Plot No: 12-A, GIDC Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 16/02/2022 for manufacturing of Chloroform, Methylene Dichloride, Sulphuric Acid (70%-80%), etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 26.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The final treated wastewater discharged into the GIDC drain exceeded GPCB CCA standards as below:

Parameters (mg/l)	Final Outlet to GIDC drain	GPCB Discharge Standards as per CCA
BOD (3 days at 27°C)	**122**	100
COD	**620**	250

2) Unit has not provided flowmeters at wastewater inlet streams at ETPs.
3) The fly ash from captive power plant and Calcium chloride were found stored haphazardly in the industry near CPP.
4) Poor handling of coal dust, fly ash and calcium chloride was observed in the premises.
5) Housekeeping is observed poor.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, RO and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall adopt good housekeeping practices.
8) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.

9) Unit shall explore possibilities to utilize or sell calcium chloride produced to actual end users by making MOU and through GPS mounted vehicles instead of disposing it in CHWTSDF.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-1080(21)/ID: 15136/ Date: /03/2022

Issued to:
M/s. Gujarat Fluorochemicals Ltd.
Plot No: 12-A,
GIDC Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer - Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Meghmani LLP (Unit-II) are operating industrial unit at Plot No: Z-34, Dahej SEZ, Dahej, Tal: Vagra ,Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 18/11/2024 for manufacturing of Pigment Red – 122, Pigment Violet – 19, Pigment Violet – 23 etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 16.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results reveals that the samples collected from the final treated waste water discharge tank exceeds the discharge limit prescribed by the GPCB as below:

Name of the Parameters (mg/l)	Final Treated Waste water Disposal Tank	GPCB Standard Limit for Discharge
TSS	**322**	100
COD	**257**	250

2) The equalization tank-1 of ETP was observed with large quantity of sludge deposition.
3) Floating sludge & flocks was observed in the laundering of primary as well as of secondary clarifier. Also, foaming in aeration tank-2 was observed.
4) Large quantity of ETP sludge was stored in the sludge storage shed as well as some quantity in open space near the ETP Equalization tank. Some sludge was also spread into the Equilization tank of ETP. Industry has not provided leachate collection system with Sludge storage area for collection of leachate.
5) OCEMS is not connected with CPCB/GPCB's server.
6) Unit has not updated the information related with hazardous waste handling and other relevant information on the display board at the entrance gate of the industry.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.

7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall connect OCEMS with GPCB/CPCB server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-137(6)/ID:23693/ Date: /03/2022

Issued to:

M/s. Meghmani LLP (Unit-II).
Plot No: Z-34,
Dahej SEZ, Dahej,
Tal: Vagra ,Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer - Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

2092

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Meghmani Limited Liability Partnership, are operating industrial unit at Plot No: D-2/CH-3, GIDC, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 16/06/2022 for manufacturing of Paracetamol and Para Amino Phenol.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 17.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The industry in non-complying to CCA discharge standards as below:

Parameters	Final treated wastewater holding tank of ETP	GPCB Discharge Standards as per CCA
pH	9.28	5.5-9.0

2) Online connectivity of OCEMS to GPCB/CPCB is not provided.
3) As per condition of CCA, "the unit shall be required to make storage facilities to store the effluent for atleast 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", however, the industry has provided only one storage tank of 95 KL capacity against the required capacity of 790 KL (the permitted discharge quantity is 395 KLD).
4) Looking to the manufacturing process (mass balance), last six month production data, waste water generation data and dilute acetic acid generation, the data submitted by unit is contradictory, as unit has shown less generation of wastewater and acetic acid.
5) On verifying the records of selling of dilute acetic acid, it was observed that unit is selling it to unauthorized industries without MoU and without proper manifest system of GPCB i.e. through "XGN portal".
6) Unit has provided uncovered sludge drying beds and overflow of sludge drying bed to nearby road and storm water drain was observed.
7) Unit has not updated display board at the entrance gate of the industry with information related with hazardous waste handling and other relevant information.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.

6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall operate OCEMS regularly and connect it to GPCB/CPCB's server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-45(9)/ID:23703 / Date: /03/2022

Issued to:
M/s. Meghmani Limited Liability Partnership.
Plot No: D-2/CH-3,
GIDC, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Aries Colorchem Pvt Ltd are operating industrial unit at Plot No: Z/29 ,Z/30,Dahej SEZ Part I, Dahej, Tal: Vagra ,Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 29/04/2023 for manufacturing of Acid Black 210, DASA etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 16.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The final outlet of treated wastewater to GIDC drain exceeds CCA discharge standards as below:

Parameters	**Final Outlet to GIDC drain**	**GPCB Discharge Standards as per CCA**
Nitrate Nitrogen (mg/l)	97.7	50

2) Unit has not provided flow meter at wastewater inlet to ETP and at MEE condensate reused in the process.
3) Hazardous waste stored in a facility without leachate collection and pumping facility to ETP for treatment.
4) Connectivity of OCEMS to GPCB/CPCBserver is not provided.
5) Unit has not updated the information related with hazardous waste handling and other relevant information on the display board at the entrance gate of the industry.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.

7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall connect OCEMS with GPCB/CPCB server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-58(4)/ID: 29376/ Date: /03/2022

Issued to:

M/s. Aries Colorchem Pvt Ltd.
Plot No: Z/29 ,Z/30,
Dahej SEZ Part I, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Sun Pharmaceuticals Pvt Ltd are operating industrial unit at Plot No: Z-15, SEZ, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 16/03/2023 for manufacturing of Mesalamine, Metformin Hydrochloride, Atorvastatin Calcium, Dolutegravir Sodium etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The analysis results of final outlet of treated wastewater to GIDC drain exceeds CCA discharge standards as below:

Parameters (mg/l)	Final Outlet to GIDC drain	Discharge Standards as per CCA
Fluorides	30	15
Nitrate Nitrogen	254.1	50

2) Aeration tank II, Stripper, MEE, VTFD, Trickling Filter were not operational.
3) The industry has not provided flow meter at wastewater inlet to ETP.
4) About 50 MT of hazardous waste was stored in jumbo bags in open land such as internal roads etc. outside the hazardous waste storage facility.
5) Leachate seepages from the hazardous waste flowing to open ground near roads and storm water drain was observed. Leachate seepages from the wastes flowing to open ground and storm water drains has potential to contaminate soil and ground water in around the premises of the industry.
6) The hazardous waste handling at the industry is poor.
7) The display board was not updated.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.

4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
8) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
9) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-71(3)/ID:30340/ Date: /03/2022

Issued to:
M/s. Sun Pharmaceuticals Pvt Ltd.
Plot No: Z-15,
SEZ, Dahej, Tal: Vagra,
Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara...............for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch...............................for kind information and necessary action pl.

2098

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. NOCIL Ltd are operating industrial unit at Plot No: 12/A/1 & 13/B, GIDC , Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 26/09/2024 for manufacturing of 4-AminoDiphenyl Amine (4 ADPA), N-1,3 Dimethyl Butyl-N-Phenyl-P-Phenylenediamines (Pilflex-13) etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 26.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The analysis results reveals that final treated waste water samples collected from final pumping station and from final treated discharge tank at industry premises exceeds the standard limit for discharge as below:

Parameter	Final treated Effluent from discharge tank of ETP	Final treated effluent discharge point at FPS	GPCB standard Limit
COD	377 mg/l	322 mg/l	250 mg/l

2) The present hydraulic capacity of the ETP (250 KLD) is very less as compared to the total wastewater generation (250 KLD) which violates the conditions as per CCA.
3) Unit has not provided controlled dosing of Chlorine in closed system with venture for proper cavitation and proper treatment treatment. Details of Hydraulic capacity of treatment is not furnished.
4) The present practice of treatment of treated wastewater from hydro cavitation plant and untreated waste water from cooling tower and boiler blow down water through pressure sand filter of same 250 KLD ETP is not adequate.
5) Unit has not provided storage shed with proper covering to avoid ingress of rain water which may result in contaminated runoff from such storage.
6) ETP sludge and some process waste/process residue drums were also found kept in open area.
7) Unit has not installed flow meter at the collection pits of respective plant and not maintaining the proper record in logbooks.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall enhance capacity of ETP in order to treat effluent quantity as per CCA.

4) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
5) Unit shall practice only single treated industrial effluent discharge point.
6) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
7) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
8) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
9) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-54(6)/ID:31700/ Date: /03/2022

Issued to:

M/s. NOCIL Ltd.
Plot No: 12/A/1 & 13/B,
GIDC, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer - Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Bharat Rasayan Ltd are operating industrial unit at Plot No.42/4, GIDC, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 11/10/2022 for manufacturing of Meta Phenoxy Benzaldehyde, Cypermethrin Technical, Alpha Cypermethrin, Bifenthtin etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 16.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The analysis results of sample collected from storm water drain reveals high concentration of analyzed parameters as below:

Parameters	from main storm water drainage of unit within premises	from storm water drainage near plant a of MPBD plant	GPCB Discharge Standards as per CCA
pH	5.89	12.03	5.5-9.0
TSS	16040	268	100
Sulphides	72	9.12	5
Ammonical Nitrogen	742	14	50
TKN	803.6	19	50
Nitrate Nitrogen	78.86	117.9	50
BOD (3 days at 27°C)	4360	2295	100
COD	19065	7463	250
Phenolic Compounds	105.5	33.58	5

All parameters are in mg/l except pH.

2) Unit has not provided permanent provision for collection of wastewater from storm water drain to ETP. Such condition of high contaminated wastewater into the storm water drain has potential of runoff from storm water drains outside the premises.
3) The storm water drain has accumulated high black colored contaminated wastewater in the portion of main storm water drain from ETP to GIDC fresh water tank inside the premises. Analysis results of the same show high organic contamination.
4) Spillage of acidic wastewater was observed on road area near Plant A area near main storm water drain.

5) Accumulated wastewater in the storm water drain near plant A was found alkaline. The team collected grab sample of wastewater from the drain and found having COD of 13,226 mg/l with pH 11.79. The analyzed parameter shows high organic contamination.
6) Accumulation of wastewater/material in tank farm area was observed at many locations. The accumulated wastewater/material was found acidic at some place and alkaline at some place.
7) Leakage of phenol from the tanker bottom was observed. However, there was no any corrective action taken by the industry.
8) Separate authorization of the generation and disposal of low boiling stream from stripping of high COD wastewater were not taken by the industry.
9) The industry has provided ETP with capacity 300KLD against the permitted generation quantity is 715 KLD as per CCA.
10) Nomenclature, records and reason for many collection tanks and storages were not provided by the industry.
11) VOC odour was sensed around collection tanks, primary treatment section of High COD/ high TDS wastewater, production plant and tank farm area.
12) Acidification of high COD stream of wastewater generating from plant need to be carried out to separate residue (high organic tarry type sludge) in the collection tank. It was observed that the industry carry out such operation manually through nutch filter. The drains were when opened, emission of VOCs and eye irritation were felt near the area.
13) Handling of high organic residue, addition of acid, working in such hazards condition without proper safety were observed. Unit has not provided provision of detection of concentration of VOCs and HCs with safety alarm.
14) Hazardous waste was found haphazardly stored inside the storage shed. The storage shed was covered however leachate collection system is not provided. Stock of about 98.529 MT of process waste/waste residue and about 3000 MT of total landfill able waste were stored.
15) Drums containing HW found stored in open area inside the premises. Physical condition of some of the drums were dilated/corroded and leakage from bottom from some of drums. Some drums were found open from top. In total storage of about 98.529 MT of various HW including drums were found stored outside the shed at various locations.
16) Looking to the site conditions of high COD and Phenolic wastewater into the main storm water drains and mismanagement of HW has potential of soil and ground water contamination in and around the premises.
17) As per condition of CCA, "the unit shall be required to make storage facilities to store the effluent for atleast 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", However, the industry has provided only one storage tank of 200 KL capacity against the required capacity of 1430KL (the permitted discharge quantity is 715 KLD).

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

18) TOC meter provided at final outlet was found defunct. Algal deposition in the capillary tubes of TOC meter was observed.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall enhance capacity of ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall take adequate measures to prevent soil and ground water contamination.
4) Unit shall take adequate measures to prevent leakage/seepage of wastewater or leachate of hazardous wastes flowing to storm water drain.
5) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
6) Unit shall practice only single treated industrial effluent discharge point.
7) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
8) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
9) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
10) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
11) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
12) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan.
13) Unit shall comply all conditions mentioned in CCA judiciously.
14) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B-CCA-50(13)/ID: 33612/ Date: /03/2022

Issued to:
M/s. Bharat Rasayan Ltd.
Plot No. 42/4, GIDC, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Shiva Pharmachem Ltd are operating industrial unit at Plot No: Z-88,Z-88/4, Dahej SEZ Part I, GIDC Dahej, Dahej, Tal: Vagra ,Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 15/04/2025 for manufacturing of n-Octanoyl Chloride, Pivaloyl Chloride, Chloroacetyl Chloride etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 & 18.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Sample collected from final discharge point exceeds the discharge standard prescribed by GPCB as below:

Name of the Parameter (mg/l)	Final treated Waste water at discharge point	GPCB standard Limit
COD	329	250

2) Industry was found discharging waste water into GIDC drainage system during shutdown period of drainagenetwork by GIDC.
3) The seepage of acidic leachate was observed in one part/corner of the hazardous waste storage shade.
4) Unit has not provided proper leachate collection facility for the collection of leachate and requisite proper arrangements for sending it to ETP for treatment.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.

8) Unit shall operate OCEMS regularly and connect it to GPCB/CPCB's server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-151(7)/ID:34080/ Date: /03/2022

Issued to:
M/s. Shiva Pharmachem Ltd
Plot No: Z-88, Z-88/4,
DAHEJ SEZ PART I, GIDC Dahej Dahej,
Tal: Vagra ,Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.
2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch..... .....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Meghmani Organics Limited (Unit-8) are operating industrial unit at Plot No: Z-31, Z-32, Dahej SEZ Part- 1, Tal. Vagra, Dahej, Dist. Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 17/04/2023 for manufacturing of CPC Blue, Alpha Blue etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results reveals that the samples collected from the final treated waste water discharge tank exceeds the discharge limit prescribed by the GPCB as below:

Name of the Parameter	Final Treated Waste water Disposal Tank	GPCB Standard Limit for Discharge
COD (mg/l)	310	250

2) All ETP units were filled with wastewater however no flow through ETP units was observed.
3) The storage tanks provided for the storage of MEE feed waste water were found overflowing and entering into pit which leads to the ETP.
4) Chlorination system was not functional and huge quantity of sludge was found deposited in the chlorination tank.
5) Logbook was not maintained for the record of quantity of waste water generated, discharge, ETP sludge generated and disposed etc.
6) The sludge drying beds were observed overflowing and full of ETP sludge.
7) TOC meter installed at final treated waste water discharge line found non-functional.
8) The unit has not provided dedicated storage shed for ETP sludge. Huge quantity of ETP sludge packed in HDPE bags were found stored partly in the closed shed and partly in the open area near the ETP in unorganized way.
9) About 350 MT gypsum sludge and ETP sludge was stored in storage shed provided by the industry and about 400 MT of Gypsum and ETP sludge was found stored in open area in haphazard way in the premises of the unit at various locations.
10) The unit has not provided proper adequate storage area and leachate collection & leachate transfer to ETP facility for ETP sludge and gypsum sludge storage.
11) Leachate from ETP sludge was observed at many places near the ETP area and gypsum sludge flowing on floor observed in the premises
12) The overall housekeeping in the ETP premises as well as in MEE plant area observed very poor in view of hazardous waste handling, wastewater and leachate management.
13) Unit has not provided readable display board at the entrance gate of the industry with updated information related with hazardous waste handling and other relevant information.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
8) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
9) Unit shall operate OCEMS regularly and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-86(7)/ID: 34573/ Date: /03/2022

Issued to:

M/s. Meghmani Organics Limited (Unit-8).
Plot No: Z-31, Z-32,
Dahej SEZ Part- 1,
Tal. Vagra, Dahej, Dist. Bharuch.

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Tagros Chemicals India Ltd are operating industrial unit at Plot No: 43/1, GIDC Estate-Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 14/02/2024 for manufacturing of Sulfentrazone etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 25.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The analysis of samples collected from final discharge point reveals that the samples collected from the final discharge point is not meeting the discharge standard as below:

Name of the Parameters (mg/l)	Final Treated Waste water Discharge Point	GPCB Standard Limit for Discharge
TSS	236	100
COD	303	250

2) The treatment units of primary treatment system of high TDS/COD were observed very corrosive and equalization tank &neutralization tanks were observed full of oily sludge.
3) Leakages and spillages of waste water were observed in the ETP area. Huge quantity of leakages of high TDS/COD waste water were observed in MEE section.
4) The flow meter installed at collection tank at plant and MEE condensate were not operational during the visit. Records for the generation of such high COD/TDS waste water was not maintained properly in the logbook by the industry.
5) The hazardous waste storage shed was observed inadequate as it is fully packed with sludge and MEE salt.
6) The process waste was stored outside the hazardous waste storage shed on concrete flooring.
7) About 900 MT MEE salt and ETP sludge, 35 MT Process distillation residue and 15 MT Spent Sulphuric Acid were stored in the hazardous waste storage area in the industrial premises.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, RO, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.

4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
8) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
9) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN RAGZI)
DY. ENVIRONMENT ENGINEER
Date: /03/2022

NO: GPCB/BRCH-B/CCA-109(13)/ID: 35422/

Issued to:

M/s. Tagros Chemicals India Ltd.
Plot No: 43/1,
GIDC Estate-Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara...............for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.................................for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Pragna Pharma Pvt Ltd are operating industrial unit at Plot No: D2-CH-224, GIDC, Dahej-2, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 31/07/2022 for manufacturing of various organic chemicals.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) As per condition of CCA, "the unit shall be required to make storage facilities to store the effluent for at least 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", However, unit has provided storage tanks of 63 KL capacity against the required capacity of 161 KL (the permitted discharge quantity is 80.5 KLD).
2) Solid residue generated from high COD wastewater is mixed with ETP sludge.
3) TOC meter is not provided at final outlet of ETP.
4) The industry has stored lot of drums (@ 900 nos. of about 200 lt capacity) containing various HW inside the premises at many locations on open ground. Handling and storage hazardous waste found unsatisfactory in view of stored hazardous waste in haphazardly manner and no nomenclature on hazardous waste drums.
5) Huge quantity (about 800 T) of HW found stored in HDPE bags inside the storage shed and near High COD wastewater storage tank.
6) The hazardous waste storage shed is not provided with proper leachate collection and transfer facility. Spillage of leachate from the bags stored near High COD wastewater storage tank was observed.
7) Manual transfer of solvent from tanks to the reactors, usage and handling of chlorine cylinders, storage of other materials and drums containing HW/solvents were found stored in the PESO demarcated area. This may create safety hazards.
8) Unit has not updated display board having information related with hazardous waste handling and other relevant information at the entrance gate.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall operate ETP effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP, MEE and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.

6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-201(4)/ID: 37338/ Date: /03/2022

Issued to:

M/s. Pragna Pharma Pvt Ltd
Plot No: D2-CH-224,
GIDC, Dahej-2, Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara..... .....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C-1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Anagha Chem Pvt Ltd are operating industrial unit at Plot No: D-2/CH-318, GIDC, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 07/09/2022 for manufacturing of various organic chemicals.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) ETP was not in operation. Only collection tank found filled with acidic wastewater. In addition, about 90KL of acidic wastewater was stored in HDPE tanks.
2) The analysis result of the sample collected from the collection tank as below reveals that in present non-operating condition of ETP, the industry will not be able to treat the stored quantity of wastewater.

Parameters	Collection tank of Primary ETP
pH	1.32
BOD (3 days at 27°C)	1346 mg/l
COD	5027 mg/l

3) The records of disposal of wastewater also found not maintained.
4) Management of wastewater treatment and proper disposal as per the condition mentioned in the CCA was not found in practiced by the industry.
5) During inspection, unit has not furnished any details pertaining to present ongoing production, product manufactured, raw material used, wastewater generation, treatment and disposal, hazardous waste generation and disposal etc.
6) The industry using various raw materials which are not mentioned by the industry during CCA application and was manufacturing of products which are not mentioned in the CCA.
7) As per batch process records submitted after visit, it is found that the industry uses many raw materials such as Nitro methyl ester (ODB), Nitro methyl ester (wet material), n-Butanol, Sodium Dithionate, Sodium Hydroxide, DMF Thionyl chloride, Chloro Benzene, 50% NaOH solution, Toluene, Butanol, Methanol etc. without permission from GPCB.
8) As per present and past production data, the industry has been manufacturing products other than CCA.
9) Unit is sending recovered solvent to M/s. Sunsine chemical without permission from GPCB.
10) Hazardous waste is stored in haphazard manner.

11) About 10MT of hazardous waste were stored within premises of unit.
12) TOC meter is not provided at final outlet of ETP.
13) Unit has not provided display board having information related with hazardous waste handling and other relevant information at the entrance gate.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

NO: GPCB/BRCH-B/CCA-119/ID: 39368/ Date: /03/2022

Issued to:
M/s. Anagha Chem Pvt Ltd.
Plot No: D-2/CH-318,
GIDC, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Accent Microcell Pvt Ltd are operating industrial unit at Plot No: Z/59,Z/63,Z/64 ,DAHEJ SEZ PART I, Dahej, Tal: Vagra ,Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 11/01/2025 for manufacturing of Micro Crystalline Cellulose Powder.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 16.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Unit has provided ETP of capacity 250 KLD however as per CCA the industry is permitted to generated and discharge 792 KLD wastewater after treatment in ETP.
2) The industry has provided ETP sludge drying facility of belt press and drying beds on uncovered surface without any facility for leachate collection and pumping to ETP for treatment.
3) OCEMS is not connected to CPCB/GPCB's server.
4) Unit has not updated the information related with hazardous waste handling and other relevant information on the display board at the entrance gate of the industry.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall enhance capacity of ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall connect OCEMS with GPCB/CPCB server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-141(3)/ID:40062/ Date: /03/2022

Issued to:

M/s. Accent Microcell Pvt Ltd.
Plot No:Z/59,Z/63,Z/64 ,
DAHEJ SEZ PART I, Dahej,
Tal: Vagra ,Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

2118

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

GPCB

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s Mehali Papers Pvt Ltd are operating industrial unit at Plot No: D2/11/B/2, GIDC Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 27/10/2026 for manufacturing of uncoated paper etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The industry is discharging wastewater to GIDC drains and using for gardening & sprinkling purposes without complying with CCA discharge norms as below:

Parameters (mg/l)	Final Outlet to GIDC drain	GPCB Discharge Standards as per CCA
BOD (3 days at 27°C)	146	100
COD	703	250

2) Use of wastewater exceeding discharge standards on land for gardening/plantation and sprinkling may lead to contamination of soil and groundwater.
3) The industry has not provided flow meter at wastewater inlet.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
9) Unit shall comply all conditions mentioned in CCA judiciously.
10) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-185(3)/ID: 44406/ Date: /03/2022

Issued to:

M/s. Mehali Papers Pvt Ltd.
Plot No: D2/11/B/2,
GIDC Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Viswaat Chemical Ltd are operating industrial unit at Plot No: D-3/10, GIDC Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 22/05/2024 for manufacturing of Lauryl Alcohol – EO Condensates, Ceto Stearyl Alcohol - EO Condensates, Behnly Alcohol – EO Condensates etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The final treated wastewater of the industry exceeded GPCB CCA standard as below:

Parameters (mg/l)	Final Outlet to GIDC drain (Treated Holding Tank)	GPCB Discharge Standards as per CCA
Nitrate Nitrogen	80.85	50
COD	370	250

2) Unit has not provided flow meter at wastewater inlet.
3) Unit has not updated the information related with hazardous waste handling and other relevant information on the display board at the entrance gate of the industry.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan.
9) Unit shall comply all conditions mentioned in CCA judiciously.
10) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CTE-349/ID: 50449/ Date: /03/2022

Issued to:
M/s. Viswaat Chemical Ltd.
Plot No: D-3/10,
GIDC Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajycti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you GIDC are operating CETP of Dahej Industrial Estate at Plot No: D-2/14/A, GIDC Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 14/01/2025 to operate Common Effluent Treatment Plant (CETP) of capacity 40 MLD.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results of treated wastewater sample collected from final outlet of CETP is not complying discharge norms as below:

Parameters (mg/l)	Final outlet of treated wastewater discharge point of CETP	GPCB Discharge Standards as per CCA
Sulphides	39.84	5
Ammonical Nitrogen	151.2	50
Total Kjeldahl Nitrogen	166.88	50
BOD (3 days at 27 C)	315	100
COD	1250	250

2) CETP is not complying discharge norms since long.
3) CETP is non-functioning since long and the waste water simply flows from inlet chamber to final discharge storage tank without any treatment.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) CETP shall upgrade and operate its treatment units effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
2) CETP shall carry out regular maintenance and proper operation of its treatment units.
3) CETP shall provide SCADA and Atomization system for monitoring, surveillance and discharge control.
4) CETP shall form SPV (Special Purpose Vehicle) for proper operation and maintenance.
5) CETP shall practice only single treated industrial effluent discharge point.
6) CETP shall provide separate flow meters and energy meters and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
7) CETP shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
8) CETP shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.

9) CETP shall operate OCEMS regularly and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
10) CETP shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) CETP shall comply all conditions mentioned in CCA and guidelines for management, operation and maintenance of CETP framed by the CPCB judiciously.
12) **CETP shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CTE-421/ID:50837/ Date: /03/2022

Issued to:

M/s. CETP of Dahej Industrial Estate
Plot No: D-2/14/A,
GIDC Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer - Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch..... .....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Rossari Biotech Ltd are operating industrial unit at Plot No: D-3/24/3, GIDC, Vill-Galenda, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 17/03/2025 for manufacturing of textile and laundry chemicals, construction chemicals etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 27.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) The industry discharges treated wastewater into pipeline leading to CETP Dahej as below:

Parameter (mg/l)	Final Outlet	GPCB Discharge Standards for CETP member industry
TSS	**1192**	300

2) Dissolved Air Floatation system provided in the ETP was not operated since long.
3) The final outlet from ETP of the industry exceeds GPCB discharge norms as per CCA for concentration of Total Suspended Solids.
4) Unit has not provided connectivity of OCEMS to CPCB/GPCB server.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall provide OCEMS and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.

11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is r ot complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control cf Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CTE-445/ID:51169/ Date: /03/2022

Issued to:

M/s. Rossari Biotech Ltd.
Plot No: D-3/24/3, GIDC,
Vill-Galenda,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajycti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Hemani Crop Care Pvt Ltd are operating industrial unit at Plot No: 73-74, GIDC Saykha, Saykha, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 05/10/2025 for manufacturing of Metribuzine, Ethofumesate etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 17.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Unit has not provided OCEMSconnected to GPCB/CPCB server.
2) The High TDS/COD wastewater generated by the industry is directly fed to VTFD without any provision for MEE/stripper.
3) About 40 MT of hazardous waste storedhaphazardly in the premises of the industry spreading in form of dust over open ground, roads etc. has potential to contaminate soil and groundwater in and around the premises of the industry.
4) VTFD condensate (with Temperature about 55 ^{0}C) generated is directly stored in open underground storage pit. High generation of Vapour fumes from the VTFD condensate tank was observed.
5) Near the VTFD area, intense odour of VOCs & Ammonia causing severe irritation to eyes and throat was sensed. The toxic fumes from VTFD condensate has potential to damage health and safety of human population, flora andfauna in and around the premises of the industry.
6) The High COD/TDS stream fed directly to VTFD has concentration of TDS as 3,38,175 mg/l, concentration of COD as 5,686.7 mg/l, concentration of Ammonical nitrogen as 30.5 mg/l, and concentration of sulphate as 2,28,500 mg/l. The Low Boiler % (v/v) (80 ^{0}C -90 ^{0}C) in the High COD/TDS stream is 80%.
7) Dust similar in appearance to VTFD salt & other hazardous waste was observed on road, storm water drains, plants, open ground etc. It was gathered that the dust was highly alkaline similar to VTFD salt.
8) The hazardous waste storage and handling at the industry was inadequate.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej Industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall provide stripper & MEE for treatment of effluent having high concentration of COD and low boilers before being fed to VTFD.
2) Unit shall close VTFD condensate tank with provision for vapour sealing to restrict release of VOCs/ammonia into atmosphere.
3) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
4) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.

5) Unit shall provide separate flow meters and energy meters for ETP, MEE, VTFD and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
6) Unit shall practice only single treated industrial effluent discharge point.
7) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
8) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
9) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
10) Unit shall provide OCEMS and connect it with GPCB/CPCB server as per CPCB's directions/guidelines.
11) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
12) Unit shall comply all conditions mentioned in CCA judiciously.
13) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN BAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CTE-378(3)/ID:52095/ Date: /03/2022

Issued to:
M/s. Hemani Crop Care Pvt Ltd
Plot No: 73-74, GIDC Saykha, Saykha,
Tal: Vagra, Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.
2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, Gandhinagar-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

GPCB

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you M/s. Meghmani LLP (Unit-3) are operating industrial unit at Plot No: D-2/CH-5, GIDC, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 30/03/2026 for manufacturing of Paracetamol etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 26.10.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results of of samples reveals that the sample exceeds the discharge standards as below:

Parameters (mg/l)	from final treated wastewater discharge point of unit (outside premises)	Final treated wastewater holding tank of ETP	GPCB Discharge Standards as per CCA
TSS	274	212	100
Sulphides	17.6	8	5
BOD (3 days at 27°C)	385	247	100
COD	1139	720	250

2) ETP is observed not in operation and effluent was observed stored in collection tank of ETP.
3) Unit has not segregated Low COD and High COD stream segregation of generated wastewater. The analysis results of the sample collected from inlet collection tank shows concentration of COD: 53,939 mg/l and BOD: 20,990 mg/l. Treatment of such high organic load in the present ETP is not possible.
4) As per mass balance data of Paracetamol submitted by unit , 2.625 KL of wastewater and 3.67 KL of acetic acid is generated per MT of Paracetamol production. However as per records, it is found that generation of acetic acid is 0.315 Kl per MT of paracetamol which highly varies with the data of mass balance submitted by the industry.
5) As per condition of CCA, "the unit shall be required to make storage facilities to store the effluent for at least 48 hours by providing acid proof brick lined impervious tanks/ HDPE tanks", However, the industry has provided only one storage tank of 45 KL capacity against the required capacity of 740.6 KL (the permitted discharge quantity is 370.3 KLD).
6) The industry has sold Dilute Acetic Acid (HW) to other industrial units for which MoU and permission status of receiving units was not furnished. Moreover, the industry is sending the HW without following GPCB online manifest system for disposal of dilute acetic acid.
7) Housekeeping is observed poor.
8) Online connectivity of OCEMS to GPCB/CPCB is not provided.

9) Unit has not updated display board having information related with hazardous waste handling and other relevant information at the entrance gate.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics. Unit shall treat high COD/TDS stream by providing appropriate advanced wastewater treatment units (i.e. Stripper, MEE, ATFD etc.).
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
8) Unit shall connect OCEMS with GPCB/CPCB server as per CPCB's directions/guidelines.
9) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
10) Unit shall comply all conditions mentioned in CCA judiciously.
11) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

NO: GPCB/BRCH-B/CTE-525/ID: 65008/ Date: /03/2022

Issued to:
M/s. Meghmani LLP (Unit-3)
Plot No: D-2/CH-5,
GIDC, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME.

WHEREAS, you M/s. Meghmani Novotech Pvt. Ltd are operating industrial unit at Plot No: CH-22, GIDC Estate-Dahej, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 15/01/2026 for manufacturing of BCMB etc.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your unit was inspected by joint team of CPCB & GPCB on 18.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results reveals that the samples collected from the final treated waste water discharge tank exceeds the discharge norms prescribed by the GPCB as below:

Parameters (mg/l)	Final Treated Waste water Discharge Tank	GPCB Standard Limit for Discharge
TSS	112	100
COD	375	250

2) The effluent collection pit provided in the process plant was found completely full with acidic wastewater however ETP was not in operation.
3) Huge quantity of Process residue waste/ Off specification chemical materials keeping in drums without any labelling stored in haphazard manner at various locations was observed. Proper hazardous waste storage area is not provided for the same.
4) Process waste and ETP Sludge was found in mix up condition in various locations on open land within premises.
5) Huge quantity of process residue/cleaning materials and off specification process distillation residue waste were stored at the various locations in plant premises in haphazard manner without any safety and security consideration.
6) About180 MT process distillation residue,30 MT dilute sulphuric acid,290 MT spent $ZnCl_2$ solution and 60 MT ETP sludge were stored in the ETP and plant premises.
7) Hazardous waste was stored since January 2021 means more than 10 months while as per hazardous waste management rules 2016 hazardous waste cannot be stored more than 90 days.
8) The drums filled with hazardous waste were not labeled with the category and name of waste and the condition of the drums was very poor and most of the drums were observed leakages and spillages of hazardous waste and contaminating the nearby unpaved /raw land surfaces.
9) Leakages from the drums, spread out of leachate from the sludge as well as from the drums on the un-impervious ground and acidic , suffocating fumes were observed during the visit.

10) Construction work was going on and digging of the land at many places were observed in the industrial premises. In such a situation, soil and ground water contamination cannot be ruled out by the leakages and spreading of hazardous waste on the ground.
11) Connectivity of TOC analyzer is not provided with the server of GPCB and CPCB.
12) The industry has not provided display board at the gate of the premises.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) Unit shall carry out proper effluent stream segregation and treat each stream based on its quality/characteristics.
2) Unit shall upgrade ETP and operate it effectively & efficiently in such a way that treated effluent always confirms discharge norms prescribed in the CCA.
3) Unit shall provide separate flow meters and energy meters for ETP and color coding of all pipeline networks of wastewater within the premises of Industries with flow directions and nomenclatures.
4) Unit shall practice only single treated industrial effluent discharge point.
5) Unit shall handle, store and dispose various types of hazardous waste as per the Hazardous & Other Waste (Management and Handling) Rules, 2016.
6) Unit shall provide adequate in-house HW storage facility with roof, covered from all sides, impervious flooring and leachate management system.
7) Unit shall immediately dispose off solid and liquid hazardous waste stored inside the premises as per CCA condition.
8) Unit shall take adequate measures to prevent leakage, spillage while handling toxic, volatile and hazardous chemicals/wastes.
9) Unit shall operate OCEMS regularly as per CPCB's directions/guidelines.
10) Unit shall immediately take corrective measures for above non-compliances and submit compliance report/ time bound action plan for it.
11) Unit shall comply all conditions mentioned in CCA judiciously.
12) **Unit shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

NO: GPCB/BRCH-B/CCA-272/ID: 70267/ Date: /03/2022

Issued to:

M/s. Meghmani Novotech Pvt. Ltd.
CH-22, GIDC Estate-Dahej, Dahej,
Tal: Vagra, Dist: Bharuch.

Copy to:

1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.

2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

2134

SHOW CAUSE NOTICE

PCB ID : 18808

Legal ID : 47368

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 26/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

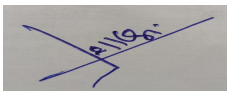
Reason :

(1) Display board was not displaying the details. (2) Unit has not provided flow meter to RO feed.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637627 , 05/04/2022

Deepak Phenolics Limited(Dpl),
p.no. 12/B/1,, GIDC,
Dahej,
Dahej,
Dist : Bharuch, Tal : Vagra, SIDC : Dahej
Phone : 7567883447

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

SHOW CAUSE NOTICE

PCB ID : 30328

Legal ID : 47370

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Air , Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 26/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Air , Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

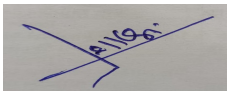
Reason :

(1) VOC odour and eye irritation felt near oil & grease treatment unit of ETP. (2) The stack attached to Effluent Collection Treatment System (for fugitive emission) not provided with stack monitoring facility. (3) Unit has not provided proper hazardous waste storage shed. (4) Hazardous waste i.e. Tarry waste, waste/residue contaminated with oil, used resin and process residue was found stored inside a temporary shed without proper impervious flooring and leachate collection facility. Seepage was observed from some of the drums. (5) Hazardous waste details are not updated.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under section 31(A) read with section 21 of the Air (Prevention and Control of Pollution) Act, 1981
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637611 , 05/04/2022

Ongc Petro Additions Ltd, Opal- Petrochemical Complex,
---, vill: ambheta,
Ta: Vagra,
Ambhetha,
Dist : Bharuch, Tal : Vagra, SIDC : Dahej
Phone : ---

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

2136

SHOW CAUSE NOTICE

PCB ID : 33323

Legal ID : 47372

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous **Show Cause Notice DATE : 05/04/2022**

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 27/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

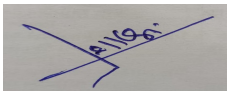
Reason :

(1) Large quantity of ETP sludge (About 616 MT) was stored in the temporary shed provided with no provision of proper leachate collection facility. Seepages from stored sludge observed. (2) The overall housekeeping in the ETP area found unsatisfactory. (3) The reading of Magnetic flow meter installed at the final discharge line was not matching with the record mentioned in the logbook of last discharged treated waste water. (4) Display board was not updated.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637622 , 05/04/2022

Indofil Industries Limited (Previously Indofil Chemicals Company),
z-8, DAHEJ SEZ LTD, ---,
Dahej,
Dist : Bharuch, Tal : Vagra, SIDC : SEZ1
Phone : -

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

SHOW CAUSE NOTICE

PCB ID : 35477

Legal ID : 47363

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous **Show Cause Notice DATE : 05/04/2022**

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 26/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

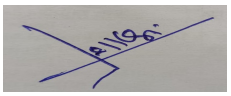
Reason :

(1) Proper records of ETP operation and discharge of wastewater into the final pumping station was not maintained. (2) Flow meter is not provided at inlet of ETP. (3) The current flow meter readings were not matching with the last discharge of waste water into GIDC pumping station. (4) Hazardous waste and other relevant information were not updated on Display board. (5) Large quantity of ETP sludge / MEE salt (about 1000 MT) and Stripped out material (about 10 MT) were stored in the storage shed without leachate collection facility. Leachate was observed in the hazardous waste storage shed. (6) Huge quantity of contaminated drums and bags were stored in the hazardous waste storage area and in open space.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637628 , 05/04/2022

Deepak Nitrite Limited,
12/B, GIDC Dahej,
Dahej,
Dist : Bharuch, Tal : Vagra, SIDC : Dahej
Phone : 02641266703

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

2138

SHOW CAUSE NOTICE

PCB ID : 38129

Legal ID : 47374

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 27/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

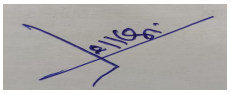
Reason :

(1) ETP was found non-functional. Unit is not operating ETP. (2) Unit has not provided flow meter at the inlet of ETP. Unit is not maintaining records for the disposal of wastewater through tankers to CETP. (3) Unit has not provided HW display board at the entry gate of the premises.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637620 , 05/04/2022

Magxid Fine Chem,
PLOT NO D-2/CH-323 ,GIDC ,DAHEJ., GIDC ,DAHEJ.,
GIDC ,DAHEJ,
Dahej,
Dist : Bharuch, Tal : Vagra, SIDC : Dahej2
Phone : -

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

SHOW CAUSE NOTICE

PCB ID : 36507

Legal ID : 47373

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous **Show Cause Notice DATE : 05/04/2022**

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 17/11/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

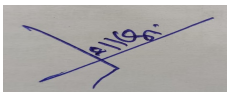
Reason :

(1)The sample collected from final discharge point exceeds marginally the discharge standard for COD (i.e. COD: 251 mg/l against standard COD: 250 mg/l). (2) Flow meter is not provided for all streams inlet. (3) Online connectivity of OCEMS to GPCB/CPCB is not provided. (4) Large quantity (about 3000 MT) of ETP sludge generated from main ETP (Bio sludge & chemical sludge mix) was stored inside storage shed and 50 MT Gypsum Waste generated from neutralization process was stored outside storage shed. (5) Unit has not provided proper leachate collection facility in the hazardous waste storage area.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637625 , 05/04/2022

Grasim Cellulosic (A Unit Of Grasim Ind. Ltd),
Plot No.-1,, GIDC Industrial Estate Vilayat,,
Vilayat, GIDC,
Vilayat,
Dist : Bharuch, Tal : Vagra, SIDC : Vilayat
Phone : 02641273037

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

2140

SHOW CAUSE NOTICE

PCB ID : 38506

Legal ID : 47376

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 17/11/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

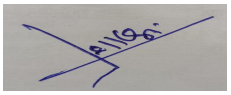
Reason :

(1) Bulking/ floating of sludge was observed in Secondary Clarifier-1 and floated sludge was carrying over to Aeration tank-2. (2) Large quantity Process residue waste and ETP sludge are stored in the provided storage shed.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637623 , 05/04/2022

Grasim Industries Ltd. (Chemical Divn),
Plot No 1, GIDC Indudtrial Estate,
Bharuch,
Vilayat,
Dist : Bharuch, Tal : Vagra, SIDC : Vilayat
Phone : 02642273163

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

SHOW CAUSE NOTICE

PCB ID : 41279

Legal ID : 47375

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 17/11/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

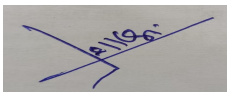
Reason :

(1) Flow meter at inlet to ETP is not provided. (2) Unit has to provide ETP comprising of primary, secondary & tertiary treatment facilities. However, unit has provided ETP consisting of only primary treatment facility. (3) Huge quantity (about 6000 MT) of process Sludge (mainly Phospho Gypsum Sludge & Brine Sludge) was found stored in the specified Storage area within the plant premises. Half portion of this storage area is open to sky. (4) Considerably very high moisture was observed in the stored sludge. (5) Unit has not provided proper leachate collection system with the sludge storage area. Leachate/spillage were observed from the sludge storage area.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637624 , 05/04/2022

Grasim Industries Limited-Chemical Division,
Plot No.1, G.I.D.C.,Vilayat Estate,
VILAYAT,
Dist : Bharuch, Tal : Vagra, SIDC : Vilayat
Phone : -

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

2142

SHOW CAUSE NOTICE

PCB ID : 47088

Legal ID : 47362

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Hazardous **Show Cause Notice DATE : 05/04/2022**

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 27/10/2021 in order to verify the statements made by you in your application for Consent to Operate under the Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

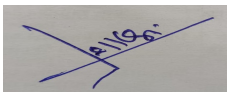
Reason :

Display board was not updated since March 2021.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637629 , 05/04/2022

Daramic Battery Separator India Pvt. Ltd,
D3/17, Dahej-III Industrial Estate,
Nr. Sambheti Village,
DAHEJ - 392130,
Dist : Bharuch, Tal : Vagra, SIDC : Dahej3
Phone : 02642675811

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

SHOW CAUSE NOTICE

PCB ID : 48440

Legal ID : 47367

Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10/A,
Gandhinagar - 382010
(079) 2323 2152
Website: www.gpcb.gov.in
https://gpcbxgn.gujarat.gov.in

ACT : Water , Hazardous

Show Cause Notice DATE : 05/04/2022

WHEREAS, the Officials of the Gujarat Pollution Control Board (hereinafter referred to as the Board, in short), conducted inspection on 17/11/2021 in order to verify the statements made by you in your application for Consent to Operate under the Water , Hazardous Act / to ascertain the Compliances of Conditions specified in Consent Order.

WHEREAS during the inspection it was observed that:-

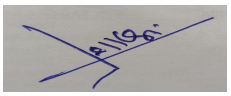
Reason :

(1) The information was not updated on the display board. (2) In-process materials were stored kept in drums in open area on concrete flooring. (3) Unit has not provided leachate collection facility in the hazardous waste storage shed. (4) Leakages of the hazardous waste from the drums observed. (5) There were storage of 667 MT of MEE salt and ETP sludge, 447 MT process waste/distillation residue in the hazardous waste storage shed. (6) Unit has not provided any fire alarm system, smoke detectors and water sprinkling system in the hazardous waste storage shed. (7) Huge quantity of scrap material and insulation material were also stored in the premises.

NOW THEREFORE, in exercise of the powers vested with this Board
Under Section 33(A) read with section 25/26 of the Water(Prevention and Control of Pollution) Act, 1974
Under Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008
notice is hereby served on you, to show cause within 15 days from the date of receipt of this show cause notice in view of the non compliance observed above and why legal action should not be initiated as per the provision of the Acts which may include rejection of your application and suspension/ closure of your unit.

For and on behalf of

Gujarat Pollution Control Board



M. G. Kagzi,DEE

NO : SCN-637619 , 05/04/2022

Yashashvi Rasayan Pvt. Limited,
Z/96/E, Dahej SEZ-II,
Dahej - 392130,
Dist : Bharuch, Tal : Vagra, SIDC : SEZ2
Phone : 9925034079

COPY TO :-

The RO Head(P.C.B.), Bharuch

With a request to carryout monitoring and send the detailed I.R. & A.R. for the sample collected to this office immediately.

ANNEXURE - III

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

BY R.P.A.D.

DIRECTION UNDER SECTION 33-A OF THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT-1974 (HEREINAFTER REFERRED TO AS THE "WATER ACT") AS AMENDED FROM TIME TO TIME

WHEREAS, you Dahej -Vilayat Pipeline Development Cell of GIDC are having common effluent conveyance and disposal pipeline project at Plot No:13/A, Dahej Pumping Station, Dahej, Tal: Vagra, Dist: Bharuch.

AND WHEREAS, you have obtained CCA of the Board with validity up to 04/03/2025 to operate common effluent conveyance and disposal pipeline project.

AND WHEREAS, in compliance of Hon. NGT order dated 04.10.2021 in the matter of OA no. 60/2021 (WZ) [Aryavart Foundation v/s Hemani Industries Ltd. & Ors.], your pipeline project was inspected by joint team of CPCB & GPCB on 25.10.2021 to 28.10.2021 and 16.11.2021 to 18.11.2021 under Section -23 of the Water Act and following major non-compliances were observed:

1) Analysis results (AR) of collected samples of wastewater from pumping stations is not meeting with discharge norms as below and the exceedance factor shows gross non-compliance.

Parameters	AR of sample collected from Pumping Station A	AR of sample collected from Pumping Station E	AR of sample collected from Final Disposal Point	Discharge norms as per CCA
pH	**5.29**	**5.01**	7.41	6 to 9
Total Suspended Solids	**384**	**712**	**278**	100
Sulphides	**28.8**	BDL	14.4	5
Ammonical Nitrogen	**143.36**	**77.28**	**89.04**	50
Total Kjeldahl Nitrogen	**170.24**	**117.6**	**99.1**	50
Nitrate Nitrogen	**113.19**	36.9	11.78	50
BOD (3 days at 27 C)	**1985**	**952**	**481**	100
COD	**9023**	**4115**	**1860**	250
Phenolic Compounds	**24.3**	2.06	**13.89**	5

Except pH all parameters in mg/l.

2) Looking to above analysis results, high concentration of pollutants in wastewater indicates illegal discharge of partly treated/untreated high concentration wastewater, illegal discharge of hazardous wastes and provision of Ghost connections by member units

3) Analysis results (AR) of collected samples of wastewater from leakage of Pumping Station – C and Pumping Station C discharge to Final Pumping Station (FPS) is not meeting with discharge norms as below and the exceedance factor shows gross non-compliance.

Parameters	AR of leakage of PS-C	AR of PS-C discharge into FPS	Discharge norms as per CCA
pH	**1.23**	2.29	6 to 9

Total Suspended Solids	**228**	**114**	100
Ammonical Nitrogen	**442.4**	161.84	50
Sulphate	8542	1333	--
Total Kjeldahl Nitrogen	**560**	**201.6**	50
BOD (3 days at 27 C)	**782**	**304**	100
COD	**3596**	**1248**	250
Chlorides	2817	2910	--
Phenolic Compounds	0.99	0.71	5

Except pH all parameters in mg/l.

4) Looking to above analysis results, highly acidic pH and high concentration of pollutants in wastewater indicates the illegal connection into the underground drainage network & malpractice of acidic wastewater discharge from one or other member industry in the area and the exceedance of concentration of Chloride & Ammonical Nitrogen indicates illegal discharge of wastewater/hazardous wastes containing Hydro Chloric Acid and Ammonical Compounds.
5) CETP- Dahej is non-functioning and not complying discharge norms since long.
6) Accumulation of wastewater was observed in the vacant plots, near many manhole chambers of the drainage network etc due to overflow of wastewater from the manhole chambers and its spread on the area surrounding the chambers.
7) The overflow of wastewater was not addressed timely and properly which indicated from the dried colored patches (white, yellow, black, reddish etc.) observed in the vacant plots, near many manhole chambers of the drainage network, surrounding the chambers etc.
8) Accumulation of wastewater having high contamination leads to soil and ground water contamination in the area.
9) Analysis results (AR) of collected samples of ponding/contaminated water of storm water drain is not meeting with discharge norms as below and it indicates high contamination.

Parameters	**GIDC storm water drain near M/s MomaiImpex**	**GIDC storm water drain near M/s Indofil Industries Ltd Unit-3**	**Storm water drain beside Khaitan Fertilizer road near Salt Pan, Dahej**	**Storm water ponding near Salt pan, Dahej (storm water drain coming from Amod road)**	**Discharge norms as per CCA**
pH	7.79	6.83	**4.92**	8.6	6 to 9
Total Suspended Solids	**366**	**4704**	76	28	100
Fluorides	0.7	1.6	**18.25**	4.7	15
Sulphides	<1	**13.6**	**5.28**	BDL	5
Ammonical Nitrogen	BDL	**50.4**	**515.2**	1.68	50

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar**-382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

Total Kjeldahl Nitrogen	1.68	**84**	**604.8**	4.48	50
Nitrate Nitrogen	4.89	1.69	12.89	3.45	50
BOD (3 days at 27 C)	60	**424**	**512**	24	100
COD	237	**1737**	**2086**	101	250
Phenolic Compounds	BDL	**15.6**	**11.96**	< 0.1	5

Except pH all parameters in mg/l.

10) Contamination of storm water is observed due to rainwater runoff from the industries in the area and overflow from manholes and pumping stations.
11) The storm water drains in the area was having contaminated wastewater which ultimately flows to estuary of the Narmada river and to the Sea.
12) The main wastewater disposal line is routed through a separate pipeline near the shore with extension limited to about 600 m into the Sea instead of 4.5 km line which was suggested by NIO and as per CCA condition due to damage /choking of 4.5 km off-shore pipeline /diffuser system.
13) The 600 m off shore pipe line used is having leakages at a number of locations in between High Tide Level (HTL) & Low Tide Level (LTL) into CRZ-IB Area.
14) Heavy sludge deposition was observed at Final Pumping Station (FPS).
15) Past incidence of choking of final discharge pipeline was observed due to discharge of wastewater beyond CCA standards, reaction tendency during mixing of various types of wastewater discharged from different types of industries etc.

AND WHEREAS, the non-compliances as narrated above is contributing to the Pollution problem in Dahej industrial area.

UNDER THE CIRCUMSTANCES, as directed, I Irfan Kagzi, Dy. Environment Engineer, Gujarat Pollution Control Board issue the direction under Section 33(A) of the Water Act – 1974 as under:

1) GIDC shall stop discharge of wastewater in CRZ 1B area and to lay down the deep sea disposal pipeline with diffusers as suggested by NIO at the earliest and as per CCA condition. GIDC shall take the requisite permission from statutory authorities for laying new pipeline and changes if any.
2) GIDC shall take immediate action to lift accumulated wastewater due to leakages/seepage/overflow in PCPIR area and contaminated soil shall be disposed safely at CHWTSDF site.
3) GIDC shall take immediate action to lift spilled over and discharged waste (solid and liquid) and disposed to appropriate common facility for disposal in environment sound manner.
4) GIDC shall identify the reasons and take corrective measures to prevent frequent overflow from the manholes and pumping stations.
5) GIDC shall augment the infrastructure like replacing the subsided drainage lines near OPAL in SEZ-1 and replacing damaged/leaking other drainage lines on priority basis.

6) GIDC shall submit detailed impact assessment study from institute of repute involved in the research of coastal/marine ecology considering the years of non-compliance and discharge of high polluted wastewater into CRZ area which has potential to create adverse effect on Marine ecology.
7) GIDC shall implement the measures for the restoration of the marine ecology as suggested by the institute need to be implemented.
8) GIDC shall explore technology for regular cleaning or select such material of construction of pipeline to avoid scaling and chocking.
9) GIDC shall explore and implement measures to help in removal of salts formation at final pumping station before discharge of wastewater to avoid chokings & scaling in the pipeline again in future.
10) GIDC shall conduct technical study through reputed institute to identify reasons of scaling and choking problem in pipeline.
11) GIDC shall stop accepting effluent of industries which are responsible for scaling and choking problem in pipeline.
12) GIDC shall carry out regular cleaning of accumulated sludge from pumping stations and pipeline. This sludge shall be dried properly through appropriate mechanism and then send to CHWTSDF site for disposal.
13) GIDC shall provide Guard Pond at Final Pumping station to hold wastewater in case of maintenance of pumping stations/drainage network, monsoon or any such emergency so that discharge/bypass from pumping stations to storm water drain may not occur.
14) GIDC shall take strict action against non-complying member industries.
15) GIDC shall provide flow measuring system and to make online TOC/COD meter operational at all the pumping stations. Proper records of flow and COD shall be maintained by GIDC.
16) The GIDC shall explore possibilities to switch to Express discharge line for better surveillance. Express discharge lines with free fall and auto sampler arrangements may be initiated first for Industrial units connected to Pumping station A and Pumping station C as both were found to have high pollution potential (e.g. high TDS/COD/NH3-N/phenol) and then to replace all underground drainage system.
17) GIDC shall frame Standard Operating Procedure to address the leakages which should also include the steps required for proper disposal of contaminated sludge removed during de-sludging of drainage lines/manholes.
18) GIDC shall provide SCADA and Automization system for monitoring, surveillance and discharge control.
19) GIDC shall ensure that there shall be no ghost connection provided for illegal effluent discharge to pipeline by adopting appropriate mechanism/practice including seismic survey on regular basis.
20) **GIDC shall immediately take corrective measures for above non-compliances and submit compliance report/time bound action plan for it.**
21) **GIDC shall comply all conditions mentioned in CCA judiciously.**
22) **GIDC shall pay Environment Damage Compensation (EDC) as and when communicated by the Board.**

GPCB

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If the above direction is not complied, you are liable for prosecution under Section 41(2) of the Water (Prevention and Control of Pollution) Act-1974 which provides punishment with imprisonment for a term not less than one year and six months and may extend to six years and with fine.

This letter is issued with the approval of the competent authority of the Board.

FOR AND ON BEHALF OF
GUJARAT POLLUTION CONTROL BOARD

(IRFAN KAGZI)
DY. ENVIRONMENT ENGINEER

NO: GPCB/BRCH-B/CCA-1194(9)/ID: 31038/ Date: /03/2022

Issued to:
M/s. Gujarat Industrial Development Corporation
Dahej - Vilayat Pipeline Development Cell
Plot No: 13/A, Dahej Pumping Station,
Dahej, Tal: Vagra, Dist: Bharuch.

Copy to:
1) **The Regional Director (West)**
Central Pollution Control Board,
Parivesh Bhawan, Aatmajyoti Ashram Rd,
Opp. VMC Ward Office No. 10,
Subhanpura, Vadodara.....for kind information and necessary action pl.
2) **The Regional Officer – Bharuch**
Gujarat Pollution Control Board,
Shed No. C - 1/119/3, GIDC Estate,
Phase II, Narmadanagar,
Bharuch.....for kind information and necessary action pl.

ANNEXURE - IV : Analysis Results of Ground Water samples

Round	Graph Code	Location Code	Geo co-ordinates	Date	pH	Colour	Conductivity	Chloride as Cl⁻	Total Hardness	Calcium Hardness	Magnesium Hardness	Total Dissolved Solids	Total Suspended Solids	Ammoniacal Nitrogen -NH_3-N	Chemical Oxygen Demand	Fluoride	Sulphate	Nitrate	Nitrite	Total Phosphorous	Sodium Adsorption Ratio	Hexavalent Chromium	Phenol	Arsenic	Boron	Cadmium	Copper	Iron	Lead	Nickel	Manganese	Mercury	Selenium	Total Chromium	Zinc	Total Kjeldahl Nitrogen	Sulphides	Cyanide	Odour	Vanadium
					-	Hazen	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	milimole/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TON	mg/L
1	G1	GW-SK	21°47'24.6"N 72°48'43.1"E	4/19/2022	7.65	5	3700	599.81	450	110	340	2140	10	BDL	24.19	0.974	274.24	248.8	0.233	0.666	7.6	BDL	2.76	BDL	1.357	BDL	BDL	0.429	0.003261	BDL	0.06569	BDL	0.00831	0.00702	BDL	BDL	16	BDL	1	0.000185
1	G2	GW-VT	21°45'53.4"N 72°52'50.8"E	4/19/2022	7.72	5	1405	249.92	360	80	210	772	BDL	BDL	12.1	1.321	39.08	4.42	BDL	BDL	3.18	BDL	1	BDL	BDL	BDL	BDL	0.136	0.004557	BDL	0.048447	BDL	BDL	BDL	BDL	BDL	BDL	1	0.154753
1	G3	GW-BS	21°46'43.4"N 72°51'24.0"E	4/19/2022	7.79	5	1813	329.9	450	120	330	970	2	BDL	8.06	BDL	57	39.15	0.221	BDL	3.17	BDL	0.5	BDL	BDL	BDL	BDL	0.176	BDL	BDL	0.082605	BDL	BDL	BDL	BDL	BDL	5.6	BDL	1	0.270084
1	G4	GW-BHE	21°43'28.0"N 72°45'09.2"E	4/19/2022	7.6	15	825	83.97	200	110	90	464	BDL	BDL	16.13	BDL	20.97	3.38	0.348	BDL	2.42	BDL	0.5	BDL	BDL	BDL	BDL	0.21	BDL	BDL	0.24734	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.052594
1	G5	GW-VD	21°43'49.8"N 72°37'58.3"E	4/19/2022	7.69	10	358	19.99	150	80	70	198	14	BDL	12.1	BDL	16.15	1.33	BDL	BDL	0.69	BDL	1.7	BDL	BDL	BDL	0.008827	0.587	BDL	BDL	0.10085	BDL	BDL	BDL	BDL	BDL	BDL	0.007	1	0.041499
1	G6	GW-KD	21°45'54.8"N 72°38'45.7"E	4/19/2022	7.76	5	23400	7597.64	1700	320	1380	14630	6	BDL	64.51	0.643	917	73	0.484	BDL	37.3	BDL	0.42	BDL	1.633	BDL	BDL	BDL	BDL	BDL	0.37961	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.507274
1	G7	GW-SP	21°44'55.2"N 72°40'11.5"E	4/19/2022	8.15	5	1217	114.96	170	70	100	710	4	BDL	8.06	BDL	52.36	48.8	0.224	BDL	6.33	BDL	0.14	0.005916	0.506	BDL	BDL	BDL	BDL	BDL	0.05337	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.139829
1	G8	GW-SUV	21°41'20.0"N 72°39'17.3"E	4/19/2022	7.63	10	7490	1449.55	800	200	600	4588	BDL	BDL	20.16	0.435	653	479	2.26	BDL	13.64	BDL	0.4	BDL	2.545	BDL	BDL	0.118	BDL	BDL	0.16634	BDL	0.005513	BDL	BDL	BDL	BDL	BDL	1	0.26335
1	G9	LA-GW	21°41'40.3"N 72°33'13.0"E	4/19/2022	7.68	10	4880	574.82	500	70	470	2996	6	BDL	12.1	0.772	284.72	334	3.525	BDL	10.77	BDL	0.18	BDL	2.114	BDL	0.005122	0.15	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.86	BDL	1	0.242071
1	G10	LU-GW	21°40'23.6"N 72°33'13.0"E	4/19/2022	8.38	10	3440	399.88	200	40	160	1980	BDL	1.18	4.03	1.189	170.84	155.4	1.496	BDL	11.92	BDL	0.42	0.007071	1.431	BDL	0.005177	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.006	1	0.122054
1	G11	GW-PK	21°47'35.5"N 72°44'16.9"E	4/20/2022	8.14	15	2460	574.82	320	100	220	1316	6	BDL	11.9	BDL	133.2	BDL	BDL	BDL	8.97	BDL	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.12227	0.013209	BDL	BDL	BDL	BDL	2.26	BDL	1	0.144701
1	G12	GW-AT	21°43'25.0"N 72°42'09.5"E	4/20/2022	8.12	10	3130	349.89	160	60	100	1812	10	BDL	11.9	1.331	143.6	11.23	0.017	BDL	21.57	BDL	0.1	0.00563	2.427	BDL	0.03103	1.567	0.00446	BDL	0.07447	BDL	BDL	BDL	BDL	BDL	9.04	BDL	1	0.14317
1	G13	GW-DA	21°42'35.0"N 72°34'59.0"E	4/20/2022	7.82	10	2970	349.89	300	60	240	1660	36	BDL	7.94	1.421	131.5	28.18	BDL	BDL	11.57	BDL	1	0.00533	0.886	BDL	BDL	0.996	BDL	BDL	0.07932	BDL	0.00143	BDL	BDL	BDL	1.6	BDL	1	0.08076
1	G14	GW-JLV	21°42'49.0"N 72°38'06.0"E	4/20/2022	7.96	15	7120	1224.62	300	60	240	4118	44	BDL	23.81	1.41	350.9	224.8	0.209	BDL	32.51	BDL	0.8	0.00586	4.135	BDL	0.00896	1.874	BDL	BDL	0.18436	0.000656	BDL	BDL	BDL	BDL	2	0.005	1	0.12231
1	G15	GW-AMB	21°41'13.7"N 72°33'29.9"E	4/20/2022	8.12	10	2290	199.94	120	40	80	1264	8	BDL	7.94	1.386	97.6	90.7	BDL	BDL	9.94	BDL	1.2	0.010708	1.032	BDL	BDL	0.312	BDL	BDL	0.06976	BDL	BDL	BDL	BDL	BDL	2.12	BDL	1	0.061361
2	G16	GW-SK	21°47'24.6"N 72°48'43.1"E	4/21/2022	7.81	5	6170	1149.64	1010	220	790	3448	BDL	BDL	16.13	0.762	361.5	565	1.202	BDL	8.99	BDL	0.28	BDL	1.18	BDL	BDL	0.161	BDL	BDL	0.1098	0.001577	0.006737	BDL	BDL	BDL	BDL	BDL	1	0.374991
2	G17	GW-VT	21°45'53.4"N 72°52'50.8"E	4/21/2022	7.86	5	1479	269.92	370	90	280	742	BDL	BDL	4.03	BDL	22.48	3.92	BDL	BDL	3.87	BDL	0.13	BDL	BDL	BDL	BDL	BDL	0.002953	BDL	BDL	0.000635	BDL	BDL	BDL	BDL	1.73	BDL	1	0.185534
2	G18	GW-BS	21°46'43.4"N 72°51'24.0"E	4/21/2022	7.95	5	1919	359.89	460	110	350	996	BDL	BDL	8.06	BDL	34.3	37.65	0.194	BDL	4.03	BDL	0.12	BDL	BDL	BDL	BDL	BDL	0.002769	BDL	0.047453	BDL	BDL	BDL	BDL	BDL	2.53	BDL	1	0.256488
2	G19	GW-BHE	21°43'28.0"N 72°45'09.2"E	4/21/2022	8.06	10	2170	349.89	130	40	90	1144	BDL	BDL	4.03	0.588	76.36	60.1	1.085	BDL	12.24	BDL	BDL	0.008361	0.841	BDL	0.007238	0.902	0.002766	BDL	0.087051	0.187867	BDL	BDL	BDL	BDL	4.78	BDL	1	0.250378
2	G20	GW-VD	21°43'49.8"N 72°37'58.3"E	4/21/2022	7.73	10	371	BDL	140	80	60	202	4	BDL	4.03	BDL	BDL	BDL	0.117	BDL	0.74	BDL	1.06	BDL	BDL	BDL	0.01309	2.198	0.00283	BDL	0.23862	0.279501	BDL	BDL	BDL	BDL	BDL	BDL	1	0.07974
2	G21	GW-KD	21°45'54.8"N 72°38'45.7"E	4/21/2022	7.7	5	23400	7497.68	1640	330	1310	14500	2	BDL	64.51	0.859	956.8	31.59	0.263	0.1	48.39	BDL	3.4	BDL	1.676	BDL	BDL	1.444	BDL	BDL	0.3536	0.006365	BDL	BDL	BDL	BDL	6.38	BDL	1	0.44784
2	G22	GW-SP	21°44'55.2"N 72°40'11.5"E	4/21/2022	7.6	5	1521	129.96	340	130	210	790	BDL	BDL	4.03	BDL	67.06	73.9	BDL	BDL	3.53	BDL	0.12	BDL	0.945	BDL	BDL	BDL	0.00325	BDL	0.040011	0.003684	BDL	BDL	BDL	BDL	1.2	BDL	1	0.133316
2	G23	GW-SUV	21°41'20.0"N 72°39'17.3"E	4/21/2022	7.95	10	5450	649.8	220	50	170	3008	BDL	BDL	16.13	0.498	257.1	395	0.465	BDL	26.63	BDL	BDL	BDL	2.288	BDL	BDL	BDL	BDL	BDL	BDL	0.004067	0.006609	BDL	BDL	BDL	0.27	BDL	1	0.138151
2	G24	LA-GW	21°41'40.3"N 72°33'13.0"E	4/21/2022	7.6	10	5030	574.82	510	100	410	2976	BDL	BDL	16.13	1.199	246.12	359.5	10.52	BDL	8.83	BDL	BDL	0.005104	1.957	BDL	BDL	BDL	BDL	BDL	BDL	0.000817	BDL	BDL	BDL	BDL	3.19	BDL	1	0.203816
2	G25	LU-GW	21°40'23.6"N 72°33'13.0"E	4/21/2022	8.03	10	3850	474.85	230	60	170	1952	BDL	BDL	16.13	2.53	204.04	147	1.178	BDL	13	BDL	0.1	0.007204	1.645	BDL	BDL	0.128	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.004	1	0.113308
2	G26	GW-PK	21°47'35.5"N 72°44'16.9"E	4/21/2022	7.84	5	4220	1074.67	490	150	340	2202	BDL	BDL	8.06	0.413	113.64	BDL	BDL	0.1	10.84	BDL	0.22	BDL	BDL	BDL	BDL	1.113	BDL	BDL	0.20959	0.00797	BDL	BDL	BDL	BDL	2.92	BDL	1	0.15547
2	G27	GW-AT	21°43'25.0"N 72°42'09.5"E	4/21/2022	8.34	15	3320	349.89	200	40	160	1658	28	BDL	8.06	1.57	106.76	14.58	BDL	BDL	19.27	BDL	0.16	0.00538	2.61	BDL	0.03673	1.947	0.00779	BDL	0.0686	BDL	BDL	BDL	BDL	BDL	0.8	BDL	1	0.13084
2	G28	GW-DA	21°42'35.0"N 72°34'59.0"E	4/21/2022	7.64	5	1214	359.89	280	150	130	624	6	BDL	8.06	BDL	47.81	21.85	0.24	BDL	2.92	BDL	BDL	BDL	BDL	BDL	BDL	0.307	0.001141	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.86	BDL	1	0.073851
2	G29	GW-JLV	21°42'49.0"N 72°39'06.0"E	4/21/2022	7.86	10	3770	474.85	400	70	330	1886	BDL	BDL	8.06	1.484	218.76	200.5	0.342	BDL	11.61	BDL	BDL	BDL	2.668	BDL	BDL	0.183	0.002252	BDL	0.74067	0.001395	0.006956	BDL	BDL	BDL	0.53	BDL	1	0.206606
2	G30	GW-AMB	21°41'13.7"N 72°33'29.9"E	4/21/2022	7.49	5	4750	924.71	710	140	570	2652	20	BDL	16.13	0.44	258.76	74.3	2.24	BDL	9.46	BDL	BDL	BDL	1.437	BDL	0.005103	0.924	BDL	BDL	0.11201	0.001123	BDL	BDL	BDL	BDL	5.6	0.13	0.008	1	0.190584
3	**G31**	**GW-SK**	**21°47'24.6"N 72°48'43.1"E**	**5/4/2022**	**7.75**	**1**	**5580**	**974.7**	**940**	**250**	**690**	**3016**	**BDL**	**0.3**	**20.16**	**1.358**	**303.96**	**529.5**	**0.713**	**0.246**	**10.74**	**BDL**	**0.7**	**BDL**	**1.914**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**	**1**	**0.29156**
3	G32	GW-VT	21°45'53.4"N 72°52'50.8"E	5/4/2022	7.91	1	1508	264.92	370	90	280	764	BDL	1.18	20	0.776	26.93	11.06	0.049	0.02	3.42	BDL	0.26	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.37954
3	G33	GW-BS	21°46'43.4"N 72°51'24.0"E	5/4/2022	7.9	1	1948	374.88	470	120	350	990	BDL	0.3	12	0.841	34.5	44.6	0.105	0.034	3.89	BDL	0.45	BDL	1.56	BDL	BDL	0.104	BDL	BDL	BDL	BDL	BDL	0.01968	BDL	BDL	BDL	BDL	BDL	1	0.36484
3	G34	GW-BHE	21°43'28.0"N 72°45'09.2"E	5/4/2022	8.22	1	320	16.99	140	80	60	162	2	0.3	12	0.562	8.87	3.29	0.03	0.054	0.72	BDL	0.85	BDL	BDL	BDL	BDL	0.394	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	BDL
3	G35	GW-VD	21°43'49.8"N 72°37'58.3"E	5/4/2022	8.35	15	1668	89.97	100	20	80	874	BDL	0.59	4.03	2.974	56.16	47.3	0.838	0.37	10.79	BDL	1.9	0.00865	0.921	BDL	BDL	0.187	0.00248	BDL	BDL	BDL	0.00671	BDL	BDL	BDL	BDL	BDL	BDL	1	0.16511
3	G36	GW-KD	21°45'54.8"N 72°38'45.7"E	5/4/2022	8	5	21080	6847.88	1530	320	1210	12780	BDL	0.59	34.56	1.47	813	82.1	0.626	0.19	49.22	BDL	2.1	BDL	1.75	BDL	BDL	BDL	BDL	BDL	0.32778	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.47365
3	G37	GW-SP	21°44'55.2"N 72°40'11.5"E	5/4/2022	7.89	1	1422	99.97	310	120	190	730	BDL	0.59	4.03	0.552	46.16	78.6	0.022	0.072	2.94	BDL	1.9	BDL	0.917	BDL	BDL	BDL	BDL	BDL	BDL	0.10255	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.21585
3	G38	GW-SUV	21°41'20.0"N 72°39'17.3"E	5/4/2022	7.75	5	7420	1274.6	680	160	520	4178	BDL	0.3	8.06	0.793	394.5	606	1.034	0.818	16.8	BDL	1.8	0.00684	2.052	BDL	BDL	BDL	BDL	BDL	0.0478	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.1854
3	G39	LA-GW	21°41'40.3"N 72°33'13.0"E	5/4/2022	7.76	5	4960	549.83	490	90	400	2750	BDL	6.52	4.03	1.62	234.92	417.5	12.57	0.486	9.78	BDL	0.2	BDL	2.54	BDL	BDL	0.19	BDL	BDL	0.2186	BDL	0.00656	BDL	BDL	19.61	BDL	BDL	1	0.27467
3	G40	LU-GW	21°40'23.6"N 72°33'13.0"E	5/4/2022	8.32	10	4700	699.78	190	40	150	2760	BDL	0.3	12.09	3.386	146	224.6	3.52	0.46	26.83	BDL	0.74	BDL	BDL	BDL	BDL	0.356	BDL	BDL	0.18043	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.23222
3	G41	GW-PK	21°47'35.5"N 72°44'16.9"E	5/4/2022	7.96	1	3982	1024.68	470	150	320	2134	BDL	0.3	16.12	1.281	100.76	4.34	0.012	0.22	11.08	BDL	0.16	BDL	0.77	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	0.15264
3	G42	GW-AT	21°43'25.0"N 72°42'09.5"E	5/4/2022	8.42	15	3290	374.88	240	40	200	1732	32	0.59	12.09	3.218	103.48	16.42	0.04	0.23	18.22	BDL	1.8	BDL	2.714	BDL	0.03134	2.334	0.0094	BDL	BDL	BDL	BDL	0.661	BDL	BDL	BDL	BDL	1	0.12798
3	G43	GW-DA	21°42'35.0"N 72°34'59.0"E	5/4/2022	8.53	1	658	67.98	170	70	100	342	BDL	0.59	4.03	0.16	29.58	6.24	0.027	0.037	1.96	BDL	2.2	BDL	BDL	BDL	BDL	BDL	0.00259	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.86	BDL	1	0.05065
3	G44	GW-JLV	21°42'49.0"N 72°39'06.0"E	5/4/2022	8.04	5	3704	449.86	420	70	350	2060	BDL	1.78	12.09	2.906	213.36	275	1.038	0.186	11.17	BDL	9.56	BDL	2.37	BDL	BDL	0.222	BDL	BDL	0.07293	BDL	BDL	BDL	BDL	BDL	BDL	0.53	BDL	1	0.302
3	G45	GW-AMB	21°41'13.7"N 72°33'29.9"E	5/4/2022	8.02	5	4880	974.7	710	130	580	2790	BDL	1.78	16.12	1.277	266.36	106.5	7.43	0.054	10.97	BDL	0.55	BDL	1.241	BDL	BDL	0.237	BDL	BDL	0.09128	BDL	0.00764	BDL	BDL	BDL	BDL	BDL	1	0.50215
3	Piezo well at Pumping Station -C	PW-2	21°41'54.1"N 72°35'53.6"E	5/20/2022	7.93	15	13050	3848.81	630	280	350	8052	6240	BDL	96	1.327	195.6	5.1	0.195	2.48	29.78	BDL	5	0.00641	2.345	BDL	0.13189	6.601	0.06314	BDL	3.06053	BDL	BDL	0.01874	BDL	5.604	2.4	BDL	4	0.43607

ANNEXURE - V : Analysis Results of Soil samples

Round	Graph Code	Location Code	Geo co-ordinates	Date	pH	Conductivity	Water Content (water Moisture)	Porosity	Bulk Density	Arsenic as AS	Cadmium as cd	Chormium as Cr	Lead as Pb	Nickel as Ni	Cobalt as Co	Sand	Silt	Clay	Type of Soil	P)hosphourus as P	Organic Matter	Total Kjeldahl Nitrogen	Sodium Adsorption Ratio	Antimony as Sb	Sodium as Na	Potassium as K	Calcium as Ca	Manganese as Mn	Marcury as Hg	Molybdenumas Mo	Copper as Cu	Iron as Fe	Zinc as Zn
					-	µS/cm	%	%	mb/m3	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	-	Kg/Hectare	%	%	milimole/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	SO-1	AMB-S	21°41'16.8"N 72°35'23.9"E	4/20/2022	9	463	11.18	39.32	1.08	4.155	BDL	72.367	BDL	33.533	17.533	10.29	85.29	4.41	Silt	15.61	2.58	0.78	0.7	BDL	784.06	6121.22	34991.1	553.97	51.514	BDL	115.037	19297.038	172.714
2	SO-2	AMB-S	21°41'16.8"N 72°35'23.9"E	4/21/2022	8.86	372	8.62	47.6	1.31	4.101	BDL	87.74	BDL	36.57	19.81	1.61	88.7	9.67	SILT	5.03	0.14	0.641	0.33	BDL	347.17	6004.59	41190.14	487.2	BDL	BDL	79.551	20171.3	61
3	SO-3	AMB-S	21°41'16.8"N 72°35'23.9"E	5/4/2022	8.5	310	5.82	42.78	1.19	3.94	BDL	78.91	2.46	42.85	20.83	2.67	93.33	4	Silt	2.03	1.36	0.11	0.91	2.36	939.9	4664.83	49624.83	586.4	BDL	BDL	82.26	25059.21	63.34
1	SO-4	AT-S	21°43'24.5"N 72°42'03.7"E	4/20/2022	8.62	2050	15.99	60	1	3.929	BDL	79.239	26.351	37.355	18.425	4.76	80.95	14.28	Silt Loam	4.61	1.492	0.56	0.6	BDL	606.15	9461.75	39775.31	522.834	0.582	BDL	88.983	20886.178	85.357
2	SO-5	AT-S	21°43'24.5"N 72°42'03.7"E	4/21/2022	8.13	3910	14.94	52.42	1.08	3.654	BDL	89.236	BDL	38.907	16.936	-	64.61	35.38	SILTY CLAY LOAM	5.5	1.992	0.25	0.91	BDL	916.27	9384.4	35304.7	543.08	BDL	BDL	88.31	20441.4	79.51
3	SO-6	AT-S	21°43'24.5"N 72°42'03.7"E	5/4/2022	8.3	256	13.79	45.67	1.13	2.86	BDL	82.65	1.97	44.68	19.67	8.57	84.28	10	Silt	7.24	1.93	0.11	0.43	2.46	414.28	8295.52	37314.26	513.71	BDL	BDL	79.79	24822.15	78.12
1	SO-7	BM-S	21°46'44.8"N 72°51'24.4"E	4/19/2022	8.17	1147	13.89	42.78	1.19	3.046	BDL	89.449	BDL	43.504	22.453	1.26	91.13	7.59	Silt	4.76	1.198	0.44	BDL	BDL	2	6060.3	16043.33	711.766	BDL	BDL	98.373	21182.108	84.201
2	SO-8	BM-S	21°46'44.8"N 72°51'24.4"E	4/21/2022	7.33	884	12.44	39.2	1.38	2.627	BDL	107.96	BDL	49.025	18.296	-	18.29	75.6	CLAY	12.97	1.386	0.35	BDL	BDL	8	6502.1	BDL	730.77	BDL	BDL	112.83	22988.4	80.16
3	SO-9	BM-S	21°46'44.8"N 72°51'24.4"E	5/4/2022	7.47	116	20.21	45.67	1.13	2.09	BDL	106.48	2.19	59.82	24.47	8.14	86.05	5.81	Silt	27.84	2.39	2.63	0.83	3.48	563.31	5576.27	10926.42	517.14	BDL	BDL	120.73	29044.77	112.96
1	SO-10	BNH-S	21°43'29.0"N 72°45'17.6"E	4/19/2022	9.18	734	10.02	42.78	1.19	2.662	BDL	67.15	BDL	32.528	18.219	23.88	67.16	8.95	Silt Loom	5.18	1.263	0.11	4.06	BDL	3029.46	6450.04	23375.8	474.878	BDL	BDL	68.447	20400.776	74.283
2	SO-11	BNH-S	21°43'29.0"N 72°45'17.6"E	4/21/2022	8.84	1347	12.42	50	1.25	3.198	BDL	88.376	BDL	36.921	14.672	3.07	86.15	10.76	SILT	5.11	1.317	0.11	1.75	BDL	1575.9	6230.7	25542.4	552.33	BDL	BDL	84.17	20256.3	73.12
3	SO-12	BNH-S	21°43'29.0"N 72°45'17.6"E	5/4/2022	8.74	1692	22.19	48.07	1.08	2.78	BDL	89.47	1.58	50.44	22.09	-	90	10	Silt	9.12	1.85	0.13	11.79	2.87	9254.22	2767.63	25540.42	510.92	BDL	BDL	94.93	26170.61	154.61
1	SO-13	DA-S	21°42'55.2"N 72°35'26.6"E	4/20/2022	7.87	3730	11.21	42.29	1.31	4.766	BDL	88.848	BDL	39.51	20.4	2.85	85.71	11.42	Silt	2.6	0.815	0.14	2.09	BDL	2288.15	6346.5	39839.25	494.855	BDL	0.181	92.597	21600.026	61.82
2	SO-14	DA-S	21°42'55.2"N 72°35'26.6"E	4/21/2022	8.56	767	8.62	47.6	1.31	4.673	BDL	88.844	BDL	36.379	22.505	-	95.38	4.61	Silt	1.1	0.843	0.24	0.49	BDL	517.86	6099.21	31795.63	445.99	BDL	BDL	85.677	20059.3	54.1
3	SO-15	DA-S	21°42'55.2"N 72°35'26.6"E	5/4/2022	7.89	1074	8.91	47.57	1.19	4.18	BDL	84.52	1.99	43.01	21.75	-	86.1	13.9	Silt	3.86	0.465	0.24	1.76	2.78	1788.73	4587.81	46275.59	610.81	12.44	1.79	90.5	24280.37	67.9
1	SO-16	JLV-S	21°42'48.5"N 72°39'03.6"E	4/20/2022	8.26	1391	13.04	50.22	1.13	3.691	BDL	74.774	BDL	33.307	17.104	2.59	5.19	92.2	Silt	5.17	1.2252	0.14	0.58	BDL	598.04	6378.79	46266.97	388.508	BDL	BDL	77.725	19311.157	54.083
2	SO-17	JLV-S	21°42'48.5"N 72°39'03.6"E	4/21/2022	8.49	680	10.45	47.57	1.19	4.407	BDL	88.424	BDL	36.256	17.842	4.05	87.83	8.1	SILT	4.51	1.317	0.11	0.39	BDL	462.83	5947.47	54578.7	472.15	BDL	BDL	75.46	20236.6	62.1
3	SO-18	JLV-S	21°42'48.5"N 72°39'03.6"E	5/4/2022	8.3	450	8.01	52.42	1.08	3.26	BDL	77.21	3.46	41.47	19.94	10.95	84.93	4.11	Silt	5.77	1.86	0.11	0.7	2.17	732.53	5567.21	54641.06	479.8	BDL	BDL	87.5	24768.46	84.63
1	SO-19	KD-S	21°45'53.0"N 72°38'48.0"E	4/19/2022	8.37	1759	12.46	52.4	1.19	3.154	BDL	72.16	BDL	34.108	17.744	14.49	66.66	18.84	Silt Loam	3.49	3.063	0.56	0.99	BDL	892.15	5375.59	37549.77	449.921	0.379	BDL	65.555	20345.13	67.527
2	SO-20	KD-S	21°45'53.0"N 72°38'48.0"E	4/21/2022	8.49	4200	8.06	50	1.25	3.966	BDL	80.403	BDL	37.825	16.299	2.77	91.66	5.55	SILT	2.92	0.14	2.54	0.709	BDL	2981.5	4773.09	36642.8	513.48	BDL	BDL	89.03	20465.3	57.4
3	SO-21	KD-S	21°45'53.0"N 72°38'48.0"E	5/4/2022	8.96	143	11.05	44.93	1.25	2.98	BDL	96.36	4.17	41.72	20.71	14.75	72.13	13.11	Silt Loam	4.86	1.63	0.16	0.55	0.19	522.55	6157.36	38743.49	545	BDL	BDL	64.47	23254.72	80.56
1	SO-22	LA-Soil	21°41'14.7"N 72°33'07.2"E	4/19/2022	8.57	375	17.98	50.81	1.38	6.154	BDL	72.299	BDL	33.719	19.017	26.31	59.64	14.03	Silt Loam	1.59	1.265	0.56	0.14	BDL	96.94	3315.91	19354.69	613.49	BDL	BDL	190.207	21574.466	86.53
2	SO-23	LA-Soil	21°41'14.7"N 72°33'07.2"E	4/21/2022	8.91	1429	10.29	50.18	1.38	5.362	BDL	82.994	BDL	33.743	16.42	-	85.24	14.75	SILT LOAM	1.86	0.574	0.27	1.69	BDL	1353.56	2613.3	19834.2	585.24	BDL	BDL	189.8	21993.61	74.98
3	SO-24	LA-Soil	21°41'14.7"N 72°33'07.2"E	5/4/2022	7.98	393	11.93	43.75	1.08	5.46	BDL	85.41	3.57	42.11	21.1	18.46	69.23	12.31	Slit Loam	3.49	1.792	0.05	0.56	BDL	514.5	3744.54	35696.16	551.94	BDL	BDL	192.59	24158.62	74.49
1	SO-25	LU-Soil	21°40'17.7"N **72°33'04.9"E**	4/19/2022	8.71	138	5.19	41.2	1.47	4.467	BDL	59.74	BDL	26.581	16.156	27.08	41.66	31.25	Clay **Loam**	1.22	0.599	0.56	BDL	BDL	2.95	2532.9	31134.35	515.106	BDL	BDL	67.464	19520.009	58.959
2	SO-26	LU-Soil	21°40'17.7"N 72°33'04.9"E	4/21/2022	8.01	439	4.4	35.24	1.47	5.09	BDL	86.005	BDL	35.231	14.625	25	56.66	18.33	SILT LOAM	1.06	0.912	0.3	BDL	BDL	1	3876.4	16593.4	589.12	BDL	BDL	100.76	20604.9	63.296
3	SO-27	LU-Soil	21°40'17.7"N 72°33'04.9"E	5/4/2022	7.73	233	6.19	45.67	1.13	4.49	BDL	83.58	3.19	42.29	21.74	6.25	85.94	7.81	Silt	4.02	0.853	0.05	0.38	2.59	357.93	3590.28	41160.97	614.67	BDL	BDL	110.17	24689.46	82.68
1	SO-28	PK-S	21°47'34.5"N 72°44'17.2"E	4/20/2022	8.77	313	15.34	44.93	1.258	2.715	BDL	68.136	BDL	34.978	18.364	12.5	79.68	7.81	Silt Loam	6.2	1.562	0.14	0.07	BDL	61.98	5535.79	25823.67	575.626	BDL	BDL	88.637	20153.624	94.346
2	SO-29	PK-S	21°47'34.5"N 72°44'17.2"E	4/21/2022	8.33	602	14.62	42.78	1.19	3.018	BDL	83.474	BDL	38.803	19.711	1.51	89.39	9.09	Silt	4.06	0.912	0.11	0.23	BDL	209.87	4723.17	26034.3	627.04	BDL	BDL	90.96	20389.07	62.2
3	SO-30	PK-S	21°47'34.5"N 72°44'17.2"E	5/4/2022	8.09	209	12.53	42.78	1.19	2.18	BDL	75.92	3.38	46.06	21.94	3.07	23.08	73.85	Clay	7.86	1.72	0.11	0.49	2.28	333.33	5612.94	16576.32	745.17	BDL	BDL	95.62	24811.24	111.84
1	SO-31	Sediment-2	21°43'21.2"N 72°35'42.6"E	4/18/2022	7.3	42800	46.67	28.31	1.19	8.351	BDL	83.414	3.981	370.751	15.925	3.65	91.46	4.87		9.78	2.318	1.2	31.7	BDL	21907.17	4682.46	23363.18	366.187	BDL	32.433	5693.824	19277.918	271.994
2	SO-32	Sediment-2	21°46'50.1"N 72°53'10.5"E	4/20/2022	7.24	39700	52.09	BDL	1.19	11.85	BDL	80.863	BDL	299.822	18.018			100	Clay	11.5	0.407	0.39	29.52	0.067	29800.8	6318.73	25288.84	426.271	BDL	32.139	4697.895	19595.539	216.892
3	SO-33	Sediment-2	21°43'21.2"N 72°35'42.6"E	5/4/2022	8.13	8490	38.29	52.42	1.08	12.67	BDL	78.69	17.22	153.03	22.42	39.58	58.33	2.08	Silt Loam	7.36	3.09	0.3	10.74	3.26	9796.08	4754.5	40545.63	566.91	BDL	14.84	1942.78	25202.14	181.25
3	SO-34	Sediment-5	21°41'58.0"N 72°36'23.4"E	5/4/2022	7.68	1364	32.78	54.18	1.04	15.62	BDL	90.8	9.19	46.09	24.28	61.54	86.15	7.69	Silt	5.1	1.98	0.14	1.37	3.26	1408.51	4415.43	49474.98	565.18	BDL	14.54	215.03	26222.55	135.6
3	SO-35	Sediment-6	21°41'24.1"N 72°35'57.5"E	5/4/2022	7.49	7800	50.51	52.42	1.08	6.38	BDL	109.78	5.18	54.39	21.2	-	98.64	1.36	Silt	50.72	5.11	0.35	5.88	3.09	4295.41	5322.36	16176.85	340.91	BDL	128.24	219.16	27649.5	184.53
1	SO-36	SK-S	21°47'25.9"N 72°48'44.2"E	4/19/2022	9.1	410	10.31	44.93	1.25	3.049	BDL	68.266	BDL	36.789	19.378	7.35	80.88	1.76	Silt	2.99	1.131	0.14	0.64	BDL	556.76	3370.06	33330.12	562.758	BDL	BDL	74.857	21035.608	68.561
2	SO-37	SK-S	21°47'25.9"N 72°48'44.2"E	4/21/2022	8.19	596	15.22	35	1.25	3.022	BDL	92.268	BDL	43.468	15.057	-	90.9	9.09	SILT	5.12	1.587	0.14	0.07	BDL	66.36	6079.04	32067.1	613.53	BDL	BDL	105.6	21210.2	86.79
3	SO-38	SK-S	21°47'25.9"N 72°48'44.2"E	5/4/2022	8.52	253	8.77	47.57	1.19	2.77	BDL	83.56	3.07	50.85	23.84	-	94.74	5.26	Silt	3.34	0.967	0.13	1.63	2.67	1124.11	3980.97	13559.87	714.41	BDL	BDL	98.92	26275.18	81.78
1	SO-39	Soil-1	21°43'11.8"N 72°36'06.8"E	4/18/2022	7.08	68800	52.08	65.68	1.08	8.59	BDL	67.14	4.838	95.971	14.81	-	-	100	Clay	9.84	2.86	0.78	64.58	BDL	45482.82	5046.41	24547.2	372.827	0.706	69.115	6044.727	17469.293	172.985
3	SO-40	Soil-1	21°43'11.8"N 72°36'06.8"E	5/4/2022	7.62	32500	40.9	45.67	1.13	3.28	BDL	73.66	4.48	51.33	19.88	2.9	94.2	2.9	Silt	2.9	3.89	0.43	50.09	2.29	42095.3	8906.5	25417.86	556.12	BDL	4.78	791.76	24589.71	84.52
1	SO-41	SP-S	21°45'55.7"N 72°40'08.4"E	4/19/2022	9.27	441	11.76	BDL	1.25	2.767	BDL	71.668	BDL	33.313	16.706	1.23	85.18	13.58	Silt Loam	2.29	1.231	0.25	0.65	BDL	534.8	4816.13	30034.99	422.894	BDL	BDL	50.415	19936.239	48.833
2	SO-42	SP-S	21°45'55.7"N 72°40'08.4"E	4/21/2022	9.7	702	8.22	37.01	1.31	3.429	BDL	80.125	BDL	32.406	15.907	7.05	81.17	11.76	SILT	2.9	0.11	0.665	1.64	BDL	1725.3	3151.4	36672.6	381.6	BDL	BDL	58.854	19221.1	44.77
3	SO-43	SP-S	21°45'55.7"N 72°40'08.4"E	5/4/2022	8.93	177	7.83	35	1.25	2.85	BDL	94.06	3.04	39.8	19.31	2.56	92.3	5.12	Silt	5.14	1.75	0.16	0.77	0.29	709.65	6785.92	36346.77	439.84	2.6	BDL	55.43	22497.25	87.37
1	SO-44	SUV-S	21°41'22.9"N 72°39'13.1"E	4/19/2022	8.96	692	9.52	42.78	1.19	2.777	BDL	60.999	BDL	28.466	14.679	8.2	73.97	17.8	Silt Loom	1.75	1.131	0.11	0.57	BDL	430.47	3857.37	27177.54	322.257	BDL	BDL	48.006	18683.991	43.741
2	SO-45	SUV-S	21°41'22.9"N 72°39'13.1"E	4/21/2022	9.29	800	8.01	39.9	1.25	3.671	BDL	79.68	BDL	33.45	15	9.72	81.94	8.33	SILT	1.9	0.11	0.37	1.28	BDL	1412.4	4250.3	32806.8	407.41	BDL	BDL	66.25	19482.53	53.15
3	SO-46	SUV-S	21°41'22.9"N 72°39'13.1"E	5/4/2022	9.53	762	8.32	54.18	1.04	3.68	BDL	73.77	2.29	39.38	20.38	-	91.11	8.89	Silt	3.21	1.18	0.13	2.77	2.19	2972.08	3792.62	60776.07	495.71	BDL	BDL	68.39	24524.63	60.01
1	SO-47	TPS-9	21°41'50.4"N 72°37'44.0"E	4/18/2022	6.99	46000	11	59.2	1.13	4.835	BDL	58.515	BDL	34.043	15.788	6.55	3.27	91.8		9.56	2.265	1.42	20.39	BDL	16755.48	3405.37	39594.48	291.099	BDL	82.494	292.875	19045.983	125.024
2	SO-48	TPS-9	21°41'50.4"N 72°37'44.0"E	4/20/2022	5.9	87500	19.93	64.4	0.89	4.615	BDL	49.658	BDL	56.252	9.424		94.73	5.26	Clay	67.72	1.426	2.24	43.89	0.276	35390.06	3625.3	37126.9	92.244	BDL	558.393	1525.618	12003.818	126.175
3	SO-49	TP-S9	21°41'50.4"N 72°37'44.0"E	5/4/2022	5.89	97200	11.94	52.08	0.92	3.77	BDL	51.85	16	59.43	8.99	56.67	41.67	1.66	Sandy Loan	13.72	3.34	4.43	70.33	0.89	52588.95	6902.21	34077.92	138.14	1.83	468.99	1467.2	13563.11	122.83
1	SO-50	VD-S	21°43'48.5"N 72°38'01.9"E	4/19/2022	8.7	530	12.15	44.93	1.25	3.322	BDL	76.021	BDL	36.056	19.347	13.15	82.89	3.94	Silt	4.94	1.763	0.1	1.07	BDL	929.26	5624.39	33217.12	412.253	BDL	0.097	122.63	20431.893	86.085
2	SO-51	VD-S	21°43'48.5"N 72°38'01.9"E	4/21/2022	8.55	598	9.11	41.14	1.13	3.389	BDL	77.599	BDL	32.658	19.312	2.81	91.54	5.63	SILT	9.2	0.979	0.25	0.42	BDL	357.87	6083.75	29675.9	376.51	BDL	BDL	81.54	18648.06	72.69
3	SO-52	VD-S	21°43'48.5"N 72°38'01.9"E	5/4/2022	8.57	498	9.06	47.57	1.19	3.37	BDL	99.12	5.66	41.91	26.47	15.62	79.68	4.68	Silt Loam	5.48	2.28	0.21	1.3	0.59	1259.44	47.57	41497.02	478.24	BDL	0.29	74.19	23100.12	102.1
1	SO-53	VL-S	21°45'50.2"N 72°52'51.4"E	4/19/2022	8.58	391	9.7	52.4	1.19	1.867	BDL	98.305	BDL	26.963	14.942	20.63	58.73	20.63	Silt Loam	4.82	1.563	0.11	0.04	BDL	28.51	3529.3	25552.89	439.441	0.136	BDL	59.083	18175.678	87.495
2	SO-54	VL-S	21°45'50.2"N 72°52'51.4"E	4/21/2022	8.16	439	9.94	39.2	1.38	2.823	BDL	91.959	BDL	41.176	22.399	-	87.87	12.12	SILT	0.74	1.115	0.56	BDL	BDL	5.98	2197.2	BDL	594.32	BDL	BDL	90.86	21527.4	56.44
3	SO-55	VL-S	21°45'50.2"N 72°52'51.4"E	5/4/2022	8.62	1138	8.47	48.07	1.08	2.87	BDL	92.56	1.58	48.86	22.74	2.35	90.59	7.06	Silt	2.24	0.75	0.1	2.74	2.77	2556.6	3936.57	34077.92	675.42	0.32	BDL	85.33	26024.18	69.27
1	SO-56	VS-1	21°46'50.1"N 72°53'10.5"E	4/18/2022	8.55	12200	25.71	44.93	1.25	2.898	BDL	87.065	BDL	39.984	19.292	-	88.17	11.82		8.09	0.891	0.11	15.52	BDL	9347.26	1910.24	14252.7	558.076	BDL	BDL	85.456	20783.786	53.878
3	SO-57	VS-1	21°46'50.1"N 72°53'10.5"E	5/4/2022	8.1	110	9.41	47.57	1.19	2.48	BDL	86.66	2.68	49.85	24.12	14.93	80.6	4.47	Silt	0.54	0.68	4.43	0.7	2.48	432.84	2106.47	10526.57	646.16	BDL	BDL	96.01	26379.16	75.52
2	SO-58	VS-1	21°46'50.1"N 72°53'10.5"E	4/20/2022	8.16	11990	18.19	42.29	1.31	2.292	BDL	92.38	BDL	41	20.148	3.7	86.41	8.64	Clay	33.12	1.493	0.56	14.33	BDL	9081.59	2433.83	9463.681	542.389	BDL	BDL	92.533	21421.866	67.838

Round	Graph Code	Location Code	Geo co-ordinates	Date	pH	Colour	Conductivity	Chloride as Cl⁻	Total Dissolved Solids	Total Suspended Solids	Ammoniacal Nitrogen NH_3-N	Chemical Oxygen Demand	Dissolved Oxygen	Biochemical Oxygen Demand	Oil & Grease
					-	Hazen	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2	S1	SW-1	21°43'11.8"N	4/21/2022	7.05	375	14230	4198.7	8006	212	116.34	499.97	BDL	156.25	BDL
3	S2	SW-1	21°43'11.8"N	5/4/2022	7.26	1000	29300	8847.26	16000	408	706.38	2590.8	BDL	645.16	BDL
1	S3	SW-1	21°43'11.8"N	4/20/2022	7.56	500	15400	4598.57	8764	250	229.12	714.24	BDL	133.93	BDL
2	S4	SW-2	21°43'50.5"N	4/20/2022	7.17	100	>100000	44,186.30	84,610	172	184.01	725.76	2.5	136.36	BDL
3	S5	SW-2	21°43'50.5"N	5/4/2022	7.32	100	157400	64,979.85	110,576	1338	172.14	1305.6	1.2	190.22	BDL
1	S6	SW-2	21°43'50.5"N	4/18/2022	7.45	80	10400	46,385.62	80,918	178	130.59	160	4.5	20	BDL
2	S7	SW-3	21°43'35.2"N	4/21/2022	7.12	125	8750	2349.27	4752	104	39.17	201.6	2	62.97	BDL
3	S8	SW-3	21°43'35.2"N	5/4/2022	7.22	1000	23320	7097.8	12,942	834	400.68	1746.24	BDL	364.96	BDL
1	S9	SW-3	21°43'35.2"N	4/20/2022	7.38	300	9520	2749.15	5,556	46	43.33	248.66	BDL	46.58	BDL
2	S10	SW-4	21°43'16.0"N	4/20/2022	7.72	500	10,050	2949.09	5682	152	131.18	252.35	0.7	84.74	BDL
3	S11	SW-4	21°43'16.0"N	5/4/2022	7.33	1250	50,400	16794.79	29818	474	1009.12	3753.6	BDL	781.25	BDL
1	S12	SW-4	21°43'16.0"N	4/18/2022	6.89	750	22,900	7347.72	12090	96	600	1709.57	BDL	212.76	BDL
2	S13	SW-5	21°41'58.1"N	4/20/2022	6.43	300	4220	699.78	2502	42	65.29	432.51	BDL	67.57	BDL
1	S14	SW-5	21°41'58.1"N	4/18/2022	7.65	200	658	59.98	396	10	4.45	56.45	3.2	7.06	BDL
2	S15	SW-6	21°41'23.3"N	4/20/2022	8.26	250	8870	999.69	5894	380	3.56	253.95	4.2	47.62	BDL
1	S16	SW-6	21°41'23.3"N	4/18/2022	8.79	375	8620	1074.67	5662	132	BDL	209.66	4.2	26.25	BDL
2	S17	SW-7	21°42'15.4"N	4/20/2022	6.86	375	16910	4798.51	10696	118	35.61	3142.66	BDL	326.92	BDL
3	S18	SW-7	21°42'15.4"N	5/4/2022	7.66	750	17880	5048.43	11640	376	55.79	2928	BDL	609.76	BDL
1	S19	SW-7	21°42'15.4"N	4/18/2022	6.81	500	15340	4598.57	9356	204	13.35	2688	BDL	253.38	BDL
2	S20	SW-8	21°41'52.8"N	4/20/2022	7.47	500	23,300	7097.8	13,928	108	41.55	2174.46	BDL	270.27	BDL
3	S21	SW-8	21°41'52.8"N	5/4/2022	7.95	1250	25,540	7747.6	16,030	302	55.2	2399.04	BDL	500	BDL
1	S22	SW-8	21°41'52.8"N	4/18/2022	7.59	625	22,000	7047.81	13,850	84	46.89	1989.12	BDL	250	BDL
1	S23	SW-10	21°47'04.2"N	4/18/2022	8.02	625	36900	1624.5	35532	80	BDL	645.12	BDL	72.58	BDL
3	S24	SW-10	21°47'04.2"N	5/4/2022	7.87	500	32600	1249.61	32700	572	1.78	652.8	BDL	81.52	BDL
2	S25	SW-10	21°47'04.2"N	4/20/2022	7.74	500	31700	1349.58	23048	68	5.94	581.97	BDL	110.29	BDL

Graph Code	Sulphate	Nitrate	Total Phosphorous	Sodium Adsorption Ratio	Total Kjeldahl Nitrogen	Hexavalent Chromium	Sulphides	Phenol	Cyanide	Anionic Surfactant (MBAS)	Arsenic	Boron	Cadmium	Copper	Iron	Lead	Nickel	Manganese
	mg/L	mg/L	mg/L	milimole/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
S1	418.4	45.95	2.97	29.93	179.32	BDL	6.65	0.51	0.02	1.6	0.005421	1.26	BDL	0.34107	0.44	0.002563	BDL	0.91984
S2	1593.5	395.2	4.29	60.15	714.51	BDL	3.33	32.6	0.082	6.2	BDL	1.916	BDL	3.80026	2.78	0.01639	0.02675	0.77129
S3	472.8	80.5	4.62	27.44	257.78	BDL	12.24	6.6	0.038	>2	0.006914	1.152	BDL	0.332196	0.624	BDL	0.020217	0.71281
S4	5080	73.1	BDL	66.62	215.75	BDL	BDL	1.7	BDL	3.8	BDL	4.578	0.002405	0.372591	0.612	BDL	0.041319	1.8067
S5	6259	62.5	0.34	99.94	198.94	BDL	BDL	1.1	BDL	4.6	0.0076	>5	BDL	0.30373	0.994	BDL	0.01283	2.4718
S6	4450	51.75	0.69	72.98	187.73	BDL	BDL	1	BDL	4.2	0.0054	7.472	BDL	0.41396	1.465	0.01689	0.04837	2.6624
S7	269.3	24.3	0.55	16.54	56.04	BDL	5.85	0.16	0.039	1.2	BDL	1.005	BDL	0.066481	0.537	0.002103	BDL	1.1045
S8	723.5	338.75	3.42	39.74	434.31	BDL	4.93	42.1	0.058	5.8	BDL	1.35	BDL	0.01176	4.04	0.01898	BDL	0.82976
S9	395.2	29.7	1.49	21.53	89.66	BDL	8.38	2.7	0.032	1	0.005261	1.107	BDL	0.089435	0.654	BDL	0.008719	1.0441
S10	418.4	56.1	1.68	21.86	184.93	BDL	7.32	2.9	0.079	3.6	0.00931	7.962	BDL	1.1843	1.375	0.00426	0.02754	0.40634
S11	24.37	606.25	4.44	81.83	983.5	BDL	9.33	28.6	0.07	7.8	0.00834	>5	BDL	2.90719	0.375	0.00813	0.03159	1.7284
S12	701.2	260.75	2.27	30.94	588.42	0.03	2.13	10.7	0.068	5.4	BDL	4.947	BDL	5.79914	2.91	0.03632	0.0442	0.66953
S13	1007	121.4	4.05	3.7	84.06	BDL	10.1	3.1	BDL	2.2	0.00712	BDL	BDL	0.03276	2.728	BDL	BDL	0.96783
S14	80.82	18.9	BDL	2.33	5.04	BDL	0.66	0.8	0.01	0.4	BDL	BDL	BDL	0.006971	0.597	0.00205	BDL	0.28718
S15	3424	77	1.61	14.32	25.22	BDL	3.59	0.6	BDL	2	0.02328	0.824	BDL	0.07258	8.012	BDL	0.01558	0.78406
S16	1652	41.5	2.6	12.62	18.49	BDL	BDL	0.9	0.02	1.6	BDL	0.855	BDL	0.06078	1.792	BDL	0.00354	0.69466
S17	280.6	399.5	6.79	75.95	98.07	BDL	19.82	12.3	BDL	4	0.006012	BDL	BDL	BDL	0.725	BDL	0.046437	0.13066
S18	342.2	479.5	8.19	58.46	140.1	BDL	19.06	12.2	BDL	6	BDL	BDL	BDL	BDL	0.57	BDL	BDL	0.05641
S19	276.55	415.5	7.6	68.99	62.2	BDL	15.73	12.2	BDL	5.6	BDL	BDL	BDL	0.00779	0.907	BDL	0.00986	0.17465
S20	494.6	340.5	6.4	82.91	274.6	BDL	6.65	12.9	BDL	11.6	0.00129	BDL	BDL	BDL	0.824	BDL	0.056547	0.2521
S21	248.6	561.5	9.07	58.66	134.49	BDL	23.73	0.9	BDL	6.8	0.01127	BDL	BDL	BDL	0.514	BDL	BDL	0.13177
S22	228.6	393	6.36	69.96	84.62	BDL	33.06	12.3	BDL	6	BDL	BDL	BDL	0.0318	1.243	0.0693	0.01972	0.36825
S23	18094	61.9	9.3	115.21	10.65	BDL	20.13	2.3	0.032	1.8	BDL	BDL	BDL	0.02254	4.015	BDL	0.04209	0.67933
S24	15974	79	7.65	99.16	22.41	BDL	5.6	2	BDL	2.2	BDL	BDL	BDL	BDL	1.53	BDL	0.02426	0.37648
S25	17650	62.05	3.89	101.88	154.11	BDL	17.82	2.7	BDL	1.8	BDL	BDL	BDL	BDL	1.973	BDL	0.06587	0.3321

Graph Code	Mercury	Selenium	Total Chromium	Zinc	Total Hardness	Calcium Hardness	Magnesium Hardness	Chlorine Residual	Fluoride	Nitrite	Odour	Vanadium	Total Coliforms	Faecal Coliforms
	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TON	mg/L	MPN/100ml	MPN/100ml
S1	BDL	BDL	0.005038	BDL	1250	800	450	BDL	BDL	0.105	17	0.106901	1600	1600
S2	BDL	BDL	0.06158	BDL	1500	1000	500	BDL	0.494	0.038	17	0.15315	1600	350
S3	BDL	BDL	0.006803	BDL	1150	850	300	BDL	BDL	0.034	24	0.086815	1600	1600
S4	BDL	BDL	BDL	BDL	14,750	3300	11,450	26.58	1.394	11.47	2	3.09596	23	2
S5	0.00787	BDL	BDL	BDL	21,600	4500	17,100	5.31	1.815	1.48	12	5.11964	26	2
S6	BDL	BDL	BDL	BDL	15,200	3000	12,200	8.86	BDL	33.6	6	4.27045	23	23
S7	0.001577	BDL	BDL	BDL	1100	450	650	BDL	0.997	BDL	12	0.092407	1600	1600
S8	BDL	BDL	0.03164	BDL	1350	1050	300	BDL	0.018	0.014	100	0.18723	1600	1600
S9	BDL	BDL	BDL	BDL	900	600	300	BDL	0.878	0.112	12	0.103434	1600	1600
S10	BDL	BDL	0.0071	BDL	750	550	200	BDL	BDL	0.028	50	0.05413	1600	1600
S11	BDL	BDL	0.03363	BDL	2350	1850	500	BDL	0.942	0.055	50	0.1212	1600	1600
S12	0.01125	BDL	0.01586	BDL	1750	1450	300	BDL	BDL	0.55	50	BDL	1600	BDL
S13	BDL	BDL	0.00587	BDL	600	450	150	BDL	0.601	0.075	12	0.00122	1600	1600
S14	BDL	BDL	BDL	BDL	170	100	70	14.18	BDL	0.12	1	0.0158	1600	1600
S15	BDL	BDL	0.02182	BDL	1750	1250	500	BDL	0.837	0.077	8	0.22493	1600	1600
S16	BDL	BDL	BDL	BDL	1500	1150	350	BDL	0.875	0.8	3	0.02109	1600	1600
S17	BDL	BDL	BDL	BDL	400	250	150	BDL	BDL	0.3	35	BDL	1600	2
S18	BDL	BDL	BDL	BDL	250	100	150	BDL	BDL	0.088	100	BDL	1600	1600
S19	BDL	BDL	BDL	BDL	350	200	150	BDL	BDL	0.46	100	BDL	1600	1600
S20	BDL	BDL	BDL	BDL	700	500	200	BDL	BDL	0.29	70	0.023562	1600	1600
S21	BDL	BDL	BDL	BDL	500	300	200	BDL	0.432	0.072	100	0.02412	1600	240
S22	BDL	BDL	BDL	BDL	650	500	150	BDL	BDL	1.06	50	BDL	1600	1600
S23	BDL	BDL	0.22442	1.266	1450	850	600	BDL	BDL	0.05	50	0.14831	900	900
S24	BDL	BDL	0.13161	1.72	1450	1050	400	BDL	1.597	0.073	17	0.15278	1600	33
S25	BDL	BDL	0.14905	1.823	1400	500	900	BDL	0.96	0.12	50	0.1481	1600	70

Graph Code	α-BHC	β-BHC	γ-BHC/Lindane	δ-BHC	Aldrin	EBDOSULFAN-I (α)	EBDOSULFAN-II (β)	EBDOSULFAN-Sulfate	4,4'-DDE	4,4'-DDD	4,4'-DDT	Anthracene	Benzo(a)pyrene	Naphthalene
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
S1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S2	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S5	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S8	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S10	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S11	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S14	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S16	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S18	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S19	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S20	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S21	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S22	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S23	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
S24	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
S25	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

ANNEXURE - VII

Title of project:

Health risks among population living in vicinity of Dahej Industrial Area (Petroleum, Chemical and Petrochemical Investment region – PCPIR)

1. Details of Scientists involved in the project:

Project Investigators at ICMR NIOH:

- Dr. Ankit Sheth, Scientist - E, ICMR-NIOH, Ahmedabad (Principal Investigator)
- Dr. Ankit Viramgami, Scientist - C, ICMR-NIOH, Ahmedabad (Co-PI)
- Dr. Dhirendra Pratap Singh, Scientist - C, ICMR-NIOH, Ahmedabad (Co-PI)
- Dr. Rakshit Shah, Scientist - B, ICMR-NIOH, Ahmedabad (Co-PI)

2. Preamble:

- Gujarat Pollution Control Board (GPCB) invited ICMR-NIOH Ahmedabad to assess health of the people living in areas of Dahej Industrial Area (PCPIR), as per directives/order of Hon'ble National Green Tribunal (NGT) in the matter of O.A. No. 60/2021 order dated 02-02-2022.
- A preliminary visit was carried out by Scientists of ICMR-NIOH to Bharuch GPCB regional office and subsequently to Dahej PCPIR (Petroleum, Chemicals and Petrochemical Investment Region) area on 23-03-2022 and 24-03-2022 to understand the ground level situation analysis. Deliberations were carried out with Regional Officer (RO) - GPCB Bharuch to understand the geographical spread of Dahej PCPIR, type and nature of industries, and the list of villages exposed to possible industrial contamination.
- The team of Scientists also visited the villages of Vagra Taluka which are located nearby Dahej PCPIR. Dahej is the largest village in Vagra Taluka and central hub of industrial development. The Scientists also met the stakeholders of Dahej Primary Health Centre and discussed the demography of villages as well as explored the accessibility to the general community for study purpose.
- The team of Scientists also met the Chief District Health Officer of Bharuch district to explore the support in coordinating and facilitating the access to the general population of villages located nearby Dahej PCPIR area.

3. Background:

3.1 Introduction to Dahej Industrial Area

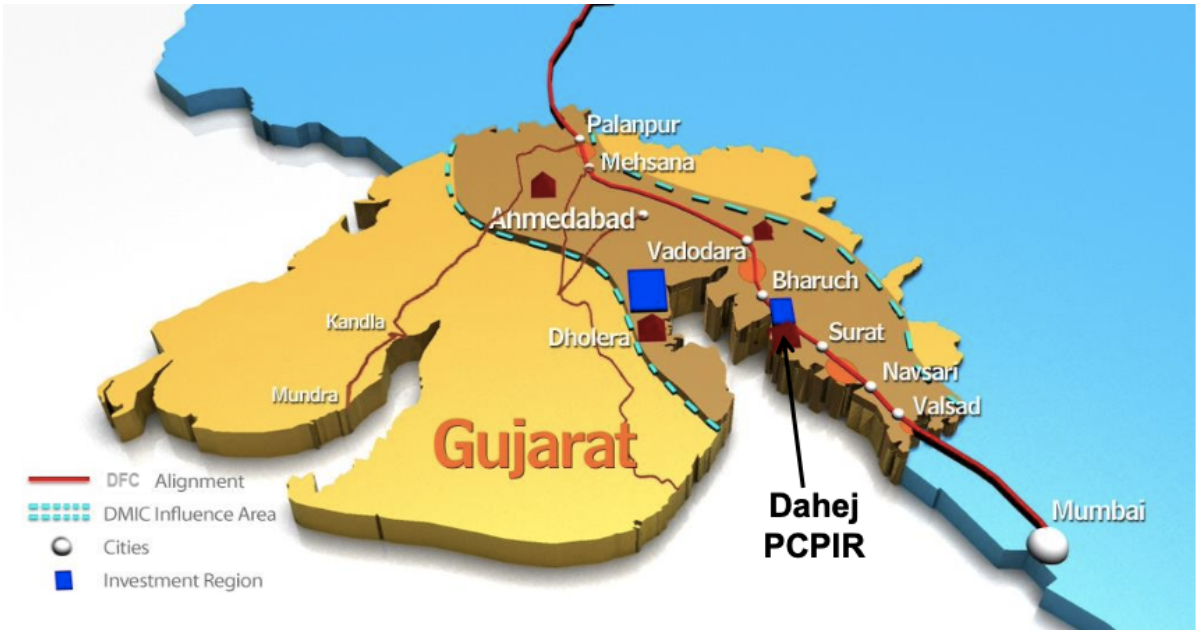
Government of India has launched the policy on the Petroleum, Chemicals and Petrochemical Investment Region (PCPIR) in May 2007. The Policy defines the concept of PCPIR as a specifically delineated investment region with an area of around 250 sq.km. planned for the establishment of manufacturing facilities for domestic and export led production in petroleum, chemical & petrochemical along with the associated services and infrastructure.

Dahej Industrial Area started in the year 2006-07 and is located in Vagra taluka of Bharuch district. Keeping PCPIR policy in mind, Government of Gujarat decided to locate the PCPIR at Dahej in Bharuch district and it is amongst the 04 PCPIR notified by Government of India under PCPIR Policy 2007. The PCPIR region has total area of 453 sq. km and is located near Gulf of Khambat. The PCPIR region covers the industrial establishments in the area namely Dahej-I, Dahej-II, Dahej-III, Dahej SEZ, Atali 1, Atali 2, Vilayat Estate, Saykha Estate, etc. The industrial zone has presence of sectors as diversified as chemicals & petrochemicals, fertilizer, textiles, drugs & pharmaceuticals, and dyes & dyes intermediates. It is also served with LNG jetty as well as liquid chemical jetty and handling facility on the coast of Dahej port.

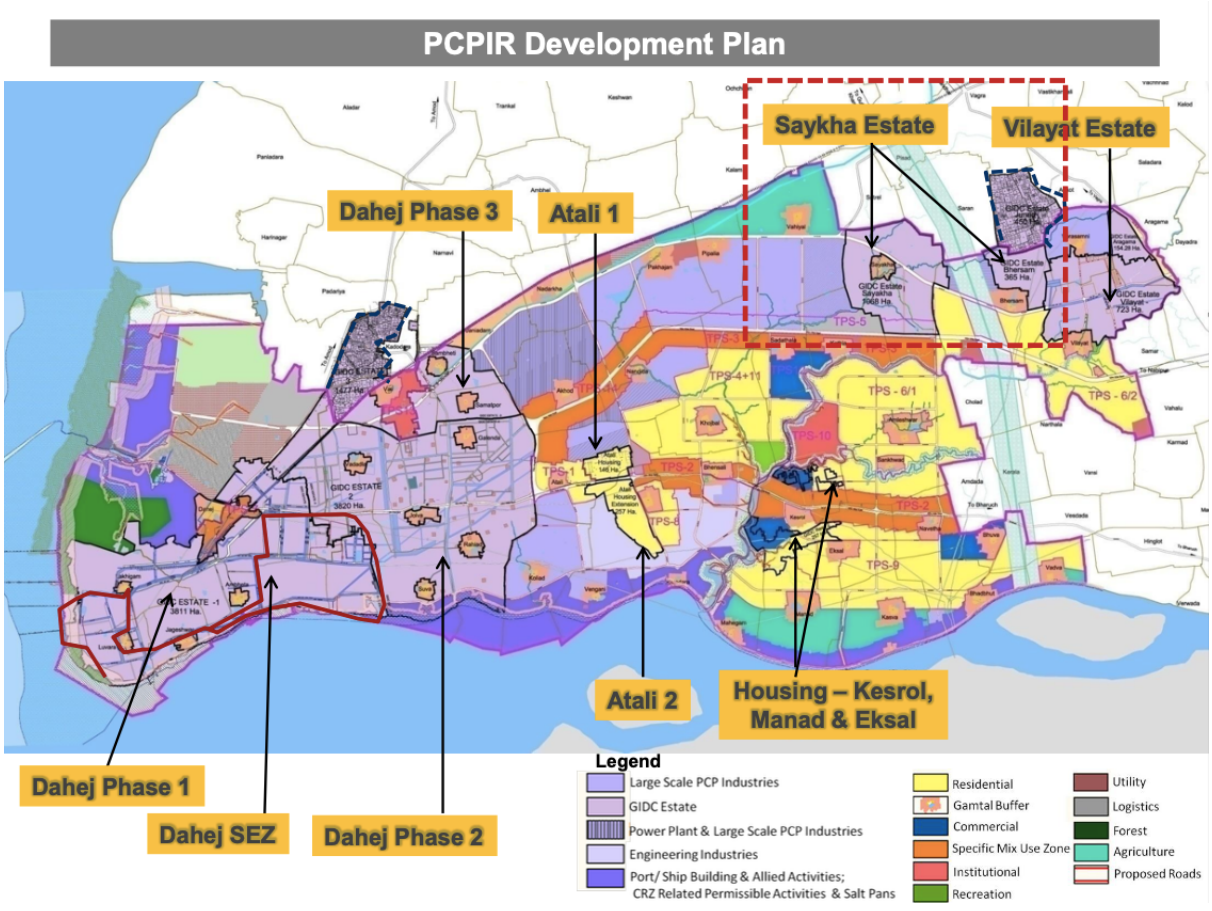
The infrastructure facilities in the Dahej PCPIR region are managed by Gujarat Industrial Development Corporation (GIDC) Dahej. Dahej GIDC has provided fresh water supply network, wastewater pumping and drainage network, roads, storm water drain etc. in the area.

The PCPIR falls on both sides of the proposed Delhi-Mumbai Industrial Corridor (DMIC). Dahej has attracted a large number of business conglomerates due to emergence of PCPIR region, Dahej SEZ and passing of DMIC in Bharuch – all of which are expected to further fuel the industrial growth of the Dahej. Dahej PCPIR has already has seen committed investments of more than 1.5 lakh crores. Dahej PCPIR is presently providing employment to 32000 people directly, and to more than one lakh people indirectly.

3.2 Location of Dahej PCPIR plan



Location of Dahej PCPIR on DMIC corridor



Dahej PCPIR development plan area

3.3 Major industrial units at Dahej PCPIR and probable pollutants

Industrial units	Probable water pollutants	Probable air pollutants
• Dyes and intermediates • Petro-chemicals • Pharmaceuticals • Chemicals • Pesticides	- Calcium carbonate, Chloride, Fluoride, Total Residual Chlorine, Sulphides, Sulphate, Nitrate, Phosphorous, Nitrite, Oil & Grease, Phenolic Compound, Cyanide, Anionic Detergents (MBAS), Boron, Organic Pollutants, Total Kjeldal Nitrogen as TKN etc. - Heavy metals like Boron, Arsenic, Selenium, Mercury, Copper, Iron, Nickel, Zinc, Cadmium, Lead, Total Chromium, Manganese, Vanadium, Hexavalent Chromium. - Poly Aromatic Hydrocarbon, Organo-chlorine pesticides, Residual pesticides, Residual APIs, Ammoniacal Nitrogen, Polychlorinated Biphenyls	- SO2, HCl, NOx, PM10, PM2.5, NH3, Cl2, PAH, VOC, HCl, HF, CS2, BR2, HBr, HCN, CN, H2S, CO, Benzene & Bezopyrine, Acid mist, pesticides, trace organic compounds, trace heavy metals etc.

3.4 Possible health hazards to general population in proximity to industrial area

Based on preliminary visit carried out by Scientists of ICMR-NIOH to Dahej PCPIR area and existing literature search, the following health related hazards are likely to occur to people living in close areas of industrial contamination.

Possible health hazards:
General health hazards due to exposure to above listed pollutants includes: - Acute irritative symptoms: eye irritation, skin irritation, nausea, throat irritation, chemical odour, etc. - Respiratory: Wheeze, cough, sore throat, chronic bronchitis, shortness of breath, etc. - Skin: atopic dermatitis, allergic conditions - Carcinogenic: Lung, uterine and bladder cancer - Cardiovascular: Increased risk of coronary events

- Endocrinal disturbances - Liver and kidney toxicity
Chemical exposures may lead to: - Mild exposure leads to irritation to the eyes and respiratory system. - Moderate exposure causes dizziness, headache, weakness, irritability, insomnia. - High exposure may cause apnoea, coma, convulsions.
PAH may cause: - Short term health effects like eye irritation, nausea, vomiting, confusion etc. - Long term health effects like skin problems, predispose various cancers (skin, GIT, lung, bladder etc), reproductive health problems, etc.
Diesel engine exhaust emits gases (CO, CO_2, NOx, Sox, hydrocarbons including PAH) and soot particles (carbon, organic material and traces of metallic compound) - Acute effects of diesel exhaust exposure include irritation of the nose and eyes, lung function changes, headache, fatigue and nausea. - Chronic exposures associated with cough, sputum production and reduced lung function.
Heavy metals may lead to neurological manifestations, cardio-vascular manifestations, respiratory hazards, renal toxicity, liver toxicity, dermal toxicity, carcinogenic risks, etc.
Chronic exposure to VOC may damage the liver, kidneys, and neurological manifestations as well as it can be carcinogenic.

With due consideration to the background knowledge and discussion held during preliminary visit, the **present study is proposed with a scope to evaluate the following health profile in population living in proximity to Dahej PCPIR.**

- Respiratory system (irritant symptoms, chronic disorders, lung function tests, etc.)
- Cardiovascular system (risk factors for heart disease, etc.)
- Endocrine system (diabetes, thyroid function tests)
- Renal system (kidney function tests)
- Liver and biliary system (liver function tests)
- Eye (irritative symptoms, conjunctivitis, etc.)
- Dermatological problems (dermatitis, allergies, etc.)
- Oxidative stress and risk of carcinogenicity (enzymes for oxidative stress, DNA damage/comet assay)
- Socioeconomic issues/challenges
- General Health and sanitation issues and health facility access

Following methods will be used for health profile assessment. These methods are discussed in details in methodology section of the proposal.

- Survey questionnaire
- Medical examination
- Lab investigations for respiratory system assessment
- Haematological investigations
- Biochemical investigations
- Carcinogenicity risk assessment

3.5 Rationale of the study:

The establishment of PCPIR may have some adverse impacts on various components of environment due to type and nature of industries. It also poses health risks to the general population which are residing in close proximity to these industrial zones.

Since Dahej PCPIR is set to expand and increase the industrial plants in near future, the health and health related factors of the population residing in close proximity to this industrial zone should be studied with special attention. Many studies in other parts of the world has emphasized on respiratory problems and other irritants in population close to petrochemical industries, however, none of the studies has comprehensively evaluated all the health hazards in population exposed to industrial pollution. The proposed study also offers to compare the health profile of exposed population with that of population residing in relatively unexposed area.

The study is of great importance because it will provide the local health authorities with baseline health and epidemiological date of population living close to Dahej PCPIR, which will provide a framework for a prospective epidemiological monitoring program in the near future.

3. Objectives:

Overall aim is to study village population within and surrounding 5 Km of the Dahej Industrial Area of district Bharuch to assess the health related impact due to pollution in the area.

Primary objectives:

- To estimate the prevalence of respiratory morbidity among population residing in proximity to industrial area.

- To study the general health profile of residents living in proximity to industrial area and compare with residents of relatively unexposed area.

Secondary objectives:

- To explore perceived health needs and health facility access of residents living in proximity to industrial area.
- To estimate the risk of carcinogenicity of population residing in proximity to industrial area.
- To suggest suitable preventive and monitoring strategies to promote good health in the community living close to industrial area

4. Methodology:

i. Type of study:

- Cross sectional comparative study

ii. Study setting:

- Dahej PCPIR villages, and control village in Bharuch district

iii. Study Population:

- For the purpose of this study, the Dahej PCPIR is categorized into 2 different zones – one which has already developed with multiple industries (Dahej-1, Dahej-2, Dahej SEZ), and another which is under development phase (Vilayat and Saykha Industrial estate)
- The villages located within 5 km radius of PCPIR (Dahej-1, Dahej-2, Dahej SEZ) will be included in the study as **high exposed population group** because they are residing in very close proximity to already developed major industries of Dahej PCPIR and exposed to industrial contamination.
- The villages located close to Vilayat and Saykha Industrial estate will be included in the study as **intermediate exposed group** because these areas presently has lesser number of industries, but will witness rapid development of new industries in near future. Geographically, these villages are located at a distance of 5-10 kms from high exposure industrial zone.
- For **control group**, relatively unpolluted villages located at a distance of >10 km from any major industrial activity will be included in the study.

iv. Sample size:

- As per the existing literature, there is huge variation in the reporting of respiratory symptoms in population exposed to industrial contamination.
- One such recent study (Sang-Yong Eom et al., 2018) has documented that 6.6% of population living close to industrial complexes self-reported irritant respiratory symptoms.
- Thus, considering P = 6.6% for finite population, confidence level = 95%, design effect= 1 and relative precision of 2%, the calculated sample size for this study using Open-Epi software is 589 i.e. ~ 600 subjects
- Thus, 600 from exposed group (living in proximity to industrial zone), 600 from intermediate exposed group (living in proximity to upcoming industrial zone) and 600 from control village will be included in the study.
- The **total sample size would be thus 1800.**

v. Sampling strategy:

- A line list of villages near Dahej PCPIR will be obtained from CDHO office of Bharuch district.
- From this list, 2 villages each from exposed area, intermediate area and control area will be selected by simple random sampling.
- Thus, a total of 6 villages will be visited for this study for inclusion of 1800 study participants.
- Based on available population statistics of selected village, desired number of adult participants will be recruited as per population proportionate size method.
- The samples will be representative of the local demography, i.e. the proportion of children and the male:female ratio will be considered as per the latest health survey and attempt will be made to select sample age group and sex group that are representative of this percentages.
- In each selected village, prior to enrolment of study participant, community sensitization programme and meeting with local stake holders will be carried out to enhance participation in the study. Following that, study team will visit representative households of village for inviting adult participants for study. After collecting basic details, participants will be mobilised to local study site (within the same village) for further medical and laboratory investigations. In case of insufficient numbers of participants from selected village, adjacent village will be accessed to approximate the desired sample size.

vi. Selection criteria of study subjects:

Inclusion criteria:

- Age group 18-60 years (for questionnaire, medical examination, lab investigation, haematological and biochemical investigations, and carcinogenic risk assessment)
- Age group < 18 years (for questionnaire and medical examination)
- Willingness to participate in the study

Exclusion criteria:

- Residing in area since less than six months
- Contraindication for spirometry (Other investigations excluding spirometry will be carried out)
- Subjects with congenital malformation/ physical inability/ intellectual disability.

vii. Study tools:

- **Questionnaire**:
  - A pretested semi closed questionnaire will be used which includes details of *sociodemographic profile* (age, sex, residence, income, education, addiction, etc.), *occupational history* (duration of job, hours of shift, risk factors at job, previous exposure/job etc.), *medical history* (past, present and family), *perceived health need* along with health facility access and expenditure.
  - Respiratory symptoms questionnaire as suggested by the American Thoracic Society (ATS 1978) will be modified for this study. The questionnaire will be adapted to the local language. This standardized questionnaire will include questions on respiratory (presence or absence of regular dry and/or productive cough, wheezing, shortness of breath, etc), nasal and eye symptoms, smoking habits, medical and family history of each subject.

- **Medical examination**
  - General examination:
    - Pallor, clubbing, cyanosis, icterus, etc.
  - System specific examination:
    - Cardiovascular, Respiratory, Gastrointestinal, Skin, Eye, etc.
  - Vitals
    - Temperature, BP, pulse, respiratory rate
  - Anthropometric assessment:

- Height (Ht)- measured with a stadiometer in centimetres, without shoes, straight standing position, arms at sides, approximating both heels on the stadiometer and maintaining head position straight.
- Weight (Wt)- with pre-calibrated weight scale measured in Kg & gm, with minimal clothing, removing shoes, emptying pockets, standing position, arm at sides, looking forward/straight.
- BMI- Calculated from equation BMI=(Wt)/(Ht)^2 where Wt in Kg and Ht in meters. Further, it will be classified as per WHO criteria for underweight, normal, pre-obese, obese-1, and obese-2.

- **Lab Investigations:**
  - Pulmonary function tests (PFTs)
    - Includes mean percentage forced vital capacity (FVC%), forced expiratory volume at the first second (FEV1%), forced expiratory ratio (FEV1/FVC%), forced expiratory flow during 25–75% of FVC (FEF25-75%), and peak expiratory flow (PEF%), in accordance with the guidelines given by the ATS (1978) standards and will be measured with a portable pre-calibrated Spirovit - SP10 (Schiller) on site.
    - From the three acceptable and repeatable measurements, the best result for FEV1, FVC, FEF25-75%, FEV1/FVC, PEF will be considered. Based on Kamat's equation, the normal Indian standard values (predicted values) of FEV1 and FVC will be derived in percent (%) of predicted values for each subject.
    - Further, values with FEV1/FVC < 70% and % predicted FVC< 80% will be considered as obstructive and restrictive pattern respectively. A subject having both (FEV1/FVC < 70% and %predicted FVC< 80%) will be considered as mixed pattern.
    - In case of obstructive findings, reversibility of the air flow limitation will be checked through bronchodilator test for differentiation between asthma and COPD. Further, GOLD criteria will be used for COPD diagnosis and categorization.

- **Haematological and biochemical investigations:**
  - With standard protocol with aseptic precautions ~ 3 ml of venous blood will be withdrawn from study subjects in different vacutainers (serum, EDTA, heparin tube, etc.) and stored in required temperature till further analysis. (Serum will be separated through centrifuge machine as per standard protocol at 3000 rpm and at room

temperature. Different aliquots will be stored at -2 °C to -8 °C for further biochemical analysis)

- Haematological analysis will be carried out using auto-Haematology analyser BC-5300 (MindRay Biomedical Electronics Ltd., China) and biochemical parameters in serum will be analyzed using Merilyzer Auto Quant 100 (Meril Life Pvt ltd, Vapi, Gujarat) as per the manufacturer instruction and standard kits (Meril Life pvt ltd, Vapi, Gujarat).
- Following key haematological and biochemical parameters will be assessed in whole blood or in serum samples:
    - Complete blood count such as differential cell count, haemoglobin, total cell count etc.
    - Liver function test (viz. ALP, SGPT, SGOT, GGT, albumin, total protein)
    - Diabetes screening – random blood sugar (if required PP2BS/HbA1C)
    - Kidney function test (viz. urea, creatinine, etc.)
    - Lipid profile test (viz. total cholesterol, HDL, LDL, etc.)
    - Thyroid function tests (TSH,T3,T4, etc.)

- **Carcinogenicity risk assessment**
    - DNA damage/ Comet assay
        - Single cell gel electrophoresis assay will be performed to assess the DNA damaging effect of potential exposures. Briefly, on frosted glass slides various layers of agarose on varying concentration (0.5% - 1.0% w/v) will be applied to make a firm but thin layer, blood samples mixed with low-melting agarose, layered to a sandwich agarose film. Gel electrophoresis will be performed after lysis of the samples. Slides will be stained with ethidium bromide (1 mg/mL), washed and observed under fluorescence microscope (Leica DM LA Microscope, Germany) at 300-60 nm. DNA damaged will be calculated using CASP software (CASP Labs). DNA content in tail and head body will be analysed.
    - Enzymes related to oxidative stress
        - Various oxidative stress markers will be estimated in the serum samples. Colorimetric analysis (Using Multimode analyser, Biotek instruments Pvt Ltd.) for lipid peroxidation in terms of malondialdehyde (MDA) levels, total thiols, reduced glutathione (GSH) and glutathione-S-transferase (GST) enzyme activities will be estimated using standard and previously published methods.

viii. Data analysis:

- After performing data cleaning, data will be analysed through SPSS 26.0. Statistical tests like proportion (frequency & percentage), central tendency/average (Mean, Median, etc.) and dispersion (Standard deviation & Standard error) will be applied. Chi-Square test to identify significant difference b/w proportion and parametric (normal distributed data)/ non-parametric tests (data not follow normal distribution) to identify difference b/w group average will be carried out. Value of 'p' as <0.05 will be consider as statistical significant difference for statistical analysis.

x. Ethical approval and consent of participants:

- Institutional Ethical Committee (IEC) and Scientific Advisory Committee (SAC) approval will be received prior to initiation of study.
- Written informed consent from each study participant will be received prior to enrolment in study.

xi. Project implementation plan:

- After necessary administrative clearance from GPCB and after obtaining consent from the study participants, required information as per the study protocol will be collected from them.
- Furthermore, medical examination, lab investigation, haematological and biochemical investigations tests, etc. will be performed as per the standard protocol.
- GPCB will facilitate the liaising with local health authorities for smoother execution of the data collection process from selected villages.

xii. Proposed duration and timeline for the study:

- The said timeline is projected after the receipt of the budget amount in account of ICMR-NIOH

Plan (months)	1	2	3	4	5	6	7	8	9	10	11	12
Preliminary information collection												
Recruitment and training of staff												
Procurement of chemicals, consumables etc.												
Field data collection												
Analysis for haematology and biochemistry parameters												
Data entry												
Data analysis												
Report writing and submission												

5. Role of sponsoring agency (Gujarat Pollution Control Board):

- Provide list of industries, the geographic mapping of industrial area, type and nature of industrial activities along with major effluents (pollutants), .
- Facilitate coordination with district health authorities and local health system stakeholders for smooth execution of the study

6. Expected deliverables of the study:

- Provide a compiled report of health profile of selected population residing in the vicinity of Dahej PCPIR.
- Identify the felt health needs of the community and suggest appropriate strategies for early identification and referral mechanism.
- Recommend suitable preventive and monitoring strategies to promote good health in the community residing in vicinity of Dahej PCPIR.

7. Proposed Budget:

Budget Head	Total amount
Manpower	
Laboratory technician for 9 months (x 2)	₹ 3,24,000
Health Assistant for 9 months (x 2)	₹ 3,06,000
Multi-tasking staff for 12 months (x 2)	₹ 1,89,600
Subtotal head	₹ 8,19,600
Recurring	
Spirometer consumables, service calibration	₹ 40,000
Laboratory kits, chemicals, consumables (needles, syringes, vacutainers, PPE kits, biomedical waste disposal kits, transport boxes, etc.)	₹ 25,00,000
Stationary items and storage devices/services	₹ 60,000
Software support (data entry, data analysis, citation manager, etc.)	₹ 50,000
Dissemination (report printing, journal publication, presentation in conferences/meeting, etc.)	₹ 1,50,000
Refreshments for participants	₹ 1,00,000
Subtotal head	₹ 29,00,000
Non-recurring	
Point of care device for differential WBC count	₹ 1,50,000
Tablet device for data entry (x2)	₹ 70,000
Centrifuge machine for serum separation	₹ 50,000
Subtotal head	₹ 2,70,000
Incidental expenses	₹ 5,00,000
TA/DA travel/fuel expense and accommodation	₹ 22,00,000
Total project cost	₹ 66,89,600
Institutional overhead charges (20% of project cost)	₹ 13,37,920
Grand Total Budget Estimate	**₹ 80,27,520**

N.B.

1) *ICMR-NIOH being a not for profit government organization with a mandate of research, won't be able to generate invoice. However, a demand letter for the grant along the research proposal will be submitted.*
2) *ICMR-NIOH is exempted under GST for any funds received for research purpose.*

3) *ICMR-NIOH is also exempted under IT for any funds received for research purpose. Therefore, funding agency need not deduct TDS from the funds allocated to ICMR-NIOH for the purpose of this study.*
4) *Budget will be re-appropriated according to requirement of the project in different heads within the limit of sanctioned budget.*
5) *Any unspent balance at the completion of the project, shall be refunded back to the funding agency.*

Disbursement of fund:

- Budget will be disbursed in two parts:
    - Phase - 1: 80% at initiation of study
    - Phase - 2: 20% at the time of completion of study

Justification:

As major expenses incurred for recruitment of staff, procurement of laboratory kits, chemicals/consumables for different lab related equipment, calibration of lab equipment, and funds (TA/DA) for field visits – are required at the time of initiation of the study; therefore 80% funds are required to be disbursed at initiation of study.

GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION
(A GOVT. OF GUJARAT UNDERTAKING)

Azadi Ka Amrit Mahotsav

Office of the Executive Engineer
(WS & Drg.)
1st floor, Narmada Commercial Complex,
Panch Batti, Bharuch.

Phone : (02642) 242432 / 244183
E-Mail : xen-brc@gidcgujarat.org

No.GIDC/EE/BRH/AB/360 **Date : 27/04/2022**

Work Order

To,
M/s CSIR-National Institute of Oceanography,
Regional Centre,
Lokhandwala Road,
4 Bungalows, Andheri (W)
Mumbai 40053

29/04/22 AAE

SUB :Work order for the work of marine ecological monitoring and assessment around the GIDC discharge locations at Dahej, Gujarat.

REF : 1. Your Project proposal dated 28th March, 2022.
2. Approval received by VC & MD on file dated 20/04/2022
3. Letter No GIDC/ENG/PH/379 dated 25/04/2022.

Agreement No : G/3 of 2022-23

Dear Sir,

This office is pleased to inform you that your above mentioned proposal has been accepted by our competent authority and considering urgency and necessity of work, you are required to start the work as mentioned in your Project Proposal with the issue of this work order. Kindly note that your scope of work will be as mentioned in your proposal and you need to contact Deputy Executive Engineer, (Drg), GIDC, Bharuch for your day to day operations. You are required to start the field investigation and submit your draft and final report as per the delivery schedule mentioned in your proposal. Kindly send us your manpower details assigned for the work and their schedule in advance so that we may plan accommodation and transport facilities for them. You are also requested to send your bank details along with invoice for making payment of 50% of your quoted rate as mentioned in your proposal.

Thanking You.

Yours Faithfully,

Executive Engineer, (W/D)

GIDC, Bharuch

DRAINAGE SUB DIVISION
Inward No. 224
29/04/2022
JCH

Asst-1
Agency file
SRPL
30-04-2022

Copy S.W.R to:

1. The Chief Engineer, GIDC, Gandhinagar for information please.
2. The Superintending Engineer (HO), GIDC, Gandhinagar for information please.

Copy to:

1. Executive Engineer (M&E), GIDC, Bharuch for information please.
2. DEE (Drg.), GIDC, Bharuch for information & further necessary action.
3. PB, GIDC, Bharuch for information.

ANNEXURE - IX : Analysis Results of Coastal Water samples

Round	Graph Code	Location Code	Geo Co-ordinates	Date	pH	Colour	Conductivity	Chloride as Cl⁻	Total Hardness	Calcium Hardness	Magnesium Hardness	Chlorine Residual	Total Dissolved Solids	Total Suspended Solids	Ammoniacal Nitrogen -NH_3-N	Chemical Oxygen Demand	Dissolved Oxygen	Biochemical Oxygen Demand	Oil & Grease
					-	Hazen	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	M1	MWS-1	21°39'41.5"N 72°31'16.6"E	4/19/2022	7.93	5	49,800	23,292.78	6240	1060	5180	BDL	34024	266	BDL	120	6.5	29.98	BDL
1	M2	MWD-1	21°39'41.5"N 72°31'16.6"E	4/19/2022	8	10	49,100	23,442.73	6220	1000	5220	BDL	33,896	110	BDL	120	6.3	26.24	BDL
2	M3	MWS-1	21°39'41.5"N 72°31'16.6"E	4/20/2022	7.91	5	50,700	18,744.19	6000	900	5100	BDL	35530	842	BDL	201.6	6.6	64.52	BDL
2	M4	MWD-1	21°39'41.5"N 72°31'16.6"E	4/20/2022	7.8	10	51,000	18,694.20	6150	950	5200	BDL	36,750	1230	14.84	161.28	6.6	69.44	BDL

Round	Graph Code	Fluoride	Sulphate	Nitrate	Nitrite	Total Phosphorous	Sodium Adsorption Ratio	Hexavalent Chromium	Phenol	Arsenic	Boron	Cadmium	Copper	Iron	Lead	Nickel	Manganese	Mercury	Selenium	Total Chromium	Zinc	Total Kjeldahl Nitrogen	Sulphides	Cyanide	Anionic Surfactant (MBAS)	Odour	Vanadium
		mg/L	mg/L	mg/L	mg/L	mg/L	milimole/L	mg/L	mg/L	µg/L	mg/L	µg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	TON	mg/L
1	M1	0.708	2537	11	BDL	1.25	48.31	BDL	1.8	BDL	2.588	BDL	0.01772	5.062	BDL	BDL	0.18623	BDL	BDL	0.01109	BDL	5.6	29.33	0.013	2	1	1.41997
1	M2	BDL	2664	3.31	BDL	0.63	42.91	BDL	1.6	BDL	2.589	BDL	0.00872	2.518	BDL	BDL	0.07425	BDL	BDL	BDL	BDL	BDL	3.33	0.012	2.2	1	1.53815
2	M3	BDL	1326	12.48	BDL	1.67	58.89	BDL	1.2	BDL	2.598	BDL	0.0385	6.637	0.00386	BDL	0.35973	BDL	BDL	0.01927	BDL	33.62	3.72	0.022	1.4	1	1.3497
2	M4	BDL	2325	44.79	0.311	0.83	51.44	BDL	1.1	BDL	2.586	BDL	0.08975	12.533	0.0087	BDL	0.84383	BDL	BDL	0.03461	BDL	100.87	2.39	BDL	1.6	1	1.06877

Round	Graph Code	Total Coliforms	Faecal Coliforms	α-BHC	β-BHC	γ-BHC/Lindane	δ-BHC	Aldrin	EBDOSULFAN-I (α)	EBDOSULFAN-II (β)	EBDOSULFAN-Sulfate	4,4'-DDE	4,4'-DDD	4,4'-DDT	Anthracene	Benzo(a)pyrene	Naphthalene
		MPN/100 ml	MPN/100 ml	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1	M1	8	2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
1	M2	50	50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	M3	40	23	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2	M4	12	BDL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

ANNEXURE - X : Analysis Results of Coastal Sediment

Round	Location Code	Geo co-ordinates	Date	pH	Conductivity	Water Content (water Moisture)	Porosity	Bulk Density	Arsenic as AS	Cadmium as cd	Chormium as Cr	Lead as Pb	Nickel as Ni	Cobalt as Co	Sand	Silt	Clay	Type of Soil	P)hosphourus as P	Organic Matter	Total Kjeldahl Nitrogen	Sodium Adsorption Ratio	Antimony as Sb	Sodium as Na	Potassium as K	Calcium as Ca	Manganese as Mn	Marcury as Hg	Molybdenumas Mo	Copper as Cu	Iron as Fe	Zinc as Zn
				-	µS/cm	%	%	mb/m3	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	-	Kg/Hectare	%	%	milimole/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	N-FDP Sediment	21°40'23.9"N 72°33'02.2"E	4/19/2022	8.75	4410	22.02	55.76	1.38	2.237	BDL	39.574	BDL	21.534	14.336	90	-	10	Loamy Sand	0.99	0.165	0.14	2.5	BDL	1739.05	835.29	24576.49	365.58	BDL	BDL	39.12	17274.061	39.281
1	O-FDP Sediment	21°40'19.3"N 72°31'55.7"E	4/19/2022	8.46	14400	44.1	56.8	1.08	4.514	BDL	85.093	BDL	37.786	22.568	-	-	100	Clay	2.04	0.865	0.25	7.9	BDL	6382.81	3685.83	25714.29	561.77	8.426	BDL	95.446	21154.226	94.198
2	O-FDP Sediment	21°40'19.3"N 72°31'55.7"E	4/21/2022	8.19	12240	43.18	54.8	1.13	3.759	BDL	77.312	BDL	34.359	19.694	-	-	100	CLAY	2.96	1.048	0.26	9.47	BDL	6981.3	2669.2	11860.23	512.9	BDL	BDL	85.074	19914.7	63.58
3	O-FDP Sediment	21°40'19.3"N 72°31'55.7"E	5/4/2022	8.5	5670	35.01	45.67	1.13	3.27	BDL	71.75	2.48	39.4	21.68	-	96	4	Slit	3.14	0.896	0.11	11.95	2.28	9478.96	2887.06	24046.45	523.42	BDL	BDL	92.29	23755.46	90.8
3	N-FDP Sediment	21°40'23.9"N 72°33'02.2"E	5/4/2022	8.97	1290	20.25	42.78	1.19	2.48	BDL	56.65	2.88	30.86	19.16	64.12	15.38	20.5	Sandy clay Loam	7.7	0.069	0.05	2.64	1.69	2133.61	1238.55	32516.13	479.88	BDL	BDL	67.4	22056.35	69.99

ANNEXURE - XI

CALCULATION OF SUB-INDEX SCORE FOR SURFACE WATER:

A: Source

Factor #A1 - Presence of Toxin

The following 3 most critical pollutants were selected depending on the concentration and exceedance in surface water samples are Phenol, BOD and TKN. As per CEPI methodology, all the three selected pollutants fall under "*GROUP B*" criteria.

Therefore,
#A1 = 3 (Score for primary pollutant is 02 and remaining other two pollutant is 0.5 each)
#A2 = 4 (Scale of industrial activity)

SCORE A for surface water = A1 x A2 = 12

B: Pathway

Factor B- Level of exposure

A surrogate number which will represent Level of Exposure (SNLF) is calculated using % violation with respect to Acceptable (Class C) criteria as per Water-Quality Parameters-Requirements & Classification. *(Source: Ecological Impact Assessment Series: EIAS/4/2009-10, CPCB)*

The SNLF is calculated for all the three pollutants for surface water using

SNLF = (No. of samples exceeded/ total no. of samples) x (Exceedance factor)

Where, Exceedance factor = Observed mean concentration of criteria pollutant / Prescribed standard for the respective pollutant and area class

Pollutant	**SNLF**	**Category (SNLF>1)**	**Score B**
Phenol (Primary)	823.48	Critical	30
BOD (Secondary)	26.20	Critical	10
TKN (Secondary)	69.39	Critical	10
Total Score B			**50**

- The **Component C (Impact on Human Health) is considered as 10**
- The **Component D = 20**, (Inadequate Facilities of individual as well as common facilities in the area)

Thus, the sub-index score for surface water = A + B + C + D = 12 + 50 + 10 + 20 = 92

CALCULATION OF SUB-INDEX SCORE FOR GROUNDWATER:

A: Source

Factor #A1 - Presence of Toxin

The following 3 most critical pollutants were selected depending on the concentration and exceedance in ground water samples are Phenol, Nitrate and Fluoride. As per CEPI methodology, all the three selected pollutants fall under "*GROUP B*" criteria.

Therefore,
#A1 = 3 (Score for primary pollutant is 02 and remaining other two pollutant is 0.5 each)
#A2 = 4 (Scale of industrial activity)
SCORE A for ground water = A1 x A2 = 12

B: Pathway

Factor B- Level of exposure

A surrogate number which will represent Level of Exposure (SNLF) is calculated using % violation with respect to IS-10500:2012 Drinking water standards.

The SNLF is calculated for all the three pollutants for ground water using

SNLF = (No. of samples exceeded/ total no. of samples) x (Exceedance factor)

Where, Exceedance factor = Observed mean concentration of criteria pollutant / Prescribed standard for the respective pollutant and area class

Pollutant	SNLF	Category	Score B
Phenol (Primary)	937.33	Critical **(SNLF>1)**	30
Nitrate (Secondary)	1.69	Critical **(SNLF>1)**	10
Fluoride (Tertiary)	0.197	Moderate (SNLF **0.15 to <0.2**)	3.5
Total Score B			**43.5**

- The **Component C (Impact on Human Health) is considered as 10**
- The **Component D = 20**, (Inadequate Facilities of individual as well as common facilities in the area)

Thus, the sub-index score for ground water = A + B + C + D = 12 + 43.5 + 10 + 20 = 85.5

CALCULATION OF SUB-INDEX SCORE FOR COASTAL WATER:

A: Source

Factor #A1 - Presence of Toxin

The following 3 most critical pollutants were selected depending on the concentration and exceedance in coastal water samples are BOD, Iron and Phenol. As per CEPI methodology, all the three selected pollutants fall under "*GROUP B*" criteria.

Therefore,
#A1 = 3 (Score for primary pollutant is 02 and remaining other two pollutant is 0.5 each)
#A2 = 4 (Scale of industrial activity)

SCORE A for coastal water = A1 x A2 = 12

B: Pathway

Factor B- Level of exposure

A surrogate number which will represent Level of Exposure (SNLF) is calculated using % violation with respect to water quality standards for coastal waters marine outfalls for BOD & Iron and Surface water quality standard for Phenol as screening and responsible level of phenol is available in acceptable criteria and also it is found to be dominant parameter with presence in all sources.

The SNLF is calculated for all the three pollutants for coastal water using

SNLF = (No. of samples exceeded/ total no. of samples) x (Exceedance factor)

Where, Exceedance factor = Observed mean concentration of criteria pollutant / Prescribed standard for the respective pollutant and area class

Pollutant	**SNLF**	**Category**	**Score B**
BOD (Primary)	9.5	Critical **(SNLF>1)**	30
Iron (Secondary)	10.9	Critical **(SNLF>1)**	10
Phenol (Tertiary)	142.5	Critical **(SNLF>1)**	10
Total Score B			**50**

- The **Component C (Impact on Human Health) is considered as 10**
- The **Component D = 20**, (Inadequate Facilities of individual as well as common facilities in the area)

Thus, the sub-index score for coastal water = A + B + C + D = 12 + 50 + 10 + 20 = 92

CALCULATION OF SUB-INDEX SCORE FOR SOIL:

The methodology adopted for calculation of sub-index for water component is adopted for calculation of sub-index for soil. The soil monitoring results and observations are discussed in section 2.4 of the report.

A: Source

Factor #A1 - Presence of Toxin

The following 3 most critical pollutants were selected depending on the concentration and its exceedance in soil water samples are Chromium (Group A pollutant), Copper and Nickel. As per CEPI methodology, all the three selected pollutants fall under "*GROUP B*" criteria.

Therefore,
#A1 = 4 (Score for primary pollutant is 03 and remaining other two pollutant is 0.5 each)
#A2 = 4 (Scale of industrial activity)

SCORE A for coastal water = A1 x A2 = 16

B: Pathway

Factor B- Level of exposure

A surrogate number which will represent Level of Exposure (SNLF) is calculated using % violation with respect to available screening level values in the Guidance Document for assessment and remediation of contaminated sites in India, MoEF& CC, 2015.

The SNLF is calculated for all the three pollutants for coastal water using

SNLF = (No. of samples exceeded/ total no. of samples) x (Exceedance factor)

Where, Exceedance factor = Observed mean concentration of criteria pollutant / Prescribed standard for the respective pollutant and area class

Pollutant	**SNLF**	**Category**	**Score B**
Chromium (Primary)	0.91	High **(SNLF 0.9 to < 0.95)**	21.75
Copper (Secondary)	6.48	Critical **(SNLF>1)**	10
Nickel (Tertiary)	0.19	Moderate **(SNLF 0.15 to < 0.2)**	3.5
Total Score B			**35.25**

- The **Component C (Impact on Human Health) is considered as 10**
- The **Component D = 20**, (Inadequate Facilities of individual as well as common facilities in the area)

Thus, the sub-index score for soil = A + B + C + D = 16 + 35.25 + 10 + 20 = 81.25.

*****

ANNEXURE - XII : The Detailed Calculation of EDC								
Sr.No	Name of Industry	Address	Ratio of Wastewater discharge by individual industry	Ratio of Failed Samples of individual industry	Deterrent factor	EC1 (New/Revised)	EC2	EDC
1	M/s. Indofil Industries Ltd.	Plot No. Z-8, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.096512932	0.125	0.041864072	18260057	0	18260057
2	M/s. Firmenich Aromatics Production India	Plot No. Z-10, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.108820625	0.1875	0.070804104	30882973	0	30882973
3	M/s. Meghmani Industries Ltd.	Plot No. Z-6, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.170254035	0.347826087	0.205497011	89632638	45000000	134632638
4	M/s. Aries Color Chem Pvt. Ltd.	Plot No. Z-29 & Z-30, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.044172618	0.2	0.030656959	35240000	0	35240000
5	M/s. Meghmani Organics Ltd. (Unit-8)	Plot No. Z-31 & Z-32, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.281147048	0.428571429	0.41812168	182374182	18000000	200374182
6	M/s. Sigachi Industries Pvt. Ltd.	Plot No. Z-16, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.008976983	0.125	0.003893914	1698428	0	1698428
7	M/s. Accent Microcell Pvt. Ltd.	Plot No. Z-59, Z-63 & Z-64, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.021211141	0.266666667	0.01962812	41160000	0	41160000
8	M/s. Sun Pharmaceuticals Pvt. Ltd.	Plot No. Z-15, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.041792641	0.1	0.014502597	6325669	2250000	8575669
9	M/s. Meghmani LLP (Unit-2)	Plot No. Z-34, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.11478552	0.307692308	0.122560264	53457711	0	53457711
10	M/s. Shiva Pharmachem Ltd.	Plot No. Z-88 & Z-88/4, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.039045526	0.333333333	0.045164371	31050000	0	31050000
11	M/s. Ramdev Chemical Industries	Plot No. Z-19 & Z-20, SEZ-I, Dahej, Ta.Vagra, Dist. Bharuch.	0.055083895	0.142857143	0.027306909	11910588	0	11910588
12	M/s. Rallis India Ltd.	Plot No. Z-110, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.114780859	0.083333333	0.062791285	6229815	0	6229815
13	M/s. Fermenta Boitech Ltd.	Plot No. Z-109B & 109C, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.042813951	0.368421053	0.103547804	10273459	0	10273459
14	M/s. Tatva Chintan Pharma Chem Pvt. Ltd.	Plot No. Z-103/F/1 & 103/F/2, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.004934622	0.076923077	0.002491849	247228	0	247228
15	M/s. Thermax Limited.	Plot No. Z-96/C, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.513417406	0.230769231	0.777785125	77167679	0	77167679
16	M/s. Yashashvi Rasayan Pvt. Ltd.	Plot No. Z-96/E, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.021319105	0.1	0.013995232	1388532	0	1388532
17	M/s. Benzo Chem Industries Pvt. Ltd.	Plot No. Z-103/D, SEZ-II, Dahej, Ta.Vagra, Dist. Bharuch.	0.015000322	0.4	0.039388707	3907937	0	3907937
18	M/s. Hemani Industries Ltd.	Plot No. CH-5, E-362, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.109438191	0.730769231	0.39534799	668819147	4500000	673319147
19	M/s. Meghmani Organics Limited.	Plot No. CH-1, CH-2/A, D-2/CH 10/A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.159213033	0.62962963	0.495557609	838346029	45000000	883346029
20	M/s. Meghmani Limited Liability Partnersh	Plot No. CH-3, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.016414818	0.333333333	0.027048626	45758773	0	45758773
21	M/s. Insecticides India Ltd	Plot No. CH-21, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.021436455	0.045454545	0.004816823	40140000	7200000	47340000
22	M/s. Bharat Rasayan Ltd.(Old Name:Siris C	Plot No. CH-42/4, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.022468741	0.076923077	0.008544089	56010000	4433805	60443805
23	M/s. Tagros Chemicals India Ltd.	Plot No. CH-43/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.072756427	0.125	0.044958494	76057302	0	76057302
24	M/s. Sun Farben Incorporation(old name -	Plot No. CH-11, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.020742373	0.1	0.010253894	17346745	0	17346745
25	M/s. The Dharamsi Morarji Chemical Comp	Plot No. CH-5/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.008298126	0.083333333	0.003418449	5783068	0	5783068
26	M/s Meghmani Novotech Pvt. Ltd. (Old Na	Plot No. CH-22, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.004067614	0.5	0.010054029	17008628	25200000	42208628
27	M/s. Gujarat Fluorochemicals Ltd.	Plot No. 12/A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.254840415	0.153846154	0.189739335	51900000	0	51900000
28	M/s. NOCIL Ltd.	Plot No. 12/A/1 & 13/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.044349303	0.117647059	0.025250519	5764927	0	5764927
29	M/s. Deepak Nitrite Limited	Plot No. 12/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.039337865	0.5	0.095188222	21732351	0	21732351
30	M/s. Sterling Auxillaries Pvt. Ltd.	Plot No. 12/A/2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.002304859	0.066666667	0.000743628	169777	0	169777
31	M/s. Deepak Phenolics Limited	Plot No. 12/B/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.040454604	0.222222222	0.043506872	9933021	0	9933021
32	M/s. SRF Ltd.	Plot No. D-II/1, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.096876683	0.25	0.117209199	26759944	0	26759944
33	M/s. Gujarat Narmada Valley Fertilizers an	Plot No. D-II/8, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.094312193	0.25	0.114106472	26051563	0	26051563
34	M/s. Mehali Papers Pvt. Ltd.	Plot No. D-II/11/B/2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.141529037	0.6	0.410959692	93825899	0	93825899
35	M/s. UPL Limited.	Plot No. D-III/6, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.003405357	0.2	0.00329606	752521	0	752521
36	M/s. Xenon Chem LLP.	Plot No. CH-46, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.008928615	0.5	0.014433041	835458	0	835458
37	M/s. Anagha Chem	Plot No. D-II/CH-318, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.003701029	1	0.011965372	692616	450000	1142616
38	M/s. Green Paradise Pigments LLP.	Plot No. D-II/CH-31, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.088051376	0.5	0.142334411	8239037		8239037
39	M/s. Gumandev Chemicals Pvt. Ltd.	Plot No. D-II/CH-82, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.034455396	0.333333333	0.037131266	2149346	0	2149346
40	M/s. PPG Asian Paints Pvt. Ltd.	Plot No. D-II/CH-21A, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.0146295	0.333333333	0.015765654	912596	0	912596
41	M/s. Tridev Industries Pvt. Ltd.	Plot No. D-II/CH-134, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.021442112	0.25	0.017330509	1003178	0	1003178
42	M/s. Tejraj Parasmalji Balar	Plot No. D-II/CH-126, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.003954819	0.333333333	0.004261958	246704	0	246704
43	M/s. Meghmani LLP (Unit-3)	Plot No. D-II/CH-5, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.029605062	1	0.095712738	5540338	0	5540338
44	M/s. Thirumalai Chemicals Limited	Plot No. D-II/CH-171/B, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.002835892	1	0.009168399	530713	0	530713
45	M/s. Ketul Chem Pvt.Ltd	Plot No. D-II/CH-132, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.001059501	1	0.003425352	198277	0	198277
46	M/s. Viswaat Chemical Ltd.	Plot No. D-III/10, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.006338557	0.6	0.012295478	1020000	0	1020000
47	M/s. Rossari Biotech Ltd.	Plot No. D-III/24/3, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.02845115	0.666666667	0.061321437	3549595	0	3549595
48	M/s. Jubilant Infrastructure Ltd. (SEZ Deve	Plot No. 5, GIDC Vilayat, Ta.Vagra, Dist. Bharuch.	0.03047735	0.083333333	0.008124902	1453389	0	1453389
49	M/s. Grasim Cellulosic (A Unit Of Grasim In	Plot No. 1, GIDC Vilayat, Ta.Vagra, Dist. Bharuch.	0.966760303	0.32	0.989671277	177033167	0	177033167
50	M/s. Hemani Crop Care Private Limited	Plot No. DP-73 & DP-74, GIDC Saykha, Ta.Vagra, Dist. Bharuch.	0.001148161	0.6	0.00220382	394221	1800000	2194221
51	CETP Dahej	Plot No. D-2, GIDC Dahej, Ta.Vagra, Dist. Bharuch.	0.177809143	1	0.574854384	33275484		33275484
52	M/s Pragna Pharma Private Limited	Plot No. D-II/CH-224, GIDC Dahej, Ta.Vagra, Dist. Bharuch.				340000	8100000	8440000
53	GIDC					61980000		61980000