BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

O.A. No. 324 of 2021

In the matter of:

In re: News item published on 21.11.2021 in the Indian Express titled "Lakes of Bengaluru: Industrial effluents, raw sewage; stinky tale of Chandrapura lake"

INDEX

13.	**Annexure 12:** A Copy of Environmental Statement in Form-V for Financial Year 2020-21 submitted by M/s Hikal Ltd Unit-I.	
14.	**Annexure 13:** A Copy of Environmental Statement in Form-V for Financial Year 2020-21 submitted by M/s Hikal Ltd Unit-II.	
15.	**Annexure 14:** A copy of addendum dated 20.12.2021 by KSPCB granting consent to M/s Kumar Organics Products Pvt. Ltd. to send their trade effluent to nearby CETP for 3 months.	
16.	**Annexure 15:** A copy of list of Zinc Electroplating Industries in Veerasandra Industrial Estate, Bengaluru.	

(A. Sudhakar)
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Delhi-110032

Dated: 24.03.2022
Place: Delhi

JOINT COMMITTEE REPORT IN THE MATTER OF ORIGINAL APPLICATION NO. 324 OF 2021 IN COMPLIANCE TO THE ORDER DATED 26TH NOVEMBER, 2021 OF HON'BLE NGT, PRINCIPAL BENCH

1.0 Preamble:

In the matter of O.A No. 324 of 2021, a case has been registered by the Hon'ble National Green Tribunal, Principal Bench, New Delhi Suo-moto, on the basis of the News item published on 21.11.2021 in the Indian Express titled "Lakes of Bengaluru: Industrial effluents, raw sewage; stinky tale of Chandapura lake", wherein it was reported that the condition of the lake has worsened due to encroachment, dumping of sewage and industrial effluents.

Hon'ble NGT vide its order dated 26.11.2021 constituted a seven-member committee comprising of CPCB, State PCB, Indian Institute of Science- Bengaluru, State Environment Impact Assessment Authority, National Wetland Authority, State Wetland Authority and the District Magistrate, Bengaluru in order to ascertain facts (Copy enclosed as **Annexure 1**). The nodal agency for coordination and compliance will be CPCB and the State PCB.

2.0 Constitution of Committee:

In compliance to the said order, the organizations have nominated their members for the committee and accordingly, an OM on constitution of committee was issued vide office memorandum dt. 3rd January, 2022 & revised on 12th January, 2022 (Copy enclosed as **Annexure 2**). The details of committee members are as follows:

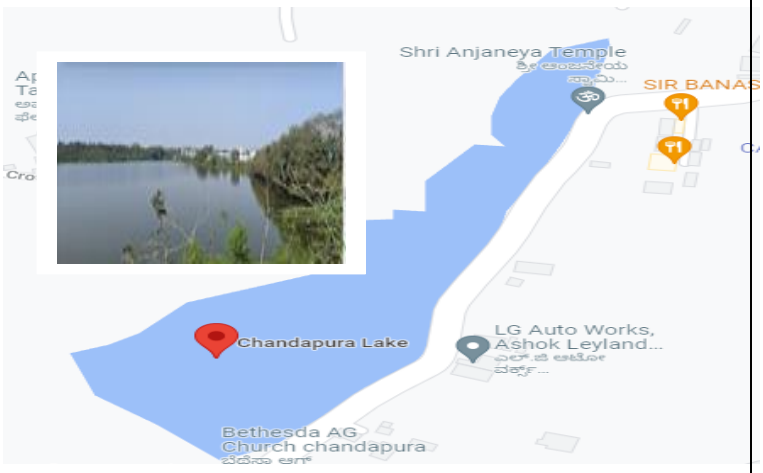
S. No.	Name of the Official	Representing
1.	Dr. M Ramesh, Scientist E Ministry of Environment, Forest & Climate Change, New Delhi.	National Wetlands Committee
2.	Sh. Shripati B S, Regional Director Karnataka State Coastal Zone Management Authority, Udupi Forest, Ecology and Environment Department	State Wetland Authority, Karnataka
3.	Dr. Lakshminarayana Rao Centre for Sustainable Technologies	Indian Institute of Science, Bengaluru
4.	Sh. Ravi Kumar J K Scientific Officer, Grade-I	State Environment Impact Assessment Authority, Karnataka

	Forest, Ecology and Environment Department, Bengaluru	
5.	Sh. Dinesh Tahsildar , Anekal Taluk, Bengaluru	District Magistrate, Bengaluru Urban
6.	Sh. Vasudeva S K Regional Senior Environmental Office-South , KSPCB, Bengaluru	Karnataka State Pollution Control Board **Nodal Agency**
7.	Smt. Anjana Kumari V Scientist D, CPCB Regional Directorate, Bengaluru	Central Pollution Control Board **Nodal Agency**

A preliminary meeting of the committee was held on 12th January, 2022 through video conference (minutes of the meeting enclosed as **Annexure 3)** and inspection and monitoring was conducted during 18th -19th January, 2022.

3.0 Chandapura lake:

Chandapura lake is located in Chandapura town, Anekal taluk, Bengaluru. The total area of Chandapura lake is around 24 acres.



The responsibility of maintenance of Chandapura lake is presently with the town municipal corporation.

As per 2011 census, the Chandapura town is having a population of 24,250 with 6,600 households.

4.0 Chandapura lake & its Catchment area:

Earlier at the time of Kempegowda, the lakes were constructed in Bengaluru in order to store rain water and are interconnected with the storm water drain. Later after 2000, the rapid growth of population & unplanned urbanization, resulted in failure of UGD & STPs, which in turn led to pollution of natural water bodies. As a result, most of the lakes are polluted due to sewage discharge and natural/storm water drains are converted to sewage drains.

Similarly, for the Chandapura lake, there exists natural drains that interconnect the different lakes in the Anekal Taluk. There are four streams that are interconnected to Chandapura lake. The details are given in the flow chart below:

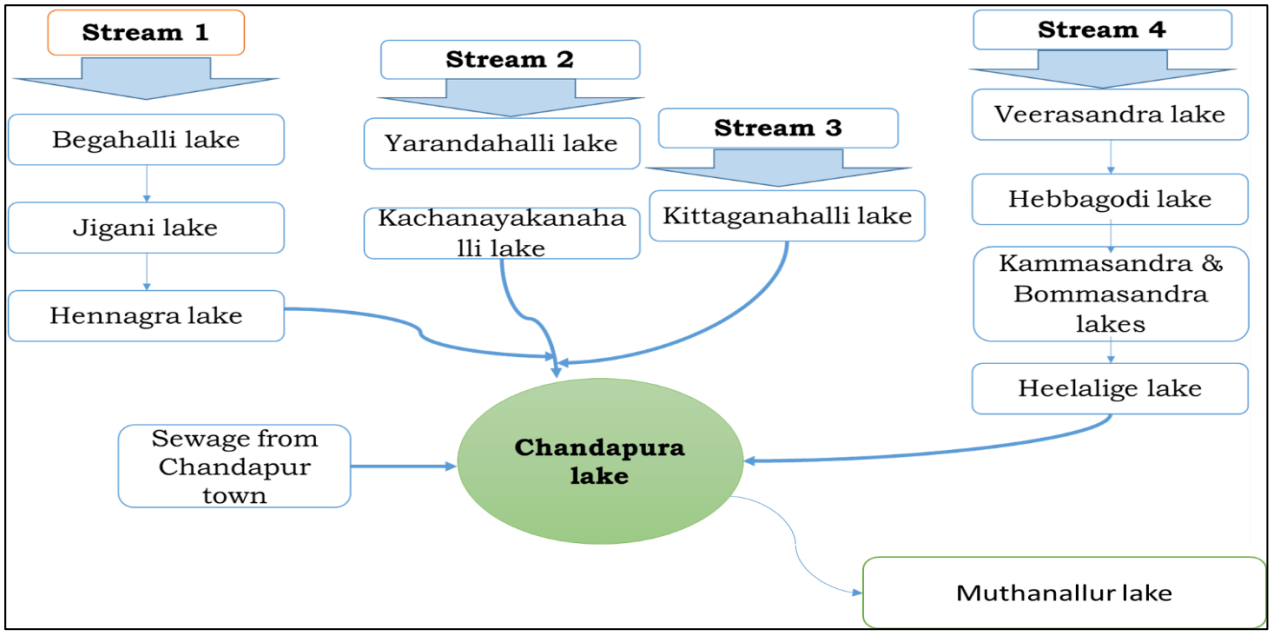


Figure 1: Streams that are connected to Chandapura lake through drains.

Stream 1:

- In the stream one, there are three lakes namely, Begahalli, Jigani & Hennagara. The overflow from the Begahalli lake reaches Jigani lake, the over flow from Jigani lake reaches Hennagara lake and the overflow of Hennagara lake reaches Chandapura lake through drains.
- In the entire Stream 1, there are two gram panchayats and one Town Municipal Corporation (TMC).
- Since 100% UGD is not existing in the gram panchayats, the domestic sewage generated therein reaches the lakes Begahalli & Hennagara
- In the Jigani TMC, sewage generated from the entire town is being let into Jigani lake except for private residential apartments.
- Other than domestic sewage, the sewage generated from few existing industries is also let into the drain that reaches small lakes which in turn finally reaches the Hennagara lake.
- The over flow of Hennagara lake finally reaches to Chandapura lake.
- The entire stretch wherein the water flows is around 12 KM.

Stream 2:

- In stream 2, there exists two lakes namely, Yarandahalli lake & Kachanayakanahalli lake. The overflow from Yarandahalli lake reaches

Kachanayakanahalli lake, which finally reaches Chandapura lake through drainage system.

- Yarandahalli lake is adjacent to Jigani industrial area, the storm water drain from the industrial area connects to Yarandahalli lake.

Stream 3:

- The Kittaganahalli lake is located adjacent to the Bommasandra Industrial Area and the residential area comes under the jurisdiction of Bommasandra Town Municipal Corporation.
- The Kittaganahalli lake rejuvenation has been taken up by the Bommasandra Industrial Association as well as concerned TMC.
- Under the Hon'ble NGT case O.A. No. 750/2019, rejuvenation of lake is completed. The drains carrying sewage & other discharges are diverted to Chandapura lake.

Stream 4:

- In stream 4, there are four lakes namely Veerasandra lake, Hebbagodi lake, Kammasandra-Bommasandra lake and Heelalige lake.
- The Veerasandra lake is rejuvenated and maintained by M/s Titan. The overflow of Veerasandra lake and the sewerage flow from drains connected to Veerasandra industrial estate reaches Hebbagodi lake. The overflow from Hebbagodi lake reaches Kammasandra-Bommasandra lake, the overflow from Kammasandra-Bommasandra lake reaches Heelalige lake and from Heelalige lake, it finally reaches Chandapura lake.

Finally, the sewage generated in the Chandapura town, except for private apartments, is discharged into the lake.

Understanding the above facts, the committee decided to collect the samples from inlet & outlet of lakes interconnected to Chandapura lake and based on field observations/conditions, sampling locations of drains & bore wells samples were decided. The details of the sampling locations are given below:

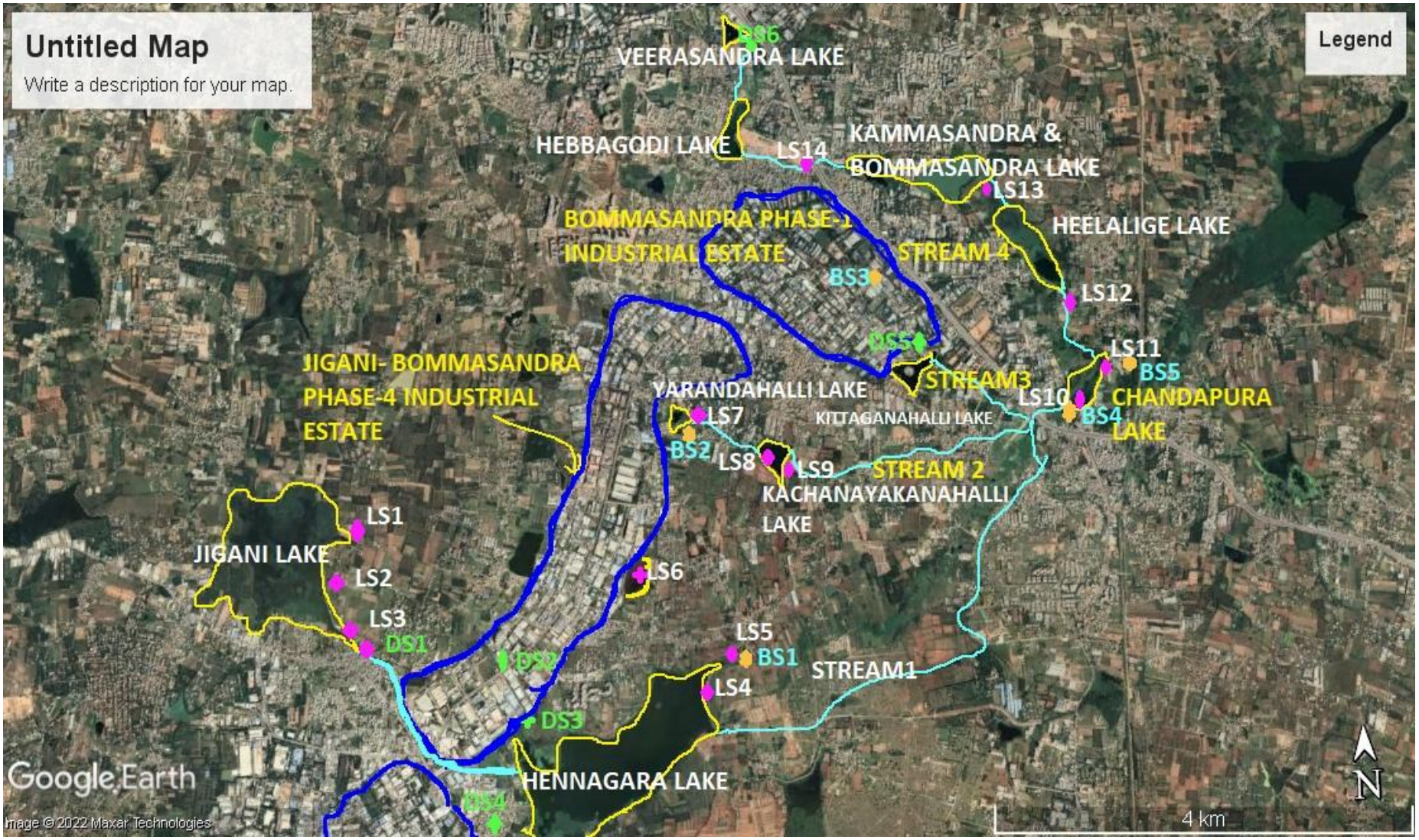


Figure 2: Sampling locations in and around Chandapura and its catchment area

Note: LS- Lake Sample, BS- Borewell Sample and DS- Drain Sample

Other than the sampling locations shown in figure 2 above, sampling was also carried out at four more locations based on the request of public. The details of sampling locations are given in the figure 3 below:

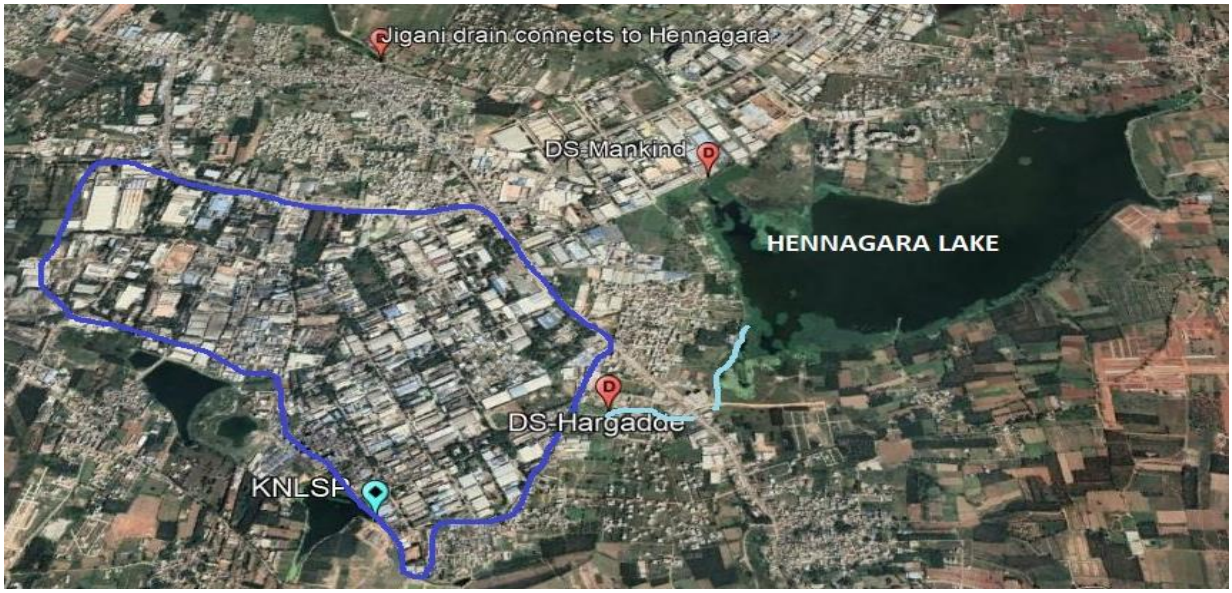


Figure 3: Sampling locations in and around Chandapura and its catchment area, based on public demand

Note:

i. Drain sample at Jigani outlet that connects to Hennagara lake
ii. Drain sample near to Mankind industry that connects to Hennagara lake
iii. Drain sample at Hargadde that reaches Hennagara lake
iv. Konasandra lake sample is adjacent to rubber industry

5.0 Data Collection and Water Quality Analysis Report

5.1 Water Samples Collected for Analysis:

The following categories of samples were collected during the joint inspection of the committee:

1) Lake water samples at the inlet and outlet of the tanks, which are located upstream of the Chandapura lake. As there were four main streams feeding the Chandapura lake, the inlet and outlet of all the tanks in these four streams were collected. As shown in Fig. 2, a total of 15 samples named as Lake Sample-1 (LS-1) to LS-15 were collected and analyzed.

2) To determine the quality of the underground water, bore well water samples from the areas surrounding the upstream tanks of the Chandapura lake and also one sample from the downstream of the Chandapura lake were collected. A total of 6 samples named as Bore-Samples-1 (BS-1) to BS-6 were collected and analyzed.
3) Samples were also collected from the drains which were feeding the Chandapura lake. These samples were named as Drain Sample-1 (DS-1) to DS-6 i.e., a total of six samples was collected and analyzed.

5.2 Water Quality Analysis

The collected water samples were analyzed for their quality by both KSPCB and CPCB. For selected water samples, a GC-MS finger printing analysis was carried out. Also, analysis for heavy metals was carried out for a few selected samples.

Visual inspection and drone footage:

In addition to visual inspection of the tanks, drone footages, both videos and photographs were collected to access:

1) The extent of encroachment of the tank
2) The streams feeding each tank and their visual appearance
3) The status of the tank boundaries
4) The extent of algal/hyacinth growth

Analysis of the results

The test reports of lake water quality (**Annexure-4**), bore well water quality (**Annexure-5**), drain water quality (**Annexure-6**), the heavy metal analysis (**Annexure-7**) and the GC-MS results (**Annexure-8**) are annexed. These results should be analyzed based on the visual inspection data and also the test reports. The results indicate that:

1) All the upstream and Chandapura lake water samples are meeting the class -E water quality criteria i.e., Irrigation, industrial cooling and controlled waste disposal. However, the DO, COD and BOD levels of the Mastenahalli, Kachanayakanahalli and Chandapura lake were very low indicating anaerobic/anoxic condition.
2) The bore well samples collected shows higher levels of NO_3. In some cases, higher levels of the NH_3, SO_4 and hardness were also found. This indicates that the bore well samples should be treated before using it for drinking purposes.

3) Few of the drain samples feeding the Chandapura lake shows high levels of COD **(>10,000 mg/L)**, similarly **(1044 mg/L)** for drain feeding to Hargadde lake, indicating the presence of some industrial effluent.
4) Heavy metal analysis shows that
    a. In lake water samples, the heavy metals were either BDL or < the allowable limit as per drinking water standard IS10500.
    b. In bore well water samples, the heavy metals were either BDL or < the allowable limit as per drinking water standard IS10500.
    c. In drain water samples, Zinc and Fe were found, again indicating the presence of industrial effluent.
5) The analysis from the GC-MS fingerprinting shows the presence of both personal care products (PCPs), insecticides, antifoaming agents and raw materials used in the making of herbicides, preservatives and disinfectants.

6.0Deliberations of the Committee with respect to Chandapura lake:

6.1 Buffer zone of the Chandapura lake:

As informed by Tahsildar, Anekal taluk, there is no buffer zone declared in and around Chandapura lake.

6.2 Compliance to Solid Waste Management Rules, 2016

- As per 2011 census, the Chandapura town is having a population of 24,250 with 6,600 households. The total municipal solid waste generation is 8.5 TPD. Out of 8.5 TPD, 6.5 TPD is wet waste and 1.5 TPD is dry waste.
- Waste collected from households is being segregated into wet, dry and sanitary waste at source.

- As per the information of Chandapura TMC, the wet waste is given to two piggeries one at Chandapura and another at Lakshmisagara village at Anekal taluk and records are also maintained for the same.
- The dry waste collected is being handed over to M/s Sahas Zero Waste Management Pvt. Ltd, the dry waste collection center facility located at Jigani, for which all records are maintained by TMC.
- For scientific disposal of sanitary waste, TMC has signed an MoU with M/s Maridi Bio Industries Ltd., the common bio-medical treatment facility.
- From the drone footage and as well as from physical observation on the day of inspection, it was witnessed that no wastes are being dumped in and around Chandapura lake bed.

6.3 Air (Prevention and Control of Pollution Act), 1981

- In the TMC limit of Chandapura, no industrial estates exist.
- The major sources of air pollution in the entire catchment area of Chandapura lake are ongoing construction activities of metro, road dust, vehicular emissions etc.

6.4 Water (Prevention and Control of Pollution Act), 1974

Sewage pollution:

- The sewage generated in the TMC limit of Chandapura is being discharged into the lake directly or indirectly through drain except for private residential apartments, since there is no common Sewage Treatment Plant (STP) to treat sewage generated in the TMC.
- From the analysis results, it is clear that the Chandapura lake is polluted majorly due to discharge of sewage with **TC value of $1600x10^4$ MPN/1000ml & $1600x10^3$ MPN/1000ml, BOD concentration as 72 mg/L & 15 mg/L, DO value of BDL & 1.5 mg/L, COD concentration of 440 mg/L & 160 mg/L, Ammonia as N 34 mg/L & 22 mg/L and Phosphates 1.93 mg/L & 3.08 mg/L** at inlet and outlet of lake respectively.
- The growth of water hyacinth in the lake also confirms sewage pollution.

Industrial Pollution:

- There exist no industries in the limit of Chandapura TMC. However, the industrial estates namely, Jigani- Bommasandra phase -IV industrial estate, Bommasandra industrial estate Phase- I and Veerasandra Industrial estate comprising of Red, Orange and green categories of industries are existing adjacent to the lakes of Hennagara, Yarandahalli, Kittaganahalli, Veerasandra which are interconnected to Chandapura lake.
- As per the records of KSPCB, no industries in all three industrial estates are permitted to let their treated/untreated trade effluent/ domestic effluents into the drains/lakes.
- The drains connected to Chandapura lake industrial estates carries quantitative amount of industrial discharges to Chandapura lake.
- However, as per the GC-MS screening analysis, there is an indication of presence of PCPs, insecticides, antifoaming agents and raw materials used in the making of herbicides, preservatives and disinfectants that confirm the presence of industrial effluents along with sewage
- In the bore well samples, the concentration of **NO_3 is 61 mg/L & 48 mg/L, TDS is 1214 mg/L & 850 mg/L, Sulphate is 157 mg/L & 62 mg/L and Total hardness is 592 mg/L and 384 mg/L at the inlet & outlet of lake respectively**. The result indicates that the bore well samples should be treated before using it for drinking purposes.

6.5 Wetlands (Conservation and Management Rules), 2017

- These Rules are applicable to the wetlands or wetlands complexes categorized as 'wetlands of international importance' under the Ramsar Convention and wetlands as notified by the Central Government, State Government and Union Territory Administration.
- The Chandapura lake is not yet notified under the Wetlands (Conservation and Management) Rules, 2017.
- However, the Hon'ble Supreme Court vide Order dated 04.10.2017 in W.P. (C) No. 230 of 2001 has inter-alia, directed that, *"We make it clear and reiterate that in terms of our order dated 8th February, 2017, 2,01,503 wetlands that have been mapped by the Union of India should continue to remain protected on the same principles as were formulated in Rule 4 of the Wetlands (Conservation and Management) Rules, 2010"*. This was also communicated by MoEF&CC to all the States and UTs.

- The Chandapura lake is covered in the above said wetlands mapped by the Union of India. As per Rule 4 of the Wetlands Rules, 2017, following activities are prohibited within the wetlands:
    i. Conversion for non-wetland uses including encroachment of any kind
    ii. Setting up of any industry and expansion of existing industries
    iii. Manufacture or handling or storage or disposal of construction and demolition waste covered under the Construction and Demolition Waste Management Rules, 2016;
    iv. Hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms Genetically engineered organisms or cells, 1989 or the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008; electronic waste covered under the E-Waste (Management) Rules, 2016;
    v. Solid waste dumping;
    vi. discharge of untreated wastes and effluents from industries, cities, towns, villages and other human settlements
    vii. any construction of a permanent nature except for boat jetties within fifty meters from the mean high flood level observed in the past ten years calculated from the date of commencement of these rules; and
    viii. poaching.
- ***Thus, the discharge of untreated sewage and effluents in Chandapura lake and all other activities listed above are prohibited in Chandapura lake.***

6.6. Hazardous & Other Waste (Management and Transboundary Movement) Rules, 2016

- In the TMC limit of Chandapura, there exists no industries and hence there is no question of compliance of HOWM, Rules, 2016. The house hold hazards are collected along with solid waste and dry waste and are handed over to M/s Sahas Zero Waste Management Pvt. Ltd, Jigani, the dry waste collection center for further processing.

Other Observations:

- *Based on the request of public, sampling was carried out at four additional locations. Out of four samples, the drain sample collected at Hargadde was having colour contamination as is evident in the photograph and the sample also has organic solvent odour, which was indicating the characteristics of effluent from pharma industry.*

- *From the GC-MS Screening, it was found that **2,4 dichlorophenol** is the compound identified with a **98% of occupancy in Chromatogram area** and the concentration is **30.99 mg/L** as per quantitative analysis. The copy of Chromatogram is enclosed as **Annexure 9**. As per physio chemical analysis concentration of COD was **1044mg/L** and Concentration of Iron found to be **7.3 mg/L.***
- *From the preliminary investigation, it is apprehended that there may be a chance of illegal discharges from industries or pilferages from the tankers carrying trade effluents from the pharma industry using **2,4 dichlorophenol** as a raw material.*
- *The pharma industries list located in the vicinity of the drain is given in T**able 6.1** and shown in the google image below:*

Table 6.1: List of the pharma industries with their major products & raw materials in the vicinity of the drain

S.No	Name of the Pharma industry	Raw materials used	Products manufactured	Remarks
1.	M/s Kumar Organics Products Ltd.	➢ 2,4 Dichlorophenol ➢ 2,5 Dichloro Nitro benzene ➢ Sodium Hydroxide ➢ Iron ➢ Perchloroethylene ➢ Sodium nitrate ➢ Sulphuric acid ➢ HCl ➢ Potassium hydroxide ➢ Acetic Acid ➢ Hexane	Triclosan.	Copy of Environmental Statement in Form-V for FY 2020-21 submitted by the unit is enclosed as **Annexure 10.**
		➢ Aceto Phenone ➢ Sodium ➢ Ethyl Chloroacctate ➢ IPA	Aldehyde C-16	
		➢ Citronellal ➢ Methanol ➢ Sodium Sulphite ➢ Sulphuric acid	Rose Oxide	
		➢ Allyl Alcohol ➢ Caproic acid ➢ Toluene ➢ Sodium Carbonate	Allyl Caprote	
2.	M/s Stellence Pharma science Pvt. Ltd	➢ 1 Phenyl-3 Methyl-5 parazalone ➢ Ranie Nickel ➢ Dimethyl sulphate ➢ Sodium Hydroxide ➢ Isopropynol alcohol	Propyphenazone	Copy of Environmental Statement in Form-V for FY 2020-21 submitted by the unit is

		➢ Activated carbon		enclosed as **Annexure 11.**
3.	M/s Hikal Ltd Unit-I	➢ Lactum ➢ Toulene ➢ Acetone ➢ NaOH flakes ➢ Methanol ➢ IPA ➢ Sod. Carbonate ➢ HCl-30% ➢ Carbon ➢ Hyflosupercel	GABAPENTIN	Copy of Environmental Statement in Form-V for FY 2020-21 submitted by the unit is enclosed as **Annexure 12.**
	_____	➢ Bupropion-1 ➢ TBA ➢ Acetone ➢ NaOH flakes ➢ Methanol ➢ IPA ➢ HCl-30% ➢ Hyflosupercel ➢ Carbon ➢ Toluene	BUPROPION HCL	
		➢ ONDT-6 ➢ 2-Methyl Immediazole ➢ IPA ➢ HCl-30% ➢ NaOH flakes ➢ $CHCl_3$ ➢ Carbon ➢ Hyflosupercel	ONDANSETR ON HCL	
		➢ ONDT-HCL ➢ TEA	ONDANSETRON API	

		➢ IPA ➢ Methanol		
		➢ Dimethyl Formamide ➢ Theobromine ➢ Potassium carbonate ➢ Chlorobromo propane ➢ Methanol ➢ IPA ➢ Carbon ➢ Methyl acetoacetate ➢ HCl	OXYPENTIFYLLINE	
		➢ Gem-1(intermediate) ➢ Methanol ➢ NaOH ➢ 30% HCl ➢ Carbon ➢ Hyflosupercel ➢ Toluene ➢ Isobutanol	GEMFIBROZIL	
		➢ Deco stage-4 ➢ Toluene ➢ Methanol ➢ Pd/catalyst ➢ Hydrogen gas ➢ EMME ➢ Diphyl	DECOQUINATE	
		➢ TRI-3(intermediate) ➢ H_2SO_4 ➢ Formic Acid ➢ NaOH flakes ➢ NaCl ➢ Oxalic acid	TRIPROLIDINE HCL	

		➢ Acetone ➢ Toluene ➢ Carbon ➢ Hyflosupercel ➢ Aq. Ammonia ➢ Ethyl acetate ➢ HCl in IPA		
		➢ 4,4 di fluro benzophenone piperazine ➢ Cinamic alcohol ➢ Soduum Borohydride ➢ Triethyl amine(TEA) ➢ Methanol ➢ Activated carbon ➢ Methanol ➢ Activated carbon ➢ Huflo Supercel ➢ HCl In IPA ➢ Toluene ➢ Piperazine Anhydrous ➢ IPA ➢ HCl ➢ Catalyst-B ➢ Catalyst-A ➢ Caustic Soda	FLUNARAZINE	
		➢ Ethyl 2-pyrrolidone N acetate (PAE) ➢ Methanol ➢ Ammonia ➢ RO water	ETIRACETAM	
		➢ S Ester ➢ KOH	PREGABLIN	

		➢ Methanol ➢ Raney Nickle Catalyst ➢ Activated Carbon ➢ Acetic Acid ➢ Hyflosupercel ➢ Hydrogen gas cylinders (42 cum) ➢ IPA ➢ Water for Cleaning equipment's ➢ Scrubber water make up		
		➢ Ethyl 2 (2)-Pyrrolidone butarate (2PBE) ➢ Methanol ➢ Sodium Methoxide ➢ Ammonia	ETIRACETAM	
		➢ Etiracetam –L060 ➢ Methanol ➢ Sodium Methoxide	ETIRACETAM RACEMIC	
		➢ QTP-2 ➢ N,N Dimethyl aniline ➢ Phosphorus oxy chloride ($POCl_3$) ➢ Toluene ➢ $NaHCO_3$ ➢ NaCl ➢ Water ➢ Piperzine anhydrous ➢ IPA HCl ➢ Acetone ➢ Sodium Sulphate ➢ Hyflow	QUETAPINE FUMARATE	

		➢ QTP-IV HCl (11-piperzninyl-dibenzo(b,f)(1,4) thiazepine hydrochloride) ➢ 2-(chloroethoxy) ethanol ➢ Sodium carbonate ➢ Sodium Hydroixde ➢ Sodium iodide ➢ N-Methyl-2-pyrrolidone ➢ Toluene ➢ Fumaric acid ➢ Hyflow ➢ Activated charcoal ➢ Methanol ➢ Water for cleaning equipments ➢ Scrubber water make up		
		➢ Benzydrol ➢ Piperzine Anhydrous ➢ Triethyl Amine ➢ Catalyst – E ➢ Catalyst – B ➢ Toluene ➢ Hyflow ➢ Caustic Soda ➢ Carbon ➢ Methanol ➢ MEK ➢ HCl ➢ Cinnamic Acid	CINNARIZINE	
4.	M/s Hikal Ltd. Unit-II	➢ DMF ➢ Theo bromine ➢ K_2CO_3 ➢ Chlorohexanone	Oxypentifylline	Copy of Environmental Statement in Form-V for FY 2020-21 submitted by the unit is

		➢ Methanol ➢ Carbon ➢ Hyflo supercell		enclosed as **Annexure 13.**
		➢ QTP-2 ➢ N, N Dimethyl aniline ➢ $POCL_3$ ➢ Tolune ➢ $NaHCO_3$ ➢ NaCl ➢ Water ➢ Piperzine anhydrous ➢ IPA HCl ➢ Acetone ➢ Sodium Sulphate ➢ Hyflow ➢ Water ➢ $NaHCO_3$	QUETIAPINE	
		➢ Piperidine ➢ Ethyl Trifluoro Acetate (ETFA) ➢ CF Ketone Stage-I ➢ THF ➢ Ary Bromide ➢ Magnesium trunings ➢ Hydrochoric acid ➢ Water ➢ Tolune	CF3KETONE STAGE-II	
		➢ Crude CF Ketone Stage-2	CF3KETONE STAGE-III	
		➢ P nitro Phenol sodium salt ➢ DMF ➢ Catalyst A ➢ Benzyl Chloride	PBA HCl STAGE-I	

		➢ Water Caustic Soda		
		➢ PBNB ➢ Ferric chloride ➢ Activated Carbon ➢ Toluene ➢ Hydrazine Hydrate ➢ Hyflo supercel ➢ HCl in IPA ➢ Iso Propyl alcohol ➢ Water	PBA HCl STAGE-II	

- *From the above table, it is learnt that **2,4 dichlorophenol** is a raw material used in the manufacturing of product **Triclosan** by **M/s Kumar Organics Products Ltd.***
- *As per the records, the said unit was permitted to send their trade effluent to nearby CETP by KSPCB vide ADDENDUM dt. 20th December, 2021 for three months. Copy of ADDENDUM enclosed as* **Annexure 14**

- As per the available information and analysis results, the committee reasonably apprehends that the effluent from **M/s Kumar Organics Products Ltd.** may be contaminating the drain near Hargadde. ***Immediate detailed investigations are necessary to identify the defaulters and take appropriate action under the provisions of respective Environmental Acts.***
- *The drain sample collected at Veerasandra lake outlet has high concentration of* ***Zinc of 23.2 mg/L and Iron of 18.85 mg/L.*** *This shows discharges from plating industries.* ***Annexure 15*** *gives a list of plating industries in Veerasandra Industrial Estate.* ***Immediate detailed investigations are necessary to identify the defaulting industry and take appropriate action under the provisions of respective Environmental Acts.***
- The drain sample collected at the entrance of Kittaganahalli lake & adjacent to Bommasandra Phase-I Industrial Estate have high concentration of **COD as 10,896 mg/L and** indicates the industrial discharge. The drain has been diverted into Chandapura lake, since the Kittaganahalli lake is rejuvenated. ***Immediate detailed investigations are necessary to identify the defaulting industry and take appropriate action under the provisions of respective Environmental Acts.***
- Apart from above, the analysis from the GC-MS screening from other samples shows the presence of PCPs, insecticides, antifoaming agents and raw materials used in the making of herbicides, preservatives and disinfectants that confirms the presence of industrial effluents along with sewage.

7.0 Recommendations of the committee:

As per the preliminary investigations carried out by committee, there is a clear indication of both sewage and industrial contamination in the lakes & drains. However, detailed investigations required to be carried out to identify the defaulters. Thus, the following recommendations are suggested by the committee to the concerned departments/authorities/stakeholders for kind consideration of Hon'ble Tribunal:

7.1 District Magistrate (Bengaluru Urban) and local bodies in the catchment area of Chandapura lake:

- ✓ To carryout mapping in Chandapura lake catchment area to identify all the drains carrying mixed effluents and entering the lake.
- ✓ To take immediate steps to control the discharge of untreated effluents into the drains.
- ✓ To follow-up with the Govt. of Karnataka to expedite the approval of DPR and allocation of land for setting up of STPs in the catchment area.
- ✓ Alternative technologies such as inline anaerobic treatment, Phytoremediation, Construction of wetlands, microbial bioremediation, waste stabilization pond and/or mechanically aerated lagoon as per the document prepared by CPCB on **"Alternative Treatment Technologies for Wastewater Treatment in Drains"** or any other sustainable technologies shall be explored immediately on priority, based on the feasibility with respect to field conditions.
- ✓ To prepare time bound short- and long-term action plans for rejuvenation of the lakes in the catchment area and maintain the lakes as per the CPCB document on "Indicative guidelines for Restoration of Water Bodies" and by adopting sustainable technologies and initiate the action on priority for rejuvenation of the lakes adhering to a strict timeline
- ✓ To ensure the treatment and conformity to the drinking water standards of bore well water before supplying it for drinking purposes, since some of the bore wells are having a high concentration of Nitrates, NH_3, SO_4 and/or hardness.
- ✓ To explore decentralized composting methods for treatment of municipal solid waste.
- ✓ To direct the survey department to identify the encroachment details & marking of mean high flood level and declaration of buffer zone at Chandapura lake in compliance to Wetlands Rules, 2017.

7.2 Karnataka Industrial Area Development Board (KIADB):

- ✓ To carry out the mapping of drainage network for industrial estates in the catchment area in order to ascertain any industrial discharge into the natural water bodies and submit the report to Hon'ble Tribunal.
- ✓ As per the records provided by KSPCB, ***206 industries out of 543 industries*** *(129/385 in Jigani-Bommasandra Phase-IV industrial Estate & 77/158 Bommasandra Industrial Estate Phase I and Veerasandra industrial estate****) are sending their trade effluents to CETPs*** either in the same industrial estate or to CETPs located at around 25 KM to 84 KM through tankers and there may be chances of illegal discharge of effluents into drains/valleys/waterbodies by the tankers. ***It is recommended to explore the possibilities of construction of CETPs within industrial estates with tamperproof & closed conduit system for pumping of trade effluents with individual online flow meters. This will help in tracking the records on quantity of effluents being sent to CETPs and identify the illegal discharges, if any.***

7.3 Karnataka State Pollution Control Board (KSPCB):

- ✓ Not to accord permissions to industries (having ETPs) to send their trade effluents to CETP. KSPCB shall direct such industries to stop their productions till their ETPs made functional.
- ✓ To conduct Environmental audit of all industries in the catchment area through reputed institutes such as IISc, IITs, and/or NEERI in order to keep strict vigilance, since the Jigani Industrial Area is declared as Critically Polluted Area under CEPI.
- ✓ To carryout environmental forensic analysis /pollutant tracer studies at all the drains connected to industrial estates in the catchment area in order to identify the defaulting industries and initiate appropriate action as per the provisions of Environmental law adhering to a strict timeline.
- ✓ To develop the e-manifest system for discharging of trade effluents from industries to CETPs with GPS tracking system in all the vehicles carrying trade effluents as adopted in Telangana State Pollution Control Board in order to keep close track on any illegal discharges and pilferages.
- ✓ To issue directions to local bodies to expedite alternative/decentralized treatment technologies for sewage treatment till the establishment and functioning of STPs.

7.4 Karnataka State Wetlands Authority as per the provisions of the Wetlands (Conservation and Management) Rules, 2017:

- ✓ To ensure protection of wetlands (>2.25 hectare) as per *Rule 4 of the Wetlands Rules, 2017, in general and* Chandapura lake, in specific, on top priority, in compliance to the direction of Hon'ble Supreme Court.
- ✓ To take requisite actions as envisaged under the Wetlands Rules, 2017, in general and for Chandapura lake, in specific.
- ✓ To consider notification of Chandapura lake under the Wetlands Rules, 2017.

Ramesh

(Dr. M Ramesh)
Scientist E, National Wetlands Committee
MoEF&CC, New Delhi.

(Dr. Lakshminarayana Rao)
Asst. Professor, IISc., Bengaluru

(Shripati B S), Regional Director
Environment, Udupi

(Ravi Kumar J K)
Scientific Officer, Grade-I
Forest, Ecology and Environment Department, Bengaluru

(Dinesh)
Tahsildar , Anekal Taluk, Bengaluru

(Vasudeva S K)
Regional Senior Environmental Office-South , KSPCB, Bengaluru

V. Anjana

(Anjana Kumari V)
Scientist D
CPCB, RD, Bengaluru

Annexure 1

Item No. 05 (Court No. 1)

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 324/2021

In re: News item published on 21.11.2021 in the Indian Express titled **"Lakes of Bengaluru : Industrial effluents, raw sewage; stinky tale of Chandrapura lake"**

Date of hearing: 26.11.2021

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

ORDER

1. We have taken cognizance of the matter considering the issue of protection of environment arising out of the above news item which shows that the buffer zone of lake has been encroached upon and garbage is being dumped into the lake. The lake is an ancient one and is said to have been choked by encroachments and affected by effluents and waste. The lake is in the area of 7.2 acres in Heelalige Village and 17.27 acres in Chandpura town. Out of the total 24.27 acres, nearly two acres of the lake in Chandpur has been encroached by construction activities. The buffer zone of the lake has been encroached by a government hospital and local shops. The fence around the lake has been broken and garbage is littered on its boundaries. There is no Sewage Treatment Plant (STP) for the lake. Sources of pollution include Jigani-Bommasandra industrial area and discharge of effluents into lakes in violation of the Zero Liquid Discharge (ZLD) Policy of the Government. Under the ZLD water management system, no untreated water is supposed to be released into lakes. There

are around 195 'red' category industries in the Jigani-Bommasandra area which include drug manufacturing companies, electroplating, power coating, pickling, heat treatment, galvanizing, casting, lead-acid battery manufacturing, used oil reprocessing, lead smelting and chemical industries. It is further stated that there are numerous water tanker lorries supplying water directly from bore wells next to the lake to consumers in Bengaluru for domestic needs. There are water packaging industries in Bommasandra that supply water to the entire city. IISc in its report on water quality in the lakes has warned about the deteriorating water quality in Anekal. The sewage-laden storm water drains flowing between the lakes in Anekal also pass through many farms and vegetable plots where farmers grow produce and supply it to the local market. There is no buffer zone between Jigani – Bommasandra industrial area and the adjoining residential areas. The area is so packed that the compound wall of an electroplating company could be shared by residential houses. These industries are supposed to hand over the effluents to Common Effluent Treatment Plant (CETP) after pre-treatment.

2. In view of above, it appears necessary to ascertain facts to determine whether any direction is necessary for protection of environment under Section 15 of the NGT Act, 2010.

3. Accordingly, we constitute a seven-member joint Committee of the CPCB, State PCB, Indian Institute of Science, Bengaluru, SEIAA, Karnataka, National Wetland Authority, State Wetland Authority and the District Magistrate, Bengaluru. The nodal agency for coordination and compliance will be the CPCB and the State PCB. The joint Committee may meet within two weeks, undertake visit to the site and interact with the stakeholders to ascertain compliance of environmental norms in the

matter of buffer zone of the lake, violation of Solid Waste Management Rules, 2016, Air (Prevention and Control of Pollution) Act, 1981, Water Prevention and Control of Pollution) Act, 1974, Environment (Protection) Act, 1986, Wetlands Rules, 2017 and the Hazardous Waste Management Rules, 2016. The Committee will be free to coordinate with other concerned authorities and take assistance of any individual/institution. The joint Committee may take into account order of this tribunal dated 12.03.2021 in *O.A 125/2017, Court on its own Motion v. State of Karnataka* and order dated 25.11.2021 in *O.A No. 351/2019, Raja Muzaffar Bhat vs. State of Jammu and Kashmir & Ors.* It will be open to the statutory authorities to take remedial action for compliance of the environmental norms, following due process of law. Report in the matter to be furnished to this Tribunal within two months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

List for further consideration on 22.02.2022.

A copy of this order be forwarded to the CPCB, State PCB, Indian Institute of Science, Bengaluru, SEIAA, Karnataka, National Wetland Authority, State Wetland Authority and the District Magistrate, Bengaluru by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Dr. Nagin Nanda, EM

November 26, 2021
Original Application No. 324/2021
AB

Annexure 2

CENTRAL POLLUTION CONTROL BOARD, REGIONAL DIRECTORATE
"NISARGA BHAWAN", 1ST FLOOR, THIMMAIAH ROAD, 7 'D' CROSS
SHIVANAGAR, BENGALURU-560 079
Phone: 080-23233739, 080-23233827, Fax: 080-23234059

Tech/39/NGT-324/2021/RDB/2021-22/ 722 3rd January, 2022

OFFICE MEMORANDUM

Sub: Constitution of Joint Committee as per the directions of Hon'ble NGT, Principal Bench in O.A. No. 324 of 2021 in its Suo-moto action on "News item published on 21.11.2021 in the Indian Express titled "Lakes of Bengaluru: Industrial effluents, raw sewage; stinky tale of Chandapura lake"

In the matter of O.A No. 324 of 2021, a case has been registered by the Hon'ble Tribunal, New Delhi on the basis of the News item published on 21.11.2021 in the Indian Express titled "Lakes of Bengaluru: Industrial effluents, raw sewage; stinky tale of Chandapura lake", wherein it was reported that the condition of the lake has worsened due to encroachment, dumping of sewage and industrial effluents.

Hon'ble NGT vide its order dated 26.11.2021 constituted the seven-member committee comprising of CPCB, State PCB, Indian Institute of Science- Bengaluru, State Environment Impact Assessment Authority, National Wetland Authority, State Wetland Authority and the District Magistrate, Bengaluru in order to ascertain facts (Copy enclosed). The nodal agency for coordination and compliance will be CPCB and the State PCB. In compliance to NGT order the joint committee comprising of following officials are constituted:

S.No.	Name of the Official	Organization	Contact details
1.	Dr. M Ramesh, Scientist E Ministry of Environment, Forest & Climate Change, New Delhi.	National Wetland Authority, Delhi	Mob: 9810701401 Email: ramesh.motipalli@nic.in
2.	Sh. Gokul, IFS Director, Forest, Ecology and Environment Department and Member Secretary, SEAC, Bengaluru	State Wetland Authority, Karnataka	Mob: 9945106846 Email: seacsec@gmail.com
3.	Dr. Lakshminarayana Rao Centre for Sustainable Technology	Indian Institute of Science, Bengaluru	Mob: 7406111228 Email: narayana@iisc.ac.in

Contd....2/-

S. Suresh
3/1/2022

4.	Sh. Ravi Kumar J K Scientific Officer, Grade-I Forest, Ecology and Environment Department, Bengaluru	State Environment Impact Assessment Authority, Karnataka	Mob: 9945689355 Email: rv_k1@yahoo.co.in
5.	Sh. Dinesh Tahsildar , Anekal Taluk, Bengaluru	Representative of District Magistrate, Bengaluru Urban	Mob: 9986811333 Email: anekaltahasil@gmail.com
6.	Sh. Vasudeva S K Regional Senior Environmental Office-South , KSPCB, Bengaluru	Karnataka State Pollution Control Board **Nodal Agency-1**	Mob:9945276544 Email: scos@kspcb.gov.in
7.	Smt. Anjana Kumari V Scientist D	Central Pollution Control Board, Regional Directorate, Bengaluru **Nodal Agency-2**	Mob: 9916355576 Email: anjana.cpcb@nic.in

Terms of Reference:

In compliance to NGT order the joint committee shall undertake visit to the site and interact with the stakeholders to ascertain compliance of environmental norms in the matter of buffer zone of the lake, violation of Solid Waste Management Rules, 2016, Air (Prevention and Control of Pollution) Act, 1981, Water Prevention and Control of Pollution) Act, 1974, Environment (Protection) Act, 1986, Wetlands Rules, 2017 and the Hazardous Waste Management Rules, 2016.

Roles and Responsibilities:

- National and State Wetland Authority are responsible for providing inputs in compliance to Wetlands Rules, 2017 and actions to be taken against defaulters in violations of Wetlands Rules, 2017 (if any) and suggest remedial measures accordingly.
- SEIAA, Karnataka responsible for providing inputs in Environmental Clearances granted in the study area and other issues as per Departmental mandate. To initiate against defaulters in violations of EC conditions (if any).
- Indian Institute of Science is responsible to discuss/appraise the study report of Dr. T V Ramachandran, IISc mentioned in the news article & any other studies under taken by IISc w.r.t lake pollution, fixing sampling locations in consultation with CPCB & KSPCB and interpretation of data & suggest suitable technologies for rejuvenation of lakes.

S. Suresh
3/11/2022

Contd...3/-

- District Magistrate shall provide the details of water management shed & connectivity of lake in the catchment area. Details of population, water consumption, sewage generation, status of UGD, Municipal Solid Waste Generation and its management of CMCs, TMCs, Zilla Panchayat, Taluk Panchayat in the study area. Details of buffer zone and its encroachment. The Hydraulic flow map of the study area showing the connectivity of lakes etc.

- Central Pollution Control Board shall technically coordinate the entire activity in organizing meetings with committee members, report preparation and also raising relevant issues, if required, calculation of environmental compensation (if any) and nodal agency for filing the report. After finalization of the report by the joint committee, the report shall be sent to CPCB, Delhi for filing in NGT, PB, Delhi after obtaining concurrence from Competent Authority.

- The Karnataka State Pollution Control Board is responsible for the following:

  i. To provide the details of industries located in the study area, category of industries, type of industries, ETP details, treated water discharge points, details of CETPs, list of industries having the permission to send their effluent to CETPs and list of industries having the grant of discharge of treated effluent to the drains etc.
  ii. To provide all such industry related information to the committee as per requirement
  iii. To organize meetings with local concerned authorities
  iv. To arrange for sampling and analysis through KSPCB/recognized laboratory. In case, any parameters to be analysed through outsourced laboratory, KSPCB shall make necessary payment.
  v. Responsible for providing logistics to all committee members, coordinate with local authorities for obtaining information.
  vi. Issue notices (show cause/closure) to the default industries (if any) found by the joint committee
  vii. To arrange for payment of siting fees to the committee members as per NGT order in OA 24/2017

Apart from above, all committee members shall actively participate in all proceedings & involve in finalizing the sampling locations and preparation of report in a time bound manner.

The roles and responsibilities of various agencies stated above may be amended from time to time based on NGT's interim orders committee decisions or any other agenda's discussed in the committee meetings. Nodal officers will finalize the subject matter.

Contd...4/-

S. Suresh
31/12/2022

From time to time CPCB and KSPCB shall circulate minutes and draft reports to all members through mail and also WhatsApp group (shall be created exclusively). Since the final report needs to be submitted in a short span of time all members are requested to respond, suggest the points preferably through return mails. It is the primary responsibility of all members to respond immediately and to sign the reports in CPCB, office. A clear cut time will be defined for each and every activity and in case of non-response from any agency within time frame, it will be considered as concurrence to the report.

Hon'ble NGT in the said order has mentioned that committee will be free to coordinate with other concerned authorities and take assistance of any individual/institution. In this connection, at any point of time if committee feels that any additional assistance from institution/individuals is required, same may be included as special invitee for considering the views but not as committee member. Necessary expenses will be borne by KSPCB.

S. Suresh 31/12/2022

(S. Suresh)
Regional Director
9480672128
ssuresh.cpcb@nic.in

Encl: As above

To:

1. Dr. M Ramesh, Scientist E, Ministry of Environment, Forest & Climate Change, New Delhi.
2. Sh. Gokul, IFS, Director, Forest, Ecology and Environment Department and Member Secretary, SEAC, Bengaluru
3. Dr. Lakshminarayana Rao, Centre for Sustainable Technology, IISc, Bengaluru
4. Sh. Ravi Kumar J K, Scientific Officer, Grade-I, SEIAA, Forest, Ecology and Environment Department, Bengaluru
5. Sh. Dinesh, Tahsildar, Anekal Taluk, Bengaluru
6. Sh. Vasudeva S K, Regional Senior Environmental Office-South, KSPCB, Bengaluru, **Nodal Agency-1**
7. Smt. Anjana Kumari V, Scientist D, CPCB, Bengaluru, **Nodal Agency-2**

Copy to:

1. Admin Section, CPCB, Bengaluru
2. Accounts Section, CPCB, Bengaluru

S. Suresh 31/12/2022

(S. Suresh)

S. SURESH
REGIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE (SOUTH)
(MIN. OF ENV. FOREST & CC, GOVT OF INDIA)
BENGALURU - 560 079, MOB : 9480672128

CENTRAL POLLUTION CONTROL BOARD, REGIONAL DIRECTORATE
"NISARGA BHAWAN", 1ST FLOOR, THIMMAIAH ROAD, 7 'D' CROSS
SHIVANAGAR, BENGALURU-560 079
Phone: 080-23233739, 080-23233827, Fax: 080-23234059

Tech/39/NGT-324/2021/RDB/2021-22/739 12th January, 2022

OFFICE MEMORANDUM

Sub: Partial modification in Joint Committee constituted earlier as per the directions of Hon'ble NGT, Principal Bench in O.A. No. 324 of 2021 in its Suo-moto action on "News item published on 21.11.2021 in the Indian Express titled "Lakes of Bengaluru: Industrial effluents, raw sewage; stinky tale of Chandapura lake"

Ref:

i. This office memorandum no Tech/39/NGT-324/2021/RDB/2021-22/722 dt. 3rd January, 2022
ii. Letter of Principal Secretary to Government (Ecology & Environment) dt. 4.01.2022
iii. Letter from Karnataka Tank Conservation and Development Authority dt. 10.01.2022
iv. Letter of Principal Secretary to Government (Ecology & Environment) dt. 11.01.2022

Apropos to references mentioned above, Shri Sripathi, Regional Director (Environment) is nominated by Govt. of Karnataka in place of Sh. Gokul R.IFS, Director to represent State Wetland Authority & accordingly the committee is reconstituted. The terms of reference, roles & responsibilities and other subject matter mentioned in the OM dt. 3rd January, 2022 remains same. The contact details of Sh. Sripathi, Regional Director are as follows:

Name	: Shri Sripathi
Designation	: Regional Director (Environment)
Mobile	: 9901278419 / 0820-2574848
Email	: udupi3cr@gmail.com
Official address	: 1st floor, C Block, Rajathadri, Manipal, Udupi -576104

S. Suresh 12/1/2022

(S.Suresh)
Regional Director
9480672128
ssuresh.cpcb@nic.in

To:

1. Dr. M Ramesh, Scientist E, Ministry of Environment, Forest & Climate Change, New Delhi.
2. Sh. Sripathi, Regional Director (Environment), 1st floor, C Block, Rajathadri, Manipal, Udupi -576104
3. Dr. Lakshminarayana Rao, Centre for Sustainable Technology, IISc, Bengaluru
4. Sh. Ravi Kumar J K, Scientific Officer, Grade-I, SEIAA, Forest, Ecology and Environment Department, Bengaluru
5. Sh. Dinesh, Tahsildar, Anekal Taluk, Bengaluru
6. Sh. Vasudeva S K, Regional Senior Environmental Office-South, KSPCB, Bengaluru, **Nodal Agency-1**
7. Smt. Anjana Kumari V, Scientist D, CPCB, Bengaluru, **Nodal Agency-2**

Copy to:

1. The Principal Secretary to Government, (Ecology and Environment), Forest, Ecology and Environment Department, Karnataka Government Secretariat, M.S. Building, Bengaluru
2. The Chief Executive Officer, Karnataka Tank Conservation & Development Authority, Ground Floor, Beeja Bhavan, Bellary Road, Hebbal, Bengaluru
3. Admin Section, CPCB, Bengaluru
4. Accounts Section, CPCB, Bengaluru

S. Suresh 12/11/2022

(S. Suresh)

S. SURESH
REGIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE (SOUTH)
(MIN. OF ENV. FOREST & CC, GOVT OF INDIA)
BENGALURU - 560 034, MOB : 9480572128

Annexure 3

Minutes of the first joint committee meeting in connection with NGT case OA 324/2021 held on 12.01.2022 through Video Conference

National Green Tribunal, Principal Bench, Delhi in its Suo-moto action on the Indian Express Article dt. 21.11.2021 has admitted the case OA 324/2021 on Chandapura lake pollution. Hon'ble tribunal vide order dt. 26th November, 2021 constituted the seven-member joint committee comprising of Central Pollution Control Board, State Pollution Control Board, Indian Institute of Science, National Wetland Authority, State Wetland Authority, State Environment Impact Assessment Authority and District Magistrate to ascertain the facts and submit the report within two months. The case is listed for next hearing on 22nd February, 2022. The joint committee report should be submitted before one week to CPCB, Delhi for filing in Principal Bench, NGT Delhi.

In view of above facts, Office Memorandum dt. 3rd January, 2022 on constitution of joint committee was issued by CPCB. Subsequently due to change in nomination of State Wetland Authority, a partial modification to OM was issued on 12th January, 2022. The first preliminary meeting of joint committee was held on 12th January, 2022 through VC (google meet) at 11.00 AM. All seven committee members were present and actively participated in the meeting. The list of participants is enclosed at **Annexure.**

Meeting started with introduction of committee members. Smt. Anjana Kumari V, Sc. D nodal officer from CPCB welcomed the committee members and made a presentation highlighting the summary of NGT order and explained in detail the roles and responsibilities of individual committee members for successful execution of the study in compliance to NGT order. The official also informed to the committee that in order to obtain the basic information on water shed management, status of sewage generation & its management, status of municipal solid waste management, connectivity of lakes and encroachment of buffer zone in the catchment area two internal meetings with local bodies were conducted on 17th & 28th December, 2021. As outcome of the two meetings, information from CMC's & TMCs were received and status of sewage management was also presented before the committee.

The official explained that there are three streams carrying sewage that joins Chandapur lake. The information on connectivity of lakes in stream1, stream 2 & stream 3 are explained in detail. Official also requested the Anekal Tahshildar representative of District Magistrate to provide the status of sewage management, solid waste management of gram panchayats falls under the catchment area and also details on encroachments in & around the lakes and hydraulic flow map to the scale of catchment area by 17th January, 2022.

The proposed schedule of study in phased manner was also deliberated for the inputs/suggestions. Dr. Lakshmi Narayana Rao, Asst. Professor, IISc suggested that along with proposed surface water monitoring, the ground water monitoring around the lake may also be collected since it is the drinking source of water for the public in vicinity and also if required sludge samples may also be collected. Also suggested to explore for drone footages of Chandapur lake in order to assess the extent of pollution. The suggestions were welcomed by the committee and informed that during the time of field visits same may be decided based on the field conditions.

The schedule of field visits, fixing of sampling locations & analysis of samples were also discussed. After detailed deliberation, the field visits are fixed during 18th -19th January, 2022. However, based on the field conditions samplings locations and number of samples may be changed. Tahshildar was requested to facilitate the field visits by the committee members.

Sh. Shripati B S, Regional Director, K representing State Wetland Authority expressed that we need to firstly look into the aspect that whether the Chandapur lake is a declared Wetland. If it is declared, we have to look into the aspects of impact on ecology and environmental especially bird species if any visiting the lake. If there is no data available, then a sub- committee of experts especially ornithologists and ecological scientists has to be constituted for which the 2 days visit as discussed may not be sufficient.

KSPCB was asked to provide the details of industries in the catchment area as discussed. It was also informed to provide the details of Hazardous waste management by the industries.

The officials from KSPCB regional offices informed that KSPCB is monitoring the few lakes in catchment area since two years under CEPI & same may be used as base data for reference of the study. Committee requested KSPCB to compile & share the data through mail/whats app group by 17th January, 2022.

The nodal officer of CPCB highlighted that there was a joint corrigendum representation from the public requesting joint committee to give them opportunity to put forth their grievances. Joint committee decided that opportunity may be given to the public in the second half of the second day in the office of Tahshildar. However, same may be restricted to two –three peoples due to ongoing COVID pandemic situation. Committee is of the opinion that contact details of committee members may not be shared to public.

It was informed that any future communications will be made through mails/Whats app group & committee members are requested to respond to the same. If no response is received well within the targeted date, then it may be considered as concurrence from committee members.

Finally, CPCB official informed committee members that as given in office memorandum CPCB shall be nodal agency for filing the report on mutual concurrence by committee members and after obtaining approval from Competent Authority. KSPCB shall be nodal agency for logistics arrangements and sampling & analysis. State Wetland Authority & National Wetland Authority were asked to provide their tour details to the KSPCB for logistics arrangements.

Meeting ended with thanks to all committee members.

Annexure

List of members attended the meeting

S.No	Name of the officer & Designation	Representing
1.	Smt. Anjana Kumari V, Scientist D	CPCB
2.	Sh. Vasudeva S K, RSEO-South	KSPCB
3.	Dr. M Ramesh, Scientist E	National Wetland Authority, MoEF&CC
4.	Dr. Lakshmi Narayana Rao, Asst. Professor	IISc, Bengaluru
5.	Sh. Shripati B S, Regional Director	State Wetland Authority
6.	Sh. Dinesh , Anekal Tahshildar	District Magistrate
7.	Sh. Ravi Kumar J K, Scientific Officer, Grade I	SEIAA, Karnataka
8.	Sh. Rangaswamy, Project Head	Office of District Magistrate
9.	Sh. C. Mruthunjayaswamy, CEO	Karnataka Tank Conservation & Development Authority
10.	Sh. Manjunath C S, Environmental Officer	RO, Sarjapura, KSPCB
11.	Sh. Sudhakar, Environmental Officer	RO, Bommanahalli, KSPCB
12.	Sh. Asif Khan, Environmental Officer	RO, Anekal, KSPCB
13.	Sh. Manjunath G S, Deputy Environmental Officer	RO, Sarjapura, KSPCB

Lake Water Quality

Annexure 4

Sl No.	Parameters	Unit	LS1	LS2	LS3	LS4	LS5	LS6	LS7	LS8	LS9	LS10	LS11	LS12	LS13	LS14	LS15	Test Method
1	pH @25˚C	-	6.5	6.5	6.8	7	6.6	6.9	6.8	7.1	7.1	6.8	7	7.2	7.2	6.9	6.5	IS 3025(11)
2	Conductivity @25˚ C	us/cm	270	265	384	687	712	903	757	1044	1400	2950	1947	2462	1867	2720	2890	IS 3025(14)
3	Dissolved Oxygen	mg/L	6.3	6.2	6.3	4.8	5.1	BDL	4.6	4.6	BDL	BDL	2.5	BDL	2	BDL	BDL	IS 3025(38)
4	Biochemical Oxygen Demand (3 days @ 27˚ C)	mg/L	5	4.0	3	8	7	110	15	17	81	72	15	21	14	48	99	IS 3025(44)
5	Total Coliform	MPN/100ml	1600	5400	540x 10^3	1600	920x 10^3	1600X 10^3	1600X 10^4	540x 10^3	1600X 10^4	1600x 10^4	1600x 10^3	920X 10^3	540x 10^3	540X 10^4	9200	APHA 3120-B 23rd edition (9221 A,B,C,)9-68 to 9-75
6	Sodium Absorption Ratio	-	2.2	2.0	2	3	3	5	2	3.0	3.0	3.79	3.15	4.17	3.58	4.48	3.8	IS; 11624
7	Free Ammonia	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	APHA 3120-B 23rd edition(4500 NH3-D)
8	Boron as B	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	APHA 3120-B 23rd edition(4500 -B B)
9	Ammonia as N	mg/L	0.24	0.33	0.68	1.4	3.1	31	22	26	45	34	22	32	20	33	29	IS 3025 (34)
10	Chemical Oxygen Demand	mg/L	40	36	40	96	80	484	152	164	444	440	116	156	112	380	544	IS 3025(58)
11	Phosphate as P	mg/L	BDL	BDL	BDL	0.48	0.07	0.47	1.0	1.4	1.3	1.93	3.08	0.44	0.49	0.96	0.14	IS 3025(31)

LS1(W-2992)	Lake water sample collected from Jigani Lake at Inlet Point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'48.9"N+77°38'17.1"E)
LS2(W-2991)	Lake water sample collected from Jigani Lake at Middle Point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'29.3"N+77°38'08.5"E)
LS3(W-2993)	Lake water sample collected from Jigani Lake at Outlet Point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'17.0"N+77°38'17.5"E)
LS4(W-2996)	Lake water sample collected from Hennargara Lake at Temple, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'00.9"N+77° 40'09.6"E)
LS5(W-2995)	Lake water sample collected from Hennargara Lake at Outlet point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'09.2"N+77° 40'22.5"E)
LS6(W-2997)	Lake water sample collected from Mastenahalli Lake Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'27.7"N+77°39'46.4"E)
LS7(W-2998)	Lake water sample collected from Yarandahalli Lake at diverted drain point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'22.2"N+77°40'09.1"E)
LS8(W-2999)	Lake water sample collected from Kachanayakanahalli Lake(Kondareddy lake) Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'05.5"N+77°40'33.3"E)
LS9(W-3000)	Lake water sample collected from Kachanayakanahalli Lake(Kondareddy lake) at Outlet Point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'00.2"N+77°40'38.8"E)
LS10(W-3023)	Lake water sample collected at the inlet of Chandapura Lake near PHC Chandapura lake Attibele Hobli Anekal Taluk Bengaluru Urban District (GPRS:12°48'14"N+77°42'20"E)
LS11(W-3024)	Lake water sample collected from the outlet of Chandapura lake (Chalarakatte) (GPRS: 12°48'27"N+77°42'26"E)
LS12(W-3026)	Lake water sample collected from the outlet of Heelalige lake, Sarjapura Hobli, Bengaluru (GPRS: 12°49'54"N+77°42'14"E)
LS13(W-3025)	Lake water sample collected from the Kammasandra and Bommasandra lake outlet (Bommasandra lake kodi) (GPRS: 12°49'01"N+77°42'00"E)
LS14(W-3028)	Lake water sample collected from the Outlet of Hebbagodi lake near Hebbagodi Police station, Bengaluru (GPRS: 12.827939"N+77 .6818"E)
LS15(W-3027)	Lake water sample collected from the Veerasandra lake outlet Opp. To Gopalan lake front apartment Veerasanda, Bengaluru (GPRS: 12°50'24"N+77°40'33"E)

Bore well Water Quality

Annexure 5

Sl No.	Parameters	Unit	BS 1	BS 2	BS 3	BS 4	BS 5	BS6	Test methods
1	pH @25˚C	-	6.6	6.6	6.5	6.5	6.5	6.8	IS 3025-11
2	Turbidity	NTU	0.2	0.4	0.4	0.6	0.8	0.5	IS 3025-10
3	Total Dissolved Solids	mg/L	668	1140	1720	1214	1172	850	IS 3025-16
4	Sulphate as SO_4	mg/L	24	19	231	157	74	62	IS 3025-24
5	Chloride as Cl	mg/L	280	544	604	368	400	228	IS 3025-32
6	Phenolic Compound as C_6H_5OH	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	IS 3025-43
7	Nitrate as NO_3	mg/L	14	23	66	61	52	48	IS 3025-34
8	Total Hardness as $CaCO_3$	mg/L	608	796	1120	592	672	384	IS 3025-21
9	Calcium as Ca	mg/L	131	192	228	120	136	78	IS 3025-40
10	Magnesium as Mg	mg/L	68	77	134	71	81	41	IS 3025-46
11	Total Akalinity as $CaCO_3$	mg/L	196	432	376	340	328	264	IS 3025-23
12	Fluoride as F	mg/L	0.33	1.0	0.28	0.21	0.11	0.22	IS 3025-60
13	Ammonia as N	mg/L	0.83	0.5	0.84	0.2	0.33	0.16	IS 3025-34
14	Sulphide as H_2S	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	APHA 23rd edition (4500-S-2 F)
15	Boron as B	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	APHA 23rd edition (4500-B B)
16	E.Coli	MPN/100ml	Absent <1.8MPN/100ml	Absent <1.8MPN/100ml	Absent <1.8 MPN/100ml	Absent <1.8 MPN/100ml	Absent <1.8 MPN/100ml	Present 1600 MPN/100ml	APHA 23rd edition (9221 G) 9-80

BS 1(W-3001)	Borewell sample collected from Hennagara Village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12˚47'08.9"N+77˚40'23.7"E)
BS 2(W-3002)	Borewell sample collected from Yarandahalli Village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12˚48'16.5"N+77˚40'07.5"E)
BS 3(W-3029)	Borewell water sample collected from the Borewell near the Bommasandra TMC STP of capacity 250 KLD (GPRS: 12˚.48'59"N+77˚41'17.5"E)
BS 4(W-3031)	Borewell water sample collected from the Borewell located adjacent TMC Chandapura compound wall (GPRS: 12˚48'16"N+77˚42'18"E)
BS 5(W-3030)	Borewell water sample collected near Heelalige lake outlet, Bengaluru (GPRS: 12˚48'53"N+77˚42'14.5"E)
BS6(W-3032)	Borewell water sample collected from the Borewell located Heelalige Gunduthopu(GPRS: 12˚48'32"N+77˚42'42"E)

Drain Water Quality

Annexure 6

Sl No.	Parameters	Unit	DS 1	DS 2	DS 3	DS 4	DS 5	DS 6	Test method
1	pH @25°C	-	6.8	6.8	7.9	5.8	6.8	6.8	IS 3025(11)
2	Conductivity @25° C	us/cm	590	1.8	4660	4890	3120	757	IS 3025(14)
3	Dissolved Oxygen	mg/L	BDL	2034	BDL	BDL	1.7	4.6	IS 3025(38)
4	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	60	78	203	2400	140	15	IS 3025(44)
5	Total Coliform	MPN/100ml	$1600X10^{3}$	$350x10^{5}$	1600X10	540X10	$920x10^{6}$	$1600x10^{4}$	APHA 3120-B 23rd edition (9221 A,B,C,)9-68 to 9-75
6	Sodium Absorption Ratio	-	3	3.2	5.72	5.37	6.9	2	IS; 11624
7	Free Ammonia	mg/L	BDL	0.05	2.15	BDL	0.04	BDL	APHA 3120-B 23rd edition(4500 NH3-D)
8	Boron as B	mg/L	BDL	0.27	BDL	BDL	1.67	BDL	APHA 3120-B 23rd edition(4500 -B B)
9	Ammonia as N	mg/L	7.9	27	27	94	21	22	IS 3025 (34)
10	Chemical Oxygen Demand	mg/L	312	287	287	10896	508	152	IS 3025(58)
11	Phosphate as P	mg/L	0.66	0.6	0.63	0.73	0.62	1	IS 3025(31)

DS 1	Lake water sample collected from Jigani Lake at Outlet near Sewage entry point from Jigani village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'16.6"N+77° 38'18.1"E)
DS 2	Drain water sample collected which lead towards Hennagara Lake at opposite HCL Technologies Limited, Bommsandra- Jigani Link road, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'06.8"N+77°39'04.4"E)
DS 3	Sample collected from the drain opp. To Puma Lift, BIA Attibele Hobli, Bengaluru Urban District. (GPRS: 12°48'41 "N+77°41'10"E)
DS 4	Sample collected from the drain located at the entrance of Kithaganahalli Lake, Bommasandra, Attibele Hobli, Anekal Taluk, Bengaluru Urban District. (GPRS:12 °48'36"N+77°41'5"E)
DS 5	Drain water sample collected from open drain which lead towards yarandahalli Lake at opposite to Grave Yard, Yarandahalli Village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'36.6"N+77°40'01.7"E)
DS 6	Lake water sample collected from Yarandahalli Lake at diverted drain point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'22.2"N+77 °40'09.1"E)

Annexure 7

Heavy Metal Analysis

SL No	Parametrs	unit	Sampling location																				Limit of detectio	Test Method Specification
			30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49		
1	Copper	mg/L	BDL	0.16	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.67	BDL	BDL	BDL	0.13	0.1	APHA 3120-B 23rd edition
2	Cadmium	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	
3	Total Chromium	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.98	BDL	BDL	BDL	BDL	0.1	
4	Iron	mg/L	1.86	23.36	0.23	BDL	0.41	1.29	BDL	0.44	0.11	0.16	0.23	0.17	0.11	BDL	0.21	18.85	0.95	1.16	BDL	7.3	0.1	
5	Manganese	mg/L	0.12	0.64	0.21	BDL	0.16	0.11	BDL	0.22	BDL	0.2	0.2	0.2	0.23	BDL	BDL	1.08	0.33	0.23	0.28	0.58	0.1	
6	Nickel	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	BDL	BDL	BDL	0.31	0.1	
7	Lead	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	
8	Zinc	mg/L	BDL	1.05	BDL	0.1	BDL	0.56	BDL	BDL	BDL	0.27	0.43	0.31	BDL	BDL	BDL	23.2	BDL	0.19	BDL	2.88	0.1	
9	Arsenic	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	
10	Cobalt	mg/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.18	BDL	BDL	BDL	BDL	0.1	

30	Lake water sample collected from Jigani Lake at Outlet near Sewage entry point from Jigani village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'16.6"N+77° 38'18.1"E)
31	Drain water sample collected which lead towards Hennagara Lake at opposite HCL Technologies Limited, Bommsandra- Jigani Link road, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'06.8"N+77°39'04.4"E)
32	Lake water sample collected from Hennargara Lake at Outlet point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'09.2"N+77° 40'22.5"E)
33	Lake water sample collected from Hennargara Lake at Village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'00.9"N+77° 40'09.6"E)
34	Lake water sample collected from Mastenahalli Lake Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°47'27.7"N+77°39'46.4"E)
35	Lake water sample collected from Yarandahalli Lake at diverted drain point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'22.2"N+77°40'09.1"E)
36	Borewell sample collected from Yarandahalli Village, Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'16.5"N+77°40'07.5"E)
37	Lake water sample collected from Kachanayakanahalli Lake (Kondareddy lake) at Outlet Point Jigani Hobli, Anekal Taluk, Bengaluru Urban District. (GPSR: 12°48'00.2"N+77°40'38.8"E)
38	Sample collected from the drain located at the entrance of Kithaganahalli Lake, Bommasandra, Attibele Hobli, Anekal Taluk, Bengaluru Urban District. (GPRS:12°48'36"N+77°41'5"E)
39	Borewell water sample collected from the Borewell near the Bommasandra TMC STP of capacity 250 KLD (GPRS: 12°.48'59"N+77°41'17.5"E)
40	Lake water sample collected at the inlet of Chandapura Lake near PHC Chandapura lake Attibele Hobli Anekal Taluk Bengaluru Urban District (GPRS:12°48'14"N+77°42'20"E)
41	Borewell water sample collected from the Borewell located adjacent TMC Chandapura compound wall (GPRS: 12°48'16"N+77°42'18"E)
42	Lake water sample collected from the outlet of Chandapura lake (Chalarakatte) (GPRS: 12°48'27"N+77°42'26"E)

43	Borewell water sample collected from the Borewell located Heelalige Gunduthopu(GPRS: 12˚48'32"N+77˚42'42"E)
44	Lake water sample collected from the outlet of Heelalige lake, Sarjapura Hobli, Bengaluru (GPRS: 12˚49'54"N+77˚42'14"E)
45	Lake water sample collected from the Veerasandra lake outlet Opp. To Gopalan lake front apartment Veerasanda, Bengaluru (GPRS: 12˚50'24"N+77˚40'33"E)
46	Lake water sample collected from the Outlet of Hebbagodi lake near Hebbagodi Police station, Bengaluru (GPRS: 12.827939"N+77 .6818"E)
47	Drain samples opposite to Mankind-Sahas
48	lake sample Konarandae outlet-adjacent to rubber industry
49	drain samples inlet to Hargadde lake

GCMS Analysis

SL. No.	Compound Name	M122020004-01	M122020004-02	M122020004-03	M122020004-04	M122020004-05	M122020004-06	M122020004-07	M122020004-08	M122020004-09	M122020004-10
1	p-Cresol	+	+	-	-	+	-	+	+	-	-
2	Phenol, 2,4,5-trimethyl	+	-	-	-	-	-	+	-	-	-
3	2,4-Di-tert-butylphenol	+	-	+	-	-	+	+	-	-	-
4	B-D-Fructopyranose, 2,3:4,5-bis-O-(1-methylethylidene)	+	-	-	-	-	-	-	-	-	-
5	Dibutyl phthalate	+	-	-	-	-	-	-	-	-	-
6	Ralox 530	+	-	-	-	-	-	-	-	-	-
7	Cyclohexanamine, N-cyclohexyl-cyclic octaatomic sulfur	-	+	-	-	+	-	+	+	-	-
8	Antioxidant 1076	-	+	-	-	-	-	-	-	-	-
9	Phthalic acid, butyl hexyl ester	-	-	+	-	-	-	+	-	-	-
10	Lysergamide	-	-	-	+	-	-	-	-	-	-
11	Tetradecane	-	-	-	-	+	-	-	-	-	-
12	Trans-O-Dithiane-4,5-diol	-	-	-	-	+	-	-	-	-	-
13	Cyclohexanamine, N-cyclohexyl-	-	-	-	-	+	-	-	-	-	-
14	Indole	+	-	-	-	-	-	-	-	-	-
15	Cyclic octaatomic sulfur	-	+	-	-	-	-	-	-	-	-
17	Phenol, 2,5-bis (1,1-dimethylethyl)	-	-	-	-	+	--	-	-	-	-
18	Pentatriacontane	-	-	-	-	+	-	-	-	-	-

19	Phenol, 4-(1,1,3,3-tetramethylbutyl)	-	-	-	-	+	-	-	-	-	-
20	2-Methyltetracosane	-	-	-	-	+	-	-	-	-	-
21	Dibutyl phthalate	-	-	-	-	+	+	-	+	-	-
22	n-Dodecyl methacrylate	--	-	-	-	-	+	-	-	-	-
23	Phenol, 2-methyl	-	-	-	-	-	-	-	-	-	-
24	2,4-Di- tert-butylphenol	-	-	-	-	-	-	-	+	-	-
25	Pthalic acid, butyl isohexyl ester	-	-	-	-	-	-	-		-	-
26	p-Cresyl formate	-	-	-	-	-	-	-	+	-	-
27	Dibutyl phthalate	-	-	-	-	-	-	-	-	-	-
28	alpha-Ethyl-alpha-methylbenzyl	-	-	-	-	-	-	-	-	+	-
29	Phenol, 2,4-dichloro	-	-	-	-	-	-	-	-	+	-
30	2,4-Dihydroxybenzaldehyde	-	-	-	-	-	-	-	-		+
31	Fenoterol, N-trifluroacetyl-O,O,O,O tetrakis (trimethylsilyl) derivative	-	-	-	-	-	-	-	-	-	+
32	Pentanediolic acid monoester		-	-	-	-	-	-	-	-	
33	Auramine	-	-	-	-	-	+	-	-	-	-

M122020004-01	Masthenahalli lake	**M122020004-05**	Chandapura lake inlet	**M122020004-09**	Opp to grave yard – at Hargadde
M122020004-02	Yarandahalli Outlet	**M122020004-06**	Veerasandra lake drain	**M122020004-10**	sample at Konnasandra lake point
M122020004-03	Heelalige Outlet	**M122020004-07**	Kithaganahalli Drain		
M122020004-04	Heelalige Borewell water	**M122020004-08**	Sample near sahas		

Annexure 9

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	MI22020004-09	Report Date	:	09 Feb 2022

SAMPLE NOT DRAWN BY LABORATORY

Customer Name	:	M/S. The Regional Director-KSPCB			
Customer Address	:	Karnataka State Pollution Control Board,Surjapur-562125			
Sample Name	:	Water			
Sample Description	:	Waste Water			
Sample No	:	MI22020004-09			
Sample Condition	:	Fit for Analysis	Sample Received on	:	07 Feb 2022
Sample Quantity	:	2 Litre	Test Started on	:	07 Feb 2022
			Test Completed on	:	09 Feb 2022

Test Results

Sl.No	Test Name	Test Method	Results	Units
1	Toluene	GL/EN-INS/SOP/33	BLQ(LOQ:0.02)	mg/L
2	Tetrachloroethene		0.044	
Phenols				
3	Phenol	APHA 23rd Edition 5530 C:2017	6.62	mg/L
4	2,4 Dichlorophenol		30.09	
5	2,6 Dichlorophenol		5.22	
6	GC-MS Screening	By GCMS	alpha.-Ethyl-alpha,-methylbenzyl Phenol, 2,4-dichloro	-

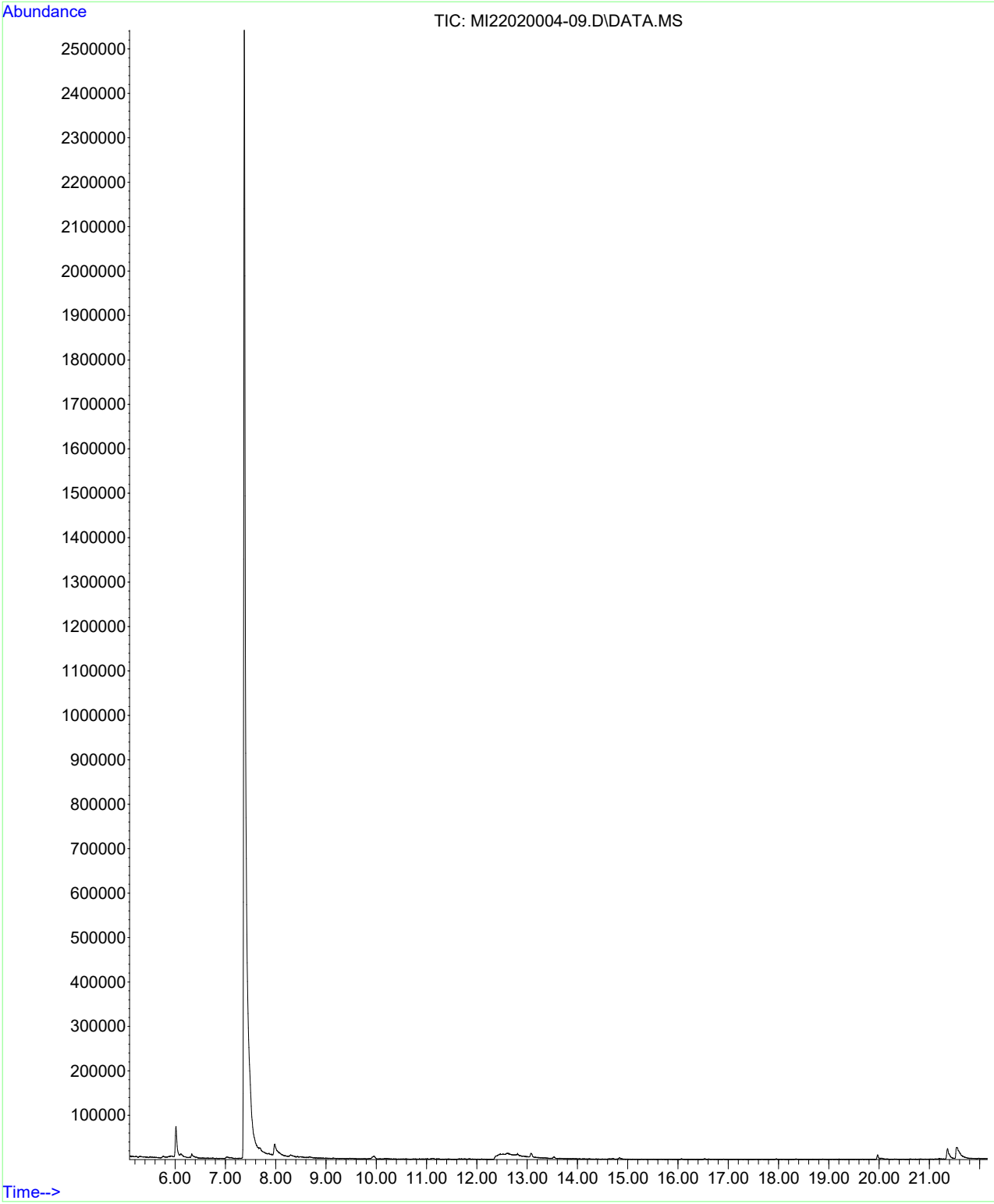
.....End of Report.....

Page 1 of 1

Authorized Signature

L. PRITHIVI RAJAN
LAB MANAGER

File :D:\GLENS LAB\DATA 2022\02-FEB\08-02-2022\Screening\MI2202000
... 4-09.D
Operator :
Instrument : GC MS
Acquired : 08 Feb 2022 20:07 using AcqMethod scan.M
Sample Name: MI22020004-09
Misc Info :



Library Search Report

Data Path : D:\GLENS LAB\DATA 2022\02-FEB\08-02-2022\Screening\
Data File : MI22020004-09.D
Acq On : 08 Feb 2022 20:07
Operator :
Sample : MI22020004-09
Misc :
ALS Vial : 10 Sample Multiplier: 1

Search Libraries: D:\MassHunter\Library\NIST17.L Minimum Quality: 0

Unknown Spectrum: Apex
Integration Events: ChemStation Integrator - autoint1.e

Pk#	RT	Area%	Library/ID	Ref#	CAS#	Qual
1	6.018	1.91	D:\MassHunter\Library\NIST17.L			
			Benzenamine, 3,4-dimethyl-	10699	000095-64-7	72
			.alpha.-Ethyl-.alpha.-methylbenzyl alcohol	26643	001565-75-9	72
			.alpha.-Ethyl-.alpha.-methylbenzyl alcohol	26651	001565-75-9	72
2	7.378	98.09	D:\MassHunter\Library\NIST17.L			
			Phenol, 2,4-dichloro-	36581	000120-83-2	98
			Phenol, 2,4-dichloro-	36577	000120-83-2	97
			Phenol, 2,4-dichloro-	36576	000120-83-2	97

Annexure 10

Ref. No

Kumar Organic Products Limited

INGREDIENTS FOR US

Ref :- KOPL/GM- Operation /2021-22/09

Date :

To

Date:07.08.2021

The Environmental Officer
KSPCB Bangalore South (Region – I)
Nisarga Bhavan, II Floor, Thimmaiah Road, 7th D Main Road
Bangalore – 79

(Unit –I)

Dear Sir

Sub:- Submission of From –V for Fy- 2020-21 (Plot No -62)

With reference to the above subject herewith we are submitting the copies of environment statement in Form- V for facility situated at plot no – 62 (Unit -1)

Kindly acknowledge the same.

Thanking you,

For ***KUMAR ORGANIC PRODUCTS LIMITED***

Authorized Signatory

G. Venkateswaran
Sr. GM (Operations)

11/8/2021
1955

DEO
AL
11/8

Cess	Hwm	Analysis fee
Cess Fee	Consent	Applicants Admin.

Plot No. 62, Road No. 3 & 5 , Jigani Industrial Area, Anekal Taluk, Bangalore - 560 105. India
Phone : 080 - 27825376, 27825196, 27826018 Fax : 080 - 27825439
E-mail : kop@kumarorganic.net / http://www.kumarorganic.net

Sl no. 40

JIGANI UNIT

ENVIRONMENTAL STATEMENT FORM - V

(See rule 14)

Environmental Statement for the financial year ending with 31st March

PART-A

Name and address of the owner occupier of the industry operation or process	:M/S. Kumar organic products limited Plot No.62 , Road No-3 Jigani Industrial Area, Anekal Taluk Bangalore-560105
Industry category Primary-(STC Code)	: Red.
Secondary- (STC Code)	
Production category	: Large
Year of establishment	: 1991
Date of the last environmental statement submitted	: 2020

PART .B

Water and Raw Material Consumption:

i. Water consumption in KL/D : 98 KL

Process:	35
Cooling:	20
Domestic:	6
Boiler :	30
Gardening	7

Name of products	Process water consumption per unit of products	
[A]	During the previous financial year	During the current financial year
Triclosan-	31.0 LIT/KG	30.5LIT/KG
Aldehyde C-16	0.95 LIT/KG	0.93 LIT/KG
Rose Oxide	00 LIT/KG	00 LIT/KG
Allyl Caprote	9.0 LIT/KG	00 LIT/KG

i. **Raw material consumption :**

Name of raw materials*	Name of Products	Consumption of raw material per unit of Output	
		During the previous financial year	During the current financial year
1] 2,4 DICLOROPHENOL	**Triclosan**	***1.22***	1.21
2] 2,5 DICLORO Nitro benzene		***1.41***	1.40
3] Sodium Hydrooxide		***0.74***	0.73
4]Iron			1.20
5]Perchloroethylene		***1.21***	
6]Sodium nitrate		***1.00***	0.99
		0.59	
7]sulphuric acid		***5.85***	5.83
8] HCL			1.28
		1.30	0.49
9] Potassium hydroxide		***0.50***	
10]Acetic acid			0.09
11]Hexane		***0.10***	0.25
		0.26	
[B]	**Aldehyde C-16**		

1]Aceto Phenone 2]Sodium 3]Ethyl Chloroacctate 4] IPA		1.25 3.50 2.40 2.30	1.23 3.48 2.38 2.27
[C]			
1] Citronellal 2]Methanol 3] Sodium Sulphite 4] Sulphuric acid	**Rose Oxide**	Nil Nil Nil Nil	Nil Nil Nil Nil
[D]			
1]Allyl Alcohol 2] caproic acid 3]Toluene 4]Sodium Carbonate	**Allyl Caprote**	1.40 0.48	Nil Nil

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants)	Quantity of Pollutants discharged (mass/day	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with Reasons.
(a) water	30.5 KL [Treated in MEE and ENVIRO and RO Permeate water reusing in our facility]	As per norms	5% During membrane cleaning & stabilizing

(b) Air		As per norms	5% Lower side pump described standard since we have head of all engineering controls

PART-D

HAZARDOUS WASTES

(As specified under Hazardous Wastes (Management & Handling Rules, 1989).

HAZARDOUS WASTE	TOTAL QUANTITY	
	During previous financial year	During the current Financial year
1 From process	1) Used Oil 105 Ltrs	1) Used oil Nil
	2) Organic residue 119.45 MT	2) Organic residue-81.16 M T
2 From Pollution Control Facilities	3) Chemical Sludge formed from waste water treatment 82.00 MT	3) Chemical sludge formed from waste water treatment –132.00 MT
	4) Incineration Ash – Nil	4) Incineration ash - Nil

PART. E

SOLID WASTES:

SOLID WASTES	TOTAL QUANTITY	
	During previous financial year	During the current Financial year
2] From pollution control Facility	NIL	NIL(as incinerator is in stopped condition
3] Quantity recycled or reutilized within limit	NA	NA

PART-F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

The nature, quantity and disposal mode of hazardous solid wastes generated from the plant is given in

Table-1

Sno	Description Category	Quantity		Disposal Mode
		MT/	MT/y	
1	Organic residue [28.1]	0.22	81.16	Collected in specified way& begs and Sent KSPCB approved vendors

2.	[34.3]Chemical Sludge From Waste treatment	0.36	132.00	Collected in Scientific way and begged &sent to KSPCB approved vendor.
3	Used oil -5.1	Nil	Nil	NA
4	Disposal of containers	Nil	Nil	Reused in process and disposed to authorized Recycler.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

Zero discharge ETP plant is stabilized and having a capacity to treat 70 kld of effluent per day with difficult effluent characteristics and water is being recycled back to the process. Cost of production reduced by Rs 15 per Kg due to this.

ATFD (Agitated Thin Film Drier) Installed in the plant to treat the MEE Reject.

Green belt / garden: Green belt of through out a boundary will be considered where native plants will be grown the land will be covered with plantation and green belt to meet the statutory requirements.

We have installed solid fired boiler of 4 MT/Hr capacity and hot oil system of 6,00,000 Kcal/Hr and the salient points were

a. Environment friendly
b. Resulting in a saving of around 400 MT of Furnace oil per Annum
c. Less toxic emission due to less sulphur in Solid fuel

PART. H

Additional measures/investment proposal for environmental protection

- New Zero discharge ETP plant with an investment of 5 crore is completed
- New technology ATFD (Agitated Thin Film Drier) is installed and started in MEE with an investment of Rs 50 Lakhs.
- Planted trees all round the plant
- Adequate measures are adopted for collection, storage and treatment of effluent generated in the industry therefore pollution in the surrounding areas is not anticipated.
- Training provided to all to develop greater awareness about Environment and safety.
- We organized world environmental day through which we create lot of awareness among the employees on the importance of protecting our environmental. Considering the current global and environmental issues.
- New Enviro system installed for effluent treatment to reduce environmental pollution.
- Considerable plantation in Safety and dump area

PART .I

MISCELLANEOUS:-

Any other particulars in respect of environmental protection and abatement of pollution.

KUMAR ORGANIC PRODUCTS LTD IS ACTIVE MEMBER OF JIGANI INDUSTRIAL AREA IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATMENT OF POLLUTION IN AND AROUND JIGANI INDUSTRIAL AREA

G.Venkateswaran

Sr.GM (Operation)

KUMAR ORGANIC PRODUCTS LIMITED

Plot No 62

Production Data Fy-2020-21

Sl No	Consented Products	Consented Qty/M(KG)	Actual Qty per Month (KG)										
			Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
1	aldehyde c-6	3000	1202	1769	1864	2824	2644	2822	3208	3120	2980	2870	2808	2806
2	2 alyl caprote	1000	0	0	0	0	0	0	0	0	0	0	0	0
3	3 rose oxide	30000	0	0	0	0	0	0	0	0	0	0	0	0
4	triclosan	7000	2950	4985	5000	4765	6210	6200	5810	6450	6162	5932	6430	6800

Kumar Organic Products Limited BANGALORE

Kumar Organic Products Limited

{Unit -Plot No- 62 ,Jigani -Bangalore}

Details of Consumption &Generation during April 2020 to March -2021.

		Month		Consuptions							Generation		
				Boiler	Cooling Water	Domestic	Process	Washing	Gardening	Other	Total	HTDS	LTDS
1	As per consent		WC (KLD)	4.5	40	5	22.5	13	12	1.5	98.5		
2			WWG (KLD)	4.824	4	4	21	13.5	0	1.5	48.824	34.5	8.824
3	Actual Water Consuptio n	Apr-20	WC (KLD)	30	20	6	21	14	7	0	98		
4			WWG (KLD)	2		4	20	14.5	0	0	40.5	34.5	6
5		May-20	WC (KLD)	30	20	6	21	14	7	0	98		
6			WWG (KLD)	2		4	20	14.5	0	0	40.5	34.5	6
7		Jun-20	WC (KLD)	32.3	3	3	22	12	4	0	76.3		
8			WWG (KLD)	1.5		2	20.5	10	0	0	34	30.5	3.5
9		Jul-20	WC (KLD)	31	4	4	19	9	6	0	73		
10			WWG (KLD)	2		3.1	18	9	0	0	32.1	27	5.1
11		Aug-20	WC (KLD)	35	5	2	21	8	2	0	73		
12			WWG (KLD)	1		1.5	22	7	1	0	32.5	29	2.5
13		Sep-20	WC (KLD)	38	3	1	21	6	0	0	69		
14			WWG (KLD)	1.5		1	20	5.5	0	0	28	25.5	2.5
15		Oct-20	WC (KLD)	34	2	2	22	6	1	0	67		
16			WWG (KLD)	2		2	21	6	0	0	31	27	4
17		Nov-20	WC (KLD)	46	7	4	20	4	2	0	83		
18			WWG (KLD)	3		4	19	4	0	0	30	23	7
19		Dec-20	WC (KLD)	44	3	3	20	2	1	0	73		
20			WWG (KLD)	1		4	21	5	1	0	32	26	5
21		Jan-21	WC (KLD)	40	5	3	22	3	2	0	75		
22			WWG (KLD)	2		3	20	3	0	0	28	23	5
23		Feb-21	WC (KLD)	38	2	4	21	2	1	0	68		
24			WWG (KLD)	1		4	21	2	0	0	28	23	5
25		Mar-21	WC (KLD)	42	4	3	20	3	0.5	0	72.5		
26			WWG (KLD)	2		3	20	3	0	0	28	23	5

Kumar Organic Products Limited BANGALORE

Sl no. 94

ENVIRONMENTAL
AUDIT STATEMENT
FORM-V
2020 - 2021

STELLENCE PHARMSCIENCE PVT LTD
#456, Road No.-03 Jigani Industrial
Area, Anekal Taluk Bangalore-560105

1465

Cess	Hwm	Analysis fee
Cess Fee	Consent	Accounts/ Admin

DE) Pls update
29/04/2021

Stellence Pharmscience Pvt Ltd

(Safety, Health & Environment)

Ref No : SPPL/PCB/2020/26

23-09-2021

To.

The Environmental officer, (Bangalore South-I)
KSPCB, Second Floor, Nisarga Bhavan,
Thimaiah Main Rd. 7th « D » Main
3rd Stage, 2nd Block, Shivanagar,
Opp Pushpanjali Theater,
Basaveshwarnagar, Bangalore – 560079

Respected Sir,

Sub : Subissions of Environmental Audit Statement Form-V for the Year 2020-2021.

We are here with submitting the Enivronmental Audit Statement Form-V for the year 2020-2021. This for your kind information and record.

Thanking you.

Your faithfully

For Stellence Pharmscience Private Limited

Authorized Signatory

Cc : HW Cell, 'Parisara Bhavan' Church Street Bangalore.

GENERAL INFORMATION

1	a) Name of the Industry	:	STELLENCE PHARMSCIENCE (P) LTD
	b) Address	:	#456, Road No. 03 Jigani Ind Area. Jigani Anekal Taluk Karnataka
	c) Contact Person	:	Mr. Muruganandham
	d) Phone	:	91 8110 413800
	e) Website	:	www.stellencepharmscience.com
	f) Ownership	:	Private Limited Company
	g) Products Manufactured	:	Enclosed in Report (Page No. 7)
	h) Consented Capacity	:	Enclosed in Report (Page No. 7)
	i) Year of establishment	:	1992
2	**OPERATION DURING THE PERIOD OF AUDIT**		
	a) Working days per year	:	301
	b) Working days per week	:	6 Days
	c) No. of working shifts	:	3
	d) No. of Employees	:	82
3	a) Current Approvals	:	Factory License: MYB 8982 Pollution Control Board consent for Water & Air,
	b) Water Consent	:	KSPCB/HPI/AW-302218
	c) Air Consent	:	KSPCB/HPI/AW-302218
	d) Hazardous waste authorization	:	PCB/WMC/SEO/H.D.Reg.No 52868/ 2013-14/H1034 dated 23.08.2013

INTRODUCTION

1. PREFACE :

M/s. STELLENCE PHARMSCIENCE PRIVATE LIMITED is a company keenly involved in the business of Active Pharmaceuticals Ingredients (API) and Chemicals. having manufacturing location in Bangalore. The company identified and bought Karnataka Chemsyn Limited (KCL), which was under rehabilitation with the Bureau of industrial Finance and Reconstruction (BIFR), Government of India. With infusion of capital in to the company, it has now been rehabilitated and restructured manufacturing facility located at Jigani, in south Bangalore

KCL has been rechristened as STELLENCE PHARMSCIENCE PVT LIMITED (SPPL). SPPL is expected to be lead player in the manufacture of Contrast Media (CM) products in the years ahead. SPPL follows the cGMP guidelines in its manufacturing operations and has two small volume finishing lines- where we expect to produce high value complex molecules either as as advanced intermediate or an Active pharmaceutical ingredient (API). In addition the facility also has a large volume finishing area where we plan to produce a range of CM products.

The resource pool of ideas that the group at Stellence, has is the result of a subtle amalgam of brilliant and creative minds. Every individual working in the group is constantly involved in generating new ideas and working towards making it a success.

ENVIRONMENTAL AUDIT STATEMENT

2020 - 2021

FORM – V

(SEE RULE 14)

Environmental Statement for the financial year ending the 31st March 2020.

PART – A

i) Name and address of the owner / occupier of the Industry in operation or process:

Mr. Muruganandham
Manager
456, Road No.03 Jigani Ind area
Jigani Karnataka

ii) Industry category primary - (STC) code, Secondary – (SIC code) ---- : Medium RED

iii) Production capacity: 72 MT/Annum

SL. NO.	PRODUCT	PRODUCTION CAPACITY (per annum)
1.	Propyphenazone	55MT/Annum
2.	Iopamidol	06 MT/Annum
3.	Isoxsuprine.HCI	03 MT/ Annum
4.	4-Methoxyl-5-Hydroxymethyl-Imidazole	03 MT/ Annum
5.	N.N-Dimethylhexanamide	02 MT/ Annum
6.	Verapamil.HCI	03 MT/ Annum
Total		72 MT/ Annum

iv) Year of establishment: 1992

v) Date of the last environmental statement submitted: Nil

PART - B

Water and raw material consumption:

1 Water consumption in liters per day:

Boiler feed	: 100
Process	: 200
Domestic	: 100
Cooling water	: 100
DM water process	: 100
TOTAL	**: 600 LPD**

Sl. No.	Name of products	Process water consumption for product output in KL	
		Process water Consumption Previous year	Process water Consumption Current year
1.	PROPYPHENAZONE	Not done	6.14
2.	IOPAMIDOL	Not done	Not done
3.	ISOXSUPRINE.HCL	Not done	Not done
4.	4-METHYL-5HYDROXYLMETHYL IMIDAZOLE	Not done	Not done
5.	N,N DIMETHYLHEXANAMIDE	Not done	Not done
6.	VERAPAMIL.HC	Not done	Not done

Raw material consumption

Sl No	Name of the product	Name of the Raw material	Consumption of raw material per unit of output	
			During the Previous financial year	During the current financial year
1	Propyphenazone	1 Phenyl-3Methyl-5 parazalone	Not done	0.812
2		Ranie Nickel	Not done	0.0046
3		Dimethyl sulphate	Not done	0.728
4		Sodium Hydroxide	Not done	0.498
		Isopropynol alcohol	Not done	0.43
		Activated carbon	Not done	0.052

Sl.No	Pollution discharge to environment/unit of output (Parameter as a specified in the consent issued)				
	Pollutants		Quantity of Pollutants Discharged (mass/day)	Concentration of pollutants in discharge (mass/Volume)	Percentage Of variation from prescribed standards with reasons
1.	Water				
	Pollution parameters	Prescribed limit			
	BOD	100	Sent to CETP 204.9	92.0	Under limit
	Suspended solids	200		26.9	Under limit
	TDS	2100		1411.8	Under limit

Air					
	Pollution parameters	**Prescribed**	**Quantity of Pollutants Discharged (mass/day)**	**Concentration of Pollutants in Discharges (mass/volume)**	**Percentage of Variation from Prescribed Standards With reasons**
	Repairable Particulate matter	100mg/Nm^3	NA	NA	Under limit
	SO2	80mg/m3	NA	NA	Under limit
	NOX	80mg/m3	NA	NA	Under limit

PART D : (Hazardous waste)

(As specified under the Hazardous Wastes/Management and Handling Rules.2008

SL.No	Hazardous Waste	Total Quantity	Total Quantity
		During the previous financial Year	During the current financial Year
1.	From process	Spent solvent - Nil Spent catalyst - Nil Used oil - Nil Process Residue - Nil Spent carbon - Nil Oil soaked cotton Waste - Nil Oil Filters - Nil	Spent solvent - Nil Spent catalyst - Nil Used oil - Nil Process Residue - Nil Spent carbon - Nil Oil soaked cotton Waste - Nil Oil Filters - Nil

PART E: (Solid waste)

Sl.No	Hazardous waste	Total Quantity (Nos/Kgs)	Total Quantity (Nos/Kgs)
		During the previous Financial year	During the current financial year
01	Discarded containers	NIL	NIL
02	Polythene bags	NIL	NIL

PART- G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

--

No natural resources are extracted at the premises for the production and no destruction is done to the natural resources. Company has developed & maintained lush green belt around the boundary & also maintained a good garden inside the premises on the available open area.

PART- H

Additional measures / investment proposed for environmental protection including abatement of pollution, prevention of pollution

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1 Environmental awareness training programs are awarded to minimize wastage and consumption of all resources and imparting knowledge on green chemistry.

2 Very good greenery is maintained.

3 The effluent analysis and air emission checks are carried out and submitted to the board as per the consent conditions and they are within the limits.

4.Proposal for Zero discharge ETP and rain water harvesting proposal is initiated

---

PART- I

Any other particulars for improvising the quality of the environment.

1. The Premises is kept always clean and tidy.
2. Plantation done for greenery

ANNEXURE -I

Air Pollution Source and Its details

The details of all the air pollution sources are as under presented in table

Sl No	Source of air pollution	Type of fuel	Sulfur content	Consumption		Chimney height (In Mts) & Air pollution control system provided /proposed
				Ltr/hr in case of liquid fuel	Kg/hr in case of agro based fuel	
1	2	3	4	5	6	7
1	200 KVA – 1 Nos	HSD	<0.05%	27	----------	Chimney of height 3.0 mts above Roof Level
2	600 KVA – 1 Nos	HSD	<0.05%	40	----------	7 mtrs above Roof level
3	a). Boilers 1.4 Ton – 1Nos	Biomass briquette	----------	----------	170	Dust Collector with 35 mts Chimney above Ground Level
	b) 2 Ton – 1 Nos	HSD/ LDO	<0.05 %	100	----------	Common Chimney of 35 mts above Ground Level
	c) 4 Tons – 1 Nos	FO/ LDO	----------	Not being used	----------	Common Chimney of 35mts above Ground Level
4	1 Lac K cal Thermic Fluid	HSD	<0.05%	16Kg/Hr	----------	Common Chimney of 35 mts above Ground Level
5	Scrubber for Process Section of Size 400m Dia x 6.95 m height	----------	----------	----------	----------	Chimney height of about 13 m above Ground level.

Annexure 12

Sl no. 140

HIKAL

Ref No: HL/ENV/2021-22/32

To

28th Sep 2021

Member Secretary
Karnataka State Pollution Control Board,
Hazardous Waste Cell, Parisara bhavan, 4th floor,
#49, Church street,
Bangalore - 560 001

Dear Sir,

Subject : Submission of Environmental Statement in Form-V by M/s Hikal Ltd. 82/A, KIADB Industrial area, Jigani, Anekal , Bangalore-560105

Please find enclosed herewith the Environmental Statement details for the year of **2020 -2021**. Kindly acknowledge the receipt of the same

Thanking you,

Yours faithfully,

For HIKAL LIMITED

Suresh S

Pharma Manufacturing Head

CC:

The Environmental Officer,
Karnataka State Pollution Control Board,
Regional Office (South)-Anekal
"Nisarga Bhavan", Thimmaiah Main Road
7th 'D' Main, 3rd Stage, 2nd Block, Shivanagar, Basaveshwaranagar,
Bangalore - 560 079

7/10/2021
1921

DE) Pls update 08/10/2021

Hikal Ltd.

Factory Unit I: 82/A, KIADB Indl. Area, Jigani, Anekal Taluk, Bangalore - 560 105, India. Tel.: +91-80-3986 1100, +91-8110-421100 Fax: +91-80-2782 5378

Admin. Office: Great Eastern Chambers, 6th Floor, Sector 11, CBD Belapur, Navi Mumbai - 400 614, India Tel.: +91-22-3097 3100 Fax: +91-22-2757 4277

Regd. Office: 717, Maker Chamber - 5, Nariman Point, Mumbai - 400 021, India. Tel.: +91-22-3926 7100, +91-22-6630 1801, Fax: +91-22-22833913

www.hikal.com info@hikal.com **CIN:** L24200MH1988PTC048028

ENVIRONMENT STATEMENT

IN FORM – V

M/s HIKAL LTD.
NO – 82/A, KIADB
JIGANI INDUSTRIAL AREA,
ANEKAL TALUK
BANGALORE – 560 105

SEPTEMBER – 2021

FORM V

(See rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31ST MARCH 2021

PART A

(i) Name and address of the owner/occupier
Of the industry operation or process : Mr. SAMEER HIREMATH
M/s. HIKAL LTD,
NO - 82/A, KIADB,
JIGANI IND AREA
ANEKAL TALUK
BANGALORE- 560105.

(ii) Industry category primary-(STC Code)
Secondary-(STC Code) : RED- LARGE

(iii) Production capacity-units (consented) :

Sl.no	Name of the Products	Total(Tons/Annum)
1	GABAPENTIN	2000
2	BUPROPION HCL	75
3	CINNARIZENE	20
4	ONDANSETRON HCL	1
5	ACEBUTALOL	15
6	P-BENZYLOXY ANILINE HCL	40
7	ONDANSETRON API	1
8	OXYPENTIFILLINE	75
9	TRIPROLIDINE HCL	4
10	GEMFIBROZIL	180
11	DECOQUINATE	275
12	LEVETRACETAM	10
13	VERAPAMIL	20
14	VALPROIC ACID	50
15	SODIUM VALAPROATE	50
16	DI-VALPROEX SODIUM	20
17	MAGNESIUM VALPROATE	10
18	TOPIRAMATE	20
19	TERTIARY LUCINE	12
20	FLUNARAZINE	12
21	VENLAFLAXINE HCL	40
22	NEOTAME	50
23	PIRACETAM	650

HIKAL LIMITED BANGALORE

24	ETIRACETAM FRESH	500
25	ETIRACETAM RACEMIC	150
26	TPCA.HCL	10
27	CMMDT	10
28	TRI-FLUROMETHYL CINNAMIC ACID	10
29	MEMANTINE HCl	10
30	PIPERAZINENITRO HCl	50
31	SEVELAMER CARBONATE	100
32	COLESEVALAM HYDROCHLORIDE	100
33	PREGABLIN	100
34	SITAGLIPTIN	10
35	VILDAGLIPTIN	10
36	LACOSAMIDE	20
37	VALOCYCLOVIR HYDROCHLORIDE	50
38	OLMESARTAN	10
39	DONEPEZIL HYDROCHLORIDE DIHYDRATE	2
40	QUETIAPINE FUMURATE	40
41	PRASUGREL (TPPO)	10
42	BUTRAPHANOL	0.3
43	METHIMAZOLE	5
44	FAVIPIRAVIR	60
45	APIXABAN	0.5

Products Manufactured:

Sl no	PRODUCTS	QTY MANUFACTURED IN TPA
1	GABAPENTIN	749.6
2	BURPROPION HCL	56.1
3	CINNARIZINE	4.08
4	ONDANSETRON HCL	1
5	ONDANSETRON API	0.9
6	OXYPENTIFYLLINE	5
7	TRIPOLIDINE - HCL	0.9
8	GEMFIBROZIL	124.7
9	DECOQUINATE	102.7
10	FLUNARAZINE	0.6
11	PIRACETAM	39.4
12	ETIRACETAM FRESH	45.9
13	ETIRACETAM RACEMIC	45
14	PREGABLIN	10.7
15	QUETIAPINE FUMURATE	1.2
	Total Tonnage	**1187.78**

(iv)Year of establishment : OCTOBER-2002

(v) Date of the last environmental statement : SEPTEMBER-2020

HIKAL LIMITED BANGALORE

PART B

Water and Raw Material Consumption:

(1) Water consumption m^3/d

Process : 85.3 m3/d
Boiler & Cooling : 246.5 m3/d
Domestic : 21.1 m3/d

Sl.no	Name of products	Process water consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
1	GABAPENTIN	5.9	5.9
2	BUPROPION HCL	6.5	6.5
3	ONDANSETRON HCL	61.3	61.3
4	ONDANSETRON API	41.5	41.5
5	OXYPENTIFYLLINE	---	---
6	TRIPROLIDINE HCL	82.5	82.5
7	GEMFIBROZIL	24.6	24.6
8	DECOQUINATE	0.006	0.006
9	FLUNARAZINE	---	14.6
10	PIRACETAM	---	0.85
11	ETIRACETAM FRESH	---	0.85
12	ETIRACETAM RACEMIC	---	---
13	PREGABLIN	---	13.43
14	QUETIAPINE FUMURATE	---	11.50
15	CINNARIZINE	---	7.69

HIKAL LIMITED BANGALORE

(2.) Raw material consumption:

(a) Gabapentin:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Lactum	GABAPENTIN	1.7	1.7
Toluene		4.0	4.0
Acetone		4.7	4.7
Noah flakes		1.2	1.2
Methanol		3.9	3.9
IPA		5.4	5.4
Sod. carbonate		0.2	0.2
HCl-30%		2.0	2.0
Carbon		0.003	0.003
Hyflosupercel		0.009	0.009

(b) Bupropion HCl:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Bupropion-1	BUPROPION HCL	1.3	1.3
TBA		2.0	2.0
Acetone		0.4	0.4
NaoH flakes		0.2	0.2
Methanol		2.2	2.2
IPA		2.3	2.3
HCl-30%		1.1	1.1
Hyflosupercel		0.01	0.01
Carbon		0.04	0.04
Toluene		2.3	2.3

(c) Ondansetron HCl:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
ONDT-6	ONDANSETRON HCL	2.5	2.5
2-Methyl Immediazole		2.5	2.5
IPA		14.7	14.7
HCl-30%		7.6	7.6
NaOH flakes		2.7	2.7
CHCL3		14.2	14.2
Carbon		0.2	0.2
Hyflosupercel		0.3	0.3

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(d) Ondansetron API:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
ONDT-HCl	ONDANSETRON API	1.4	1.4
TEA		0.6	0.6
IPA		1.2	1.2
Methanol		16.6	16.6

(e) Oxypentifylline:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Dimethyl Formamide	OXYPENTIFYLLINE	2.3	2.3
Theobromine		0.8	0.8
Potassium carbonate		1.8	1.8
Chlorobromo propane		1.2	1.2
Methanol		1.6	1.6
IPA		1.6	1.6
Carbon		0.04	0.04
Methyl acetoacetate		0.9	0.9
HCl		0.3	0.3

(f) Gemfibrozil:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Gem-1(intermediate)	GEMFIBROZIL	1.4	1.4
Methanol		7.6	7.6
NaOH		0.6	0.6
30% HCl		1.1	1.1
Carbon		0.1	0.1
Hyflosupercel		0.03	0.03
Toluene		0.6	0.6
Isobutanol		2.1	2.1

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(g) Decoquinate:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Deco stage-4	DECOQUINATE	1.1	1.1
Toluene		0.9	0.9
Methanol		2.6	2.6
Pd/catalyst		0.003	0.003
Hydrogen gas		0.02	0.02
EMME		0.4	0.4
Diphyl		3.1	3.1

(h) Triprolidine HCl:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
TRI-3(intermediate)	TRIPROLIDINE HCL	1.1	1.1
H_2SO_4		5.3	5.3
Formic Acid		0.3	0.3
NaOH flakes		5.6	5.6
NaCl		0.3	0.3
Oxalic acid		0.4	0.4
Acetone		17.3	17.3
Toluene		8.9	8.9
Carbon		0.1	0.1
Hyflosupercel		0.04	0.04
Aq.Ammonia		2.4	2.4
Ethyl acetate		3.7	3.7
HCl in IPA		0.8	0.8

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(i) **Flunarazine**

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
4,4 di fluoro benzophenone piperazine	FLUNARAZINE	—	1
Cinamic alcohol		—	0.65
Sodium Borohydride		—	0.08
Triethyl amine (TEA)		—	0.65
Methanol		—	8.15
Activated carbon		—	0.06
Huflo Supercel		—	0.06
HCL In IPA		—	1.085
Toluene		—	6.11
Piperazine Anhydrous		—	2
IPA		—	9.3
HCL		—	5.7
Catalyst-B		—	0.035
Catalyst-A		—	0.04
Caustic Soda		—	0.45

(j)Etiracetam

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Ethyl 2- pyrrolidone N acetate (PAE)	ETIRACETAM	—	1.27
Methanol		—	0.68
Ammonia		—	0.29
RO water		—	0.85

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(k) Pregablin

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
S Ester	PREGABLIN	—	1.54
KOH		—	0.70
Methanol		—	20.21
Raney Nickle Catalyst		—	0.23
Activated carbon		—	0.02
Acetic Acid		—	0.91
Hyflosupercel		—	0.03
Hydrogen gas cylinders (42 cum)		—	0.00
IPA		—	4.57
Water for Cleaning equipments		—	5.71
Scrubber water make up		—	1.43

(l) Etiracetam Fresh

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Ethyl 2 (2)-Pyrrolidone butarate (2PBE)	ETIRACETAM	---	1.54
Methanol		---	1.94
Sodium Methoxide		---	0.02
Ammonia		---	0.39

(m) Etiracetam Racemic

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Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Etiracetam -L060	ETIRACETAM RACEMIC	—	1.36
Methanol		—	2.45
Sodium Methoxide		—	0.01

(n) Quetapine Fumarate

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
QTP-2	QUETAPINE FUMARATE	—	0.81
N,N Dimethyl aniline		—	0.26
Phosphorus oxy chloride (POCL3)		—	0.65
Toluene		—	8.97
NaHCO3		—	0.01
NaCl		—	1.21
Water		—	14.68
Piperzine anhydrous		—	1.08
IPA HCl		—	0.68
Acetone		—	1.26
Sodium Sulphate		—	0.08
Hyflow		—	0.04
QTP-IV HCl (11-piperazinyl-dibenzo(b,f)(1,4) thiazepine hydrochloride)		—	1.00
2-(chloroethoxy) ethanol		—	0.49
Sodium carbonate		—	0.64
Sodium Hydroxide		—	0.16
Sodium iodide		—	0.01
N-Methyl-2-pyrrolidone		—	0.46
Toluene		—	2.57
Fumaric acid		—	0.18
Hyflow		—	0.01
Activated charcoal		—	0.02
Methanol		—	7.83

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Water for cleaning equipments		—	4.29
Scrubber water make up		—	2.15

(o) Cinnarizine

Name of the Raw materials	Name of the Products	Consumption of raw material per unit	
		During the current financial year 2019-20	During the current financial year 2020-21
Benzydrol	CINNARIZINE	---	0.94
Piperzine Anhydrous		---	2.14
Triethyl Amine		---	0.48
Catalyst - E		---	0.01
Catalyst B		---	0.02
Toluene		---	10.35
Hyflo		---	0.05
Caustic soda		---	1.28
Carbon		---	0.07
Methanol		---	1.79
MEK		---	3.19
HCl		---	5.73
Cinnamic Acid		---	0.64

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PART C

Pollution discharged to environment/unit of output.

(1) Pollution	Qty of pollutants Discharged (Mass/day)	Concentration of pollutants in discharges (mass/volume)	percentage of variation from prescribed stand-ards with reason
(a) Water:			
COD:	0.79 kg/day	39.7 mg/liter	Nil
BOD:	0.12 kg/day	6.2 mg/liter	Nil
TSS:	0.25 kg/day	12.4mg/liter	Nil
(b) Air :			
Acid mist & SO2			
Process stack-1	0.06 & 0.07 kg/day	1.48 & 1.9 mg/Nm3	Nil
Process stack-2	0.06 & 0.07 kg/day	1.35 & 1.6 mg/Nm3	Nil
Process stack-3	0.04 & 0.07 kg/day	1.12 & 1.9 mg/Nm3	Nil
Process stack-4	0.05 & 0.08 kg/day	1.31 & 1.9 mg/Nm3	Nil
Process stack-5	0.04 & 0.07 kg/day	1.17 & 2.0 mg/Nm3	Nil
Process stack-6	0.05 & 0.08 kg/day	1.38 & 2.0 mg/Nm3	Nil
Process stack-7	0.06 & 0.07 kg/day	1.37 & 1.7 mg/Nm3	Nil
SO2			
Boiler-1	6.62 kg/day	55.2 mg/Nm3	Nil
Boiler/TFH-2	167 kg/day	348 mg/Nm3	Nil
Cogen Boiler	124.68 kg/day	133.2 mg/Nm3	Nil
DG-1 (275KV)	0.04 kg/day	17.90 mg/Nm3	Nil
DG-2 (750KV)	0.21 kg/day	21.40 mg/Nm3	Nil
DG-3 (1500KV)	0.45 kg/day	25.10 mg/Nm3	Nil
Particulate matter			
Cogen Boiler	53.42 kg/day	57.07 mg/Nm3	Nil

NOTE: AAQM monitoring, Noise, Stack & water monitoring compilation details has been attached:

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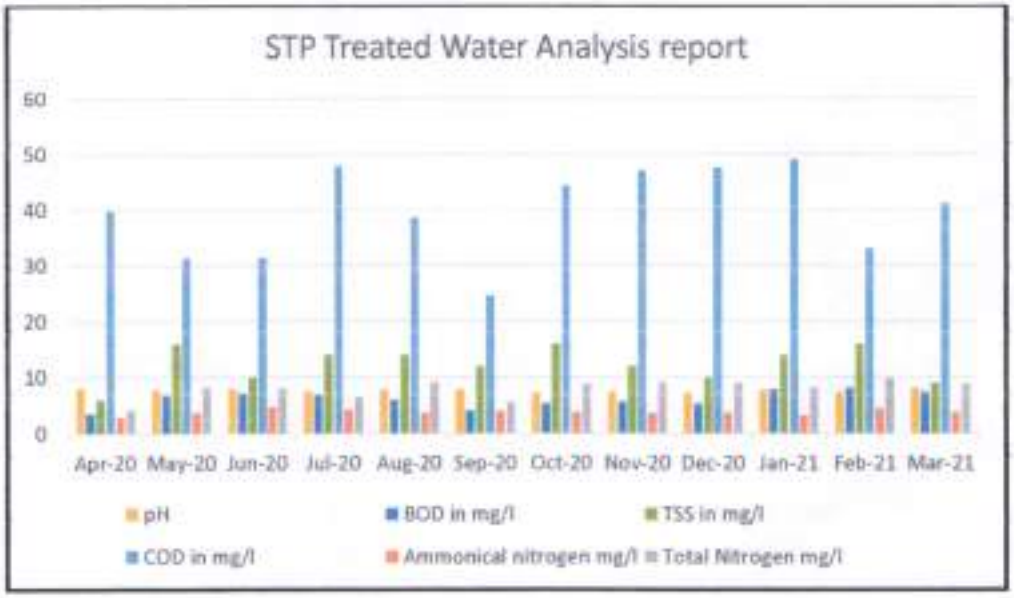
STP Treated Water Analysis Report for the year from April-2020 to March-2021						
Parameters	**pH**	**BOD in mg/l**	**TSS in mg/l**	**COD in mg/l**	**Ammonical nitrogen mg/l**	**Total Nitrogen mg/l**
KSPCB Limits	**6.5-8.5**	**20**	**20**	**50**	**5**	**10**
Apr-20	8.1	3.6	6	39.8	2.9	4.2
May-20	7.7	6.9	16	31.3	3.8	8.2
Jun-20	7.9	7.2	10	31.4	4.7	7.9
Jul-20	7.5	6.9	14	47.8	4.25	6.5
Aug-20	7.8	6	14	38.6	3.7	9.1
Sep-20	7.8	4.2	12	24.6	4.1	5.6
Oct-20	7.25	5.4	16	44.4	3.9	8.8
Nov-20	7.6	5.7	12	47	3.7	9.2
Dec-20	7.3	5.4	10	47.6	3.85	9
Jan-21	7.7	7.8	14	49.1	3.2	8.2
Feb-21	7.4	8.1	16	33.1	4.5	9.8
Mar-21	8.3	7.4	9	41.2	3.9	8.9



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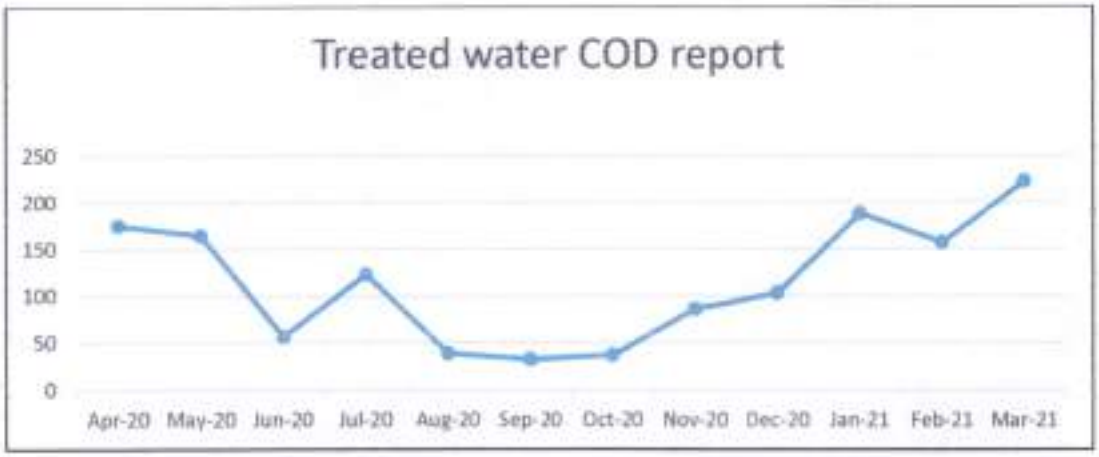
Treated Water (RO permeate) Analysis Report From Apr-2020 TO Mar-2021				
Parameters	**pH**	**COD in mg/l**	**BOD in mg/l**	**TDS in mg/l**
Date	**Results**			
Apr-20	6.6	175.1	6	212
May-20	6.6	164.6	7.2	218
Jun-20	6.8	56.4	9.3	162
Jul-20	6.5	122.8	5.4	168
Aug-20	6.3	38.6	3.6	152
Sep-20	7	32.8	3.3	190
Oct-20	6.8	37	3.6	192
Nov-20	6.8	86.2	6.3	154
Dec-20	6.85	103.1	6.9	170
Jan-21	6.8	188.2	9.6	304
Feb-21	6.5	157.2	28.9	162
Mar-21	6.8	222.7	26.2	138
Average	**6.69**	**115**	**9.6**	**185**



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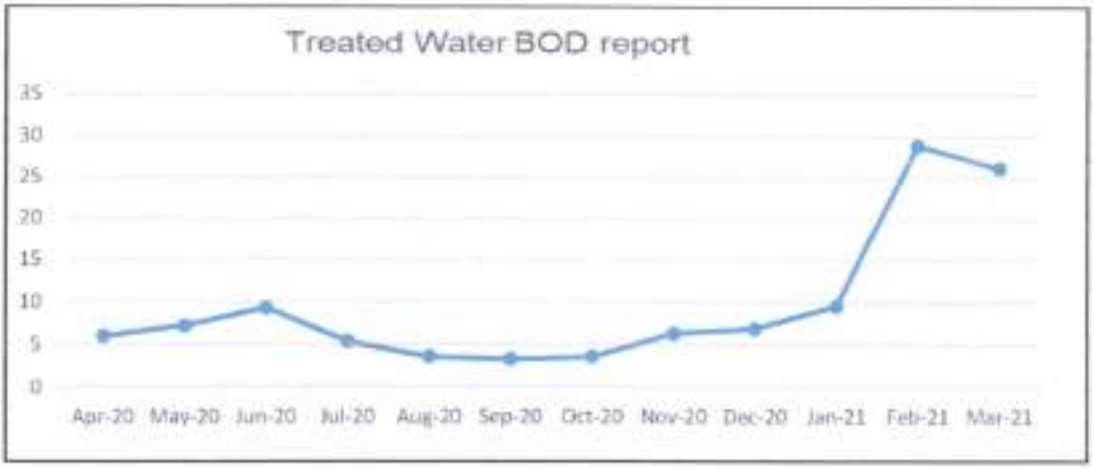

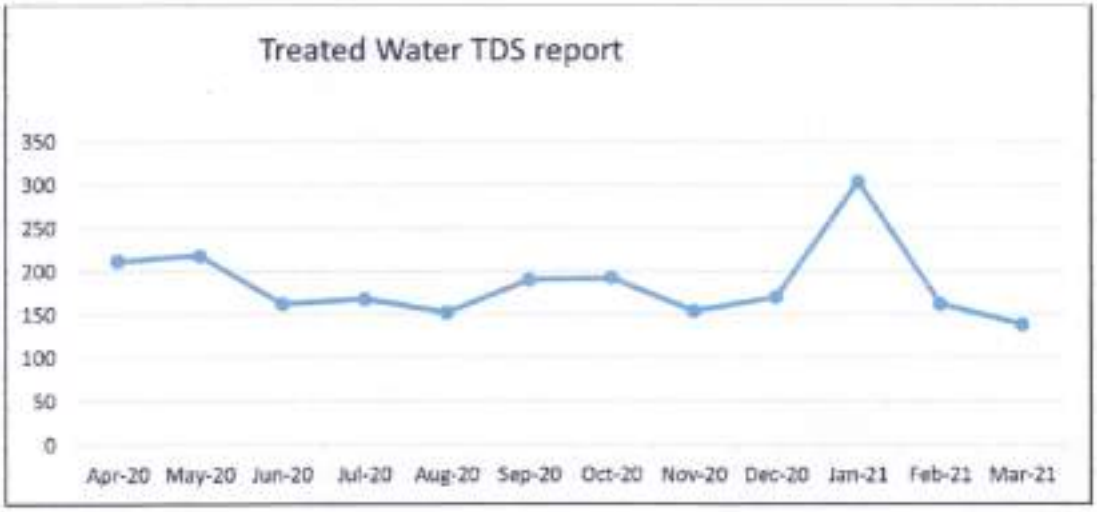

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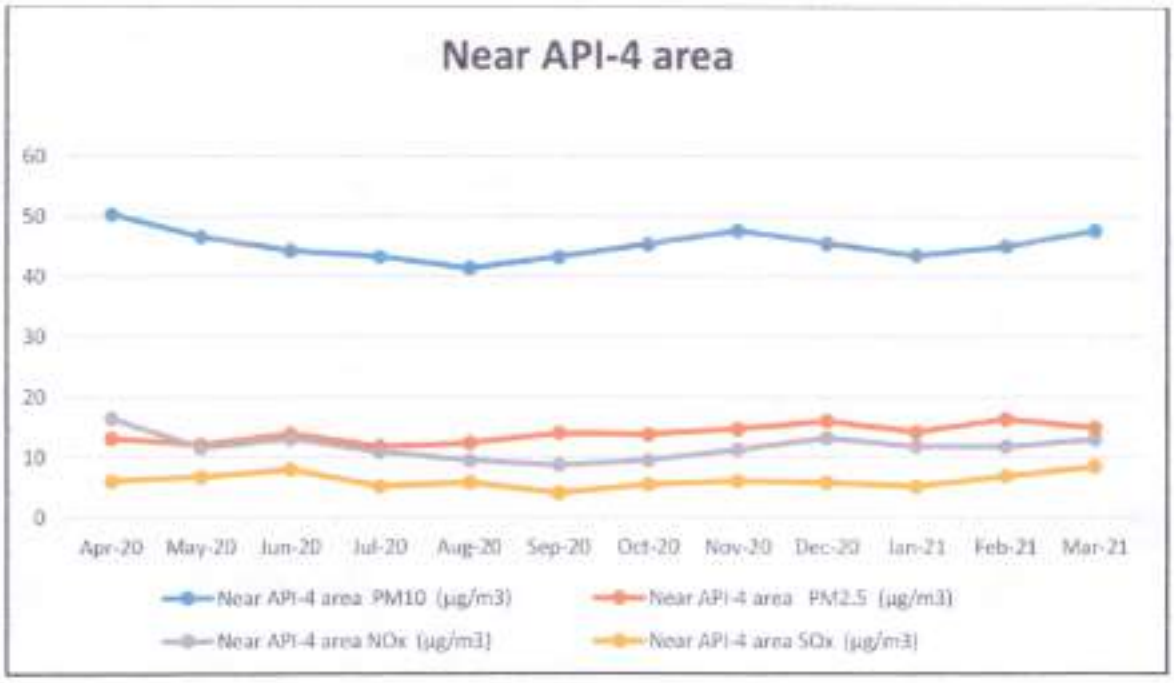
AAQM Location	Near API-4 area			
MONTH	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	NO_x (µg/m3)	SO_x (µg/m3)
Apr-20	50.3	13.2	16.5	6.1
May-20	46.5	12.1	11.6	6.8
Jun-20	44.2	13.9	13.1	8
Jul-20	43.2	11.8	10.9	5.2
Aug-20	41.3	12.4	9.5	5.8
Sep-20	43.2	14	8.7	4.1
Oct-20	45.3	13.8	9.5	5.5
Nov-20	47.6	14.7	11.3	6.1
Dec-20	45.5	16	13.2	5.8
Jan-21	43.5	14.2	11.8	5.2
Feb-21	45	16.3	11.8	6.9
Mar-21	47.6	14.9	13	8.5



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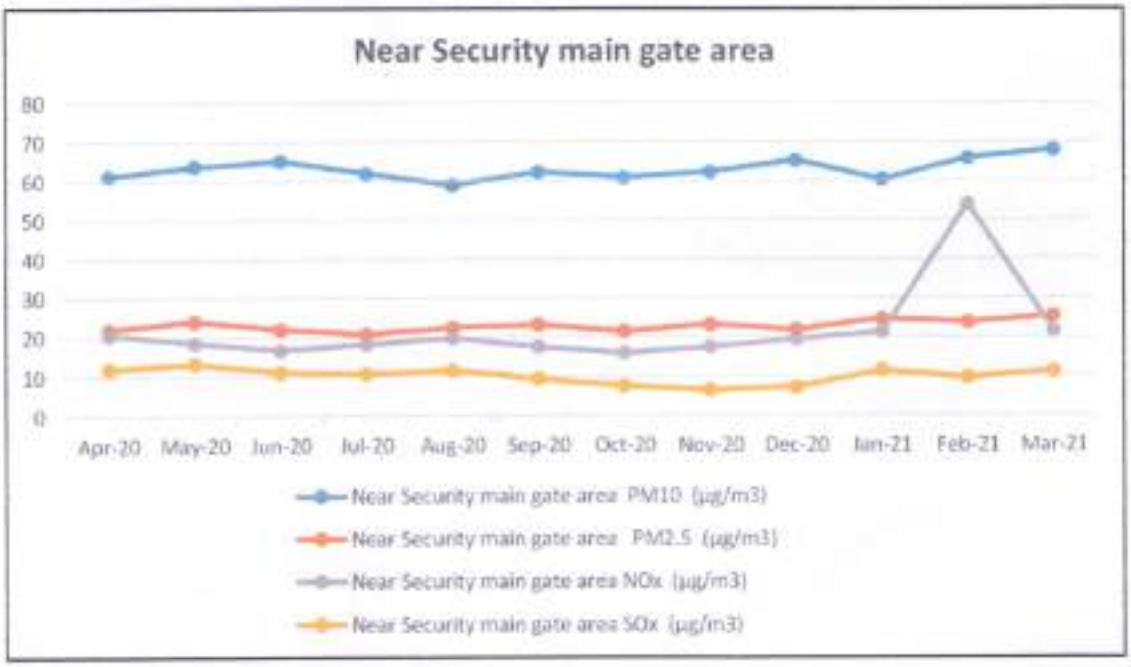
AAQM Location	Near Security main gate area			
MONTH	PM_{10} (µg/m3)	PM2.5 (µg/m3)	NOx (µg/m3)	SOx (µg/m3)
Apr-20	61.3	22	20.6	11.9
May-20	63.7	24.1	18.5	13.2
Jun-20	65.2	22	16.7	11.1
Jul-20	61.9	20.8	18.1	10.6
Aug-20	58.9	22.4	19.7	11.5
Sep-20	62.3	23.1	17.4	9.3
Oct-20	60.9	21.4	15.8	7.5
Nov-20	62.3	23.2	17.4	6.5
Dec-20	65.3	21.8	19.3	7.2
Jan-21	60.3	24.6	21.2	11.4
Feb-21	65.8	23.7	54	9.6
Mar-21	67.9	25.3	21.5	11.2



AAQM Location	Near ETP Garden area

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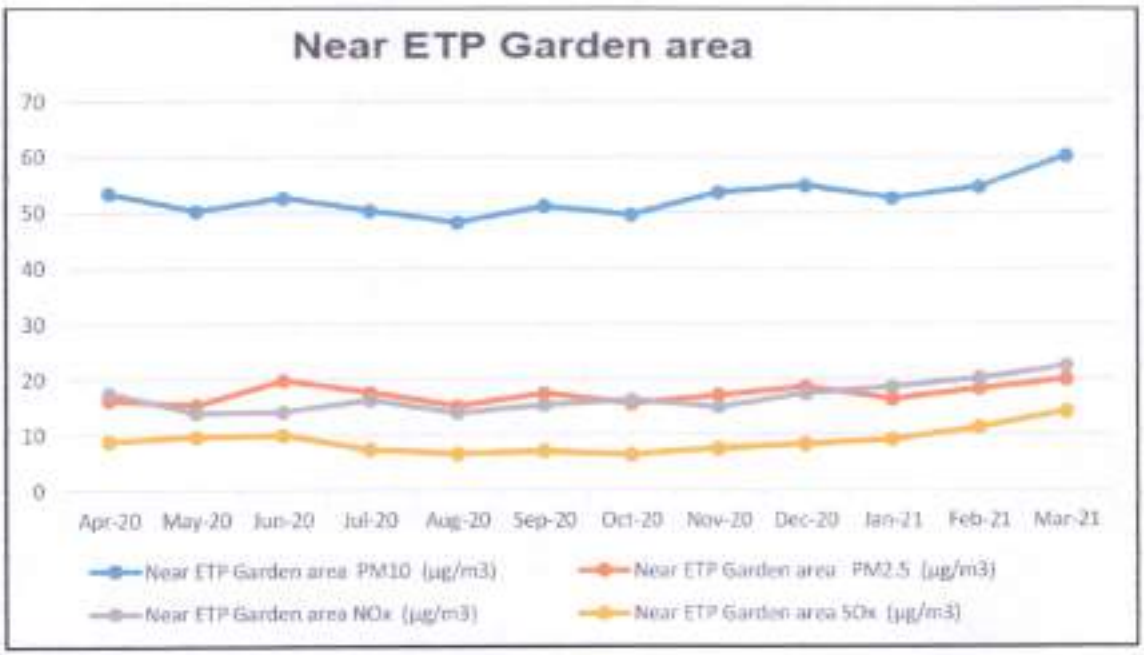
MONTH	PM_{10} (µg/m3)	PM2.5 (µg/m3)	NOx (µg/m3)	SOx (µg/m3)
Apr-20	53.4	16.2	17.5	8.8
May-20	50.2	15.3	13.9	9.6
Jun-20	52.6	19.8	14.1	9.9
Jul-20	50.3	17.6	16.2	7.3
Aug-20	48.2	15.1	13.9	6.6
Sep-20	51.2	17.4	15.3	7
Oct-20	49.6	15.6	16.2	6.4
Nov-20	53.7	17.1	15	7.5
Dec-20	55	18.6	17.4	8.3
Jan-21	52.7	16.4	18.6	9.1
Feb-21	54.8	18.3	20.2	11.3
Mar-21	60.3	20	22.4	14.2



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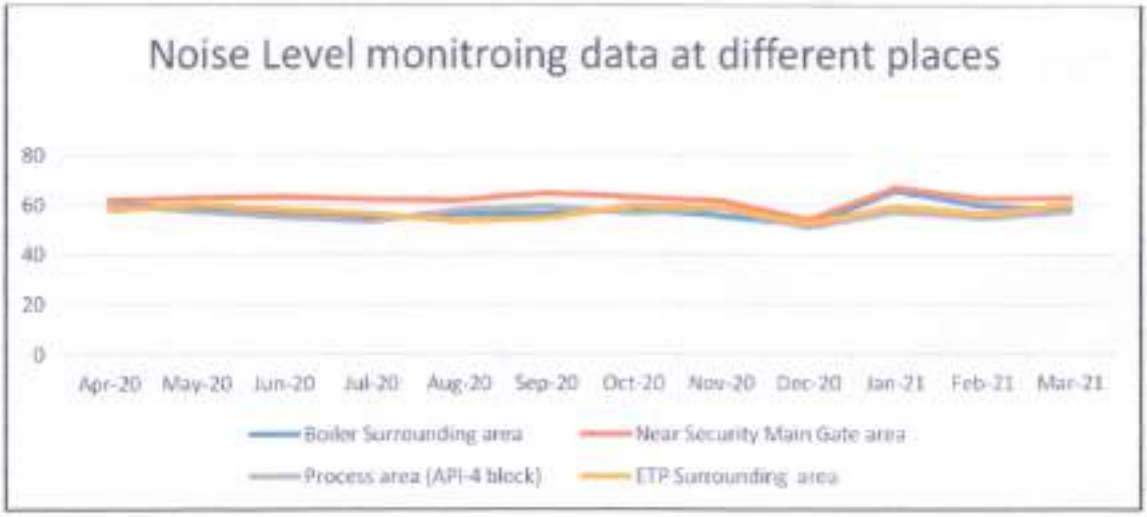
Noise level monitoring data at different places in the plant					
Month / Location	Limit dB(A)	Boiler surrounding area dB(A)	Near security main gate area dB(A)	Process area (API -4 block) dB(A)	ETP surrounding area dB(A)
Apr-20	75dB(A)	60.5	61.7	59.8	57.6
May-20	75dB(A)	58	62.8	57.2	60.1
Jun-20	75dB(A)	56.6	63.2	55	57.8
Jul-20	75dB(A)	54.2	62.2	53.2	56.3
Aug-20	75dB(A)	56	61.8	57.9	53.3
Sep-20	75dB(A)	56.5	64.6	59.2	54.5
Oct-20	75dB(A)	58	63	56.4	59.4
Nov-20	75dB(A)	55.6	61.5	58.7	58.9
Dec-20	75dB(A)	51.7	53.9	50.7	52.4
Jan-21	75dB(A)	65.5	66.9	57.1	59.3
Feb-21	75dB(A)	59.5	62.4	54.5	56.4
Mar-21	75dB(A)	58	62.8	57.2	60.1



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Stack emission (SO_2 in mg/Nm3) monitoring data
April 2020 - March 2021

Month / Location	14 TPH Cogen boiler	6300 Kg/hr Boiler & Hot oil 301	DG 275 KVA	DG 750 KVA	DG 1500 KVA CODE 303
Apr-20	206.3	486	16.5	23.7	25.1
May-20	195.9	541.7	17.3	23.1	27.1
Jun-20	184.5	545.44	19.1	25.3	27.9
Jul-20	174.6	512.3	22.5	27	30
Aug-20	168.4	493.47	20.3	25.4	28.5
Sep-20	60.3	444.12	19.5	20.3	25.4
Oct-20	144.1	350.2	17.4	19.1	22.7
Nov-20	138.6	331	15.4	17.6	20.6
Dec-20	119.2	314.2	18.6	20.3	22.5
Jan-21	27.8	28.1	13.5	16.7	19.5
Feb-21	63.2	55.1	16.9	18.5	25.3
Mar-21	115.9	73.9	17.3	19.2	27.1

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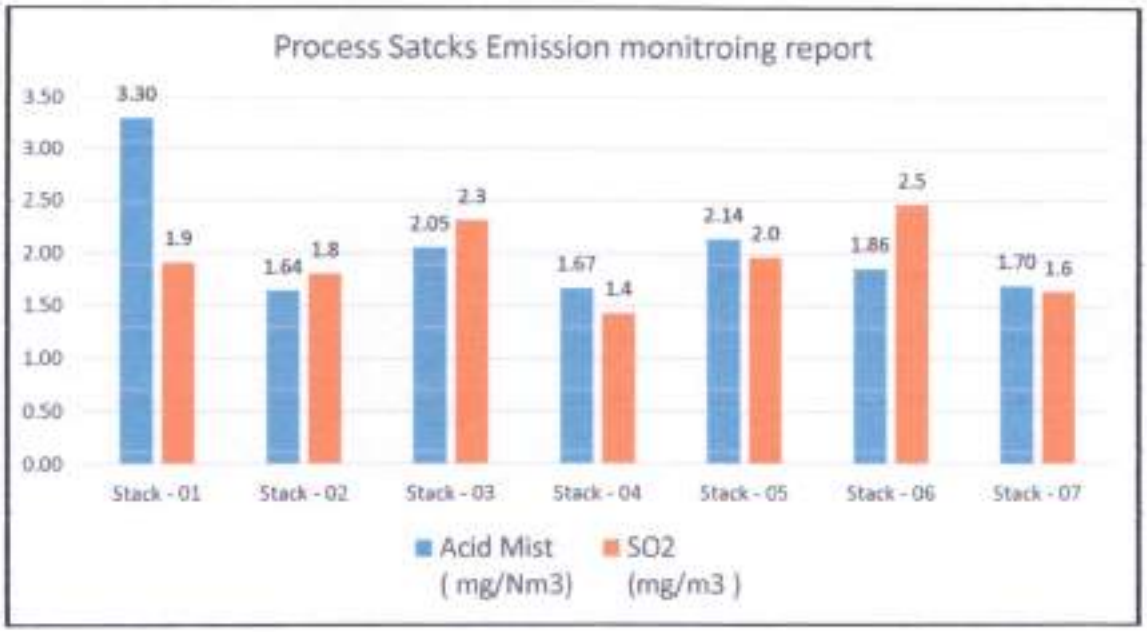

Process stacks average emissions monitoring report from April-2020 to Mar-2021							
Parameter	**Stack - 01**	**Stack - 02**	**Stack - 03**	**Stack - 04**	**Stack - 05**	**Stack - 06**	**Stack - 07**
Acid Mist (mg/Nm3)	1.48	1.35	1.12	1.31	1.17	1.38	1.38
SO_2 (mg/m3)	1.9	1.6	1.9	1.9	2.0	2.0	1.7

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PART D

HAZARDOUS WASTES

(As specified under Hazardous Wastes (Management and Handling) Rules, 1989)

(a) From Process:

Sl.no	Description of waste	Cat. no.	Total Quantity	
			During the current financial year 2019-20	During the current financial year 2020-21
1	Used oil	5.1	1.05 MT	1.10MT
2	Oil soaked cotton waste, & oil filters	5.2	0.175 MT	0.196MT
3	Sludge & filters contaminated with oil	3.3	0.2 MT	0.18 MT
4	Spent carbon & Hyflow mixture, & carbon soot.	28.3	71.49 MT	71.915 MT
5	Spent solvent from process	28.6	232.5 MT	240 MT
6	Distillation residue from contaminated organic solvent	36.4	191.99 MT	337.34 MT
7	E-waste	----	220 Kgs	1370 Kgs

(b)From pollution Control facilities:

Sl.no	Description of waste	Cat. no.	Total Quantity	
			During the current financial year 2019-20	During the current financial year 2020-21
1	Chemical sludge from waste water treatment	35.3	133.26 MT	194.28 MT
2	Evaporation residues(MEE Salt)	37.3	1255.05 MT	1405.7 MT

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PART E

Solid waste

(a) From process:

S.no	Description of waste	Cat. no.	Total Quantity	
			During the current financial year 2019-20	During the current financial year 2020-21
1	Spent carbon & Hyflow mixture, & carbon soot.	28.3	71.49 MT	71.915 MT
2	Briquette Boiler Ash	----	784.6 MT	1029

(b) From pollution Control facilities:

S.no	Description of waste	Cat. no.	Total Quantity (MT)	
			During the current financial year 2019-20	During the current financial year 2020-21
1	Chemical sludge from waste water treatment	35.3	133.26	194.28 MT
2	Evaporation residues(MEE Salt)	37.3	1255.05	1405.7 MT

(c)

(1) Qty recycled or re-utilized within the unit : 256 MT & 1700 No's
(2) Sold : 46.87 MT & 150003 No's
(3) Disposed : 3119.9 MT

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PART F

Characterization (in terms of composition and quantum) of hazardous as well as solid wastes and disposal practice adopted for both these categories of wastes.

Sl.no	Description of waste	composition	Disposal practice
1	Chemical sludge from WWT (ETP Sludge)	Solid	Sent to M/s Mother Earth Environ Tech Pvt LTD for Secured landfill
2	Evaporation Residues (MEE salt)	Solid	Sent to M/s Mother Earth Environ Tech Pvt LTD for Secured landfill
3	Spent carbon & Hyflow mixture, & carbon soot.	Solid	Sent to KSPCB authorized party for Incineration / Co-processing in Cement kiln.
4	Spent solvent from process	Liquid	Stored in secured manner & reprocessed inside the industry.
5	Distillation residue from contaminated organic solvent	Liquid/Tarry	Sent to KSPCB authorized party for Incineration / Co-processing in Cement kiln.
6	Used oil	Liquid	Sent to KSPCB authorized party for re-processing
7	Oil Soaked Cotton waste & Used Oil filters	Solid	Sent to KSPCB authorized party for Incineration / Co-processing in Cement kiln.

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PART- G

Impact of the pollution abatement measures taken on conservational of natural resources and on the cost of production.

Effluent recycling systems comprising of Reverse osmosis plant, multiple effect evaporation and drying systems are installed in our unit to achieve Zero Liquid discharge to eliminate water pollution. By installing the above systems we have totally avoided the need for effluent discharge and also the recovered water from effluent recycling plant is reused in our cooling towers as make up water which has resulted in conservation of natural resources i.e. fresh raw water intake to cooling tower make up is avoided.

PART -H

Additional measures / investment proposal for environmental protection abatement of pollution.

During the last financial year we have invested around 36.0 Lakhs for the pollution equipment's up gradation and for protection of environment. Following are the invest details done last financial year:

1. Hydro Jet cleaning of MEE plant to improve efficiency of the plant - 2.0 Lakhs.
2. Replacement of RO plant membrane and disc to improve the RO permeate quality- 29.0 Lakhs.
3. Increasing of steam condensate recovery purpose and reduction of effluent generation invested Rs:5.0

PART- I

Any other particular for improving the quality of the environment.

We have planted around 400 saplings this year in the Lake periphery and other areas of our plant/neighboring areas in addition to exiting green belt maintained in our premises.
Also we always have continuous improvement programs in place to conserve energy and natural resources which in turn will contribute for greenhouse gas emission reductions.
We are initiated to wealth out of waste projects to reduce the waste and recover the product and reused as a raw material.

HIKAL LIMITED BANGALORE

Sl no. 139

Annexure 13

HIKAL

To

27th September 2021

Member Secretary
Karnataka State Pollution Control Board,
Hazardous Waste Cell, Parisara Bhavan, 4th floor,
#49, Church Street,
Bangalore - 560 001

Dear Sir,

Sub: Submission of **Environmental Statement in Form-V** of M/s Hikal Limited, 28, KIADB Industrial Area, Anekal Taluk, Bangalore.
Ref: Combined Consent No.: AW-325853 dated-26/07/2021 and E (Protection) Act 1986

***

With reference to the above subject, we are hereby submitting the **"Environmental Statement"** in **Form -V** for the year of **2020-2021** with required attachments enclosed the copy of the same for your reference.

Kindly acknowledge the same.

Cess	Hwm	Analysis fee
Cess Fee	Consent	Accounts/ Admin

Thanking you,

Yours faithfully,

For HIKAL LIMITED

HIKAL LIMITED BANGALORE

7/10/21

1920

Dr. Ranganatha Rao.
Asst. Vice President.

DE) Pkpdali

Cc:
The Environmental Officer,
Karnataka State Pollution Control Board,
Regional Office (South)-Anekal,"Nisarga Bhavan", Thimmaiah Main Road
7th 'D' Main, 3rd Stage, 2nd Block, Shivanagar, Basaveshwaranagar, Bangalore - 560 079

Hikal Ltd.

Factory Unit II : 28, KIADB Indl. Area, Jigani, Anekal Taluk, Bangalore - 560 105, India. Tel. : +91-8110-421000

Admin. Office : Great Eastern Chambers, 6th Floor, Sector 11, CBD Belapur, Navi Mumbai - 400 614, India. Tel. : +91-22-3097 3100. Fax : +91-22-2757 4277

Regd. Office : 717, Maker Chamber - 5, Nariman Point, Mumbai - 400 021, India. Tel. : +91-22-3926 7100, +91-22-6277 0477. Fax : +91-22-2283 3913

w.hikal.com info@hikal.com **CIN** : L24200MH1988PTC048028

FORM – V

ENVIRONMENT STATEMENT

April 2020 - March 2021

M/s HIKAL LTD.,
No. 28, KIADB
JIGANI INDUSTRIAL AREA,
ANEKAL TALUK
BANGALORE – 560105

HIKAL LIMITED BANGALORE

FORM V

(See rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31ST MARCH 2021

PART A

i) **NAME AND ADDRESS OF THE OCCUPIER:**

MR. SAMEER HIREMATH
M/s HIKAL LTD,
No- 28, KIADB,JIGANI IND AREA
ANEKAL TALUK
BANGALORE – 560 105

ii) **INDUSTRY CATEGORY** : Red – Large

iii) **PRODUCTION CAPACITY (Consented)** : 72.45 TPA
Products Manufactured:

Sl. No.	Product Name	Quantity in MT
1	CF3 KETONE	0.683
2	OXYPENTIFYLLINE (PENTOXIFYLLINE)	2.650
3	QUETIAPINE	3.049
4	4-BENZYLOXY ANILINE HCl (PBA.HCl)	2.800
	Total	**9.182**

(iv) **YEAR OF ESTABLISHMENT** : December-2004

(v) **DATE OF SUBMISSION OF LAST ENVIRONMENTAL STATEMENT** : 24th September-2020.

PART – B

WATER CONSUMPTION DETAILS

(1) Water consumption Ltr/d

Process : 2000 LPD

Cooling and Boiler : 17000 LPD

Domestic : 980 LPD

Sl. No	Name of products	Process water consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
Annexure -1		Annexure -1	

(2) Raw material consumption:

Name of the Raw materials	Name of the Products	Consumption of raw material per unit of product	
		During the current financial year 2019-20	During the current financial year 2020-21
Annexure -2		Annexure -2	

PART C

Pollution discharged to environment/unit of output.

Pollution	Qty of pollutants Discharged (Mass/day) **Kg/Day (Avg.)**	Concentration of pollutants in discharges (mass/volume) **mg/l (Avg.)**	percentage of variation from prescribed stand-ards with reason

(a) **Water:**

Zero Discharge is maintained. Treated domestic water is being used in garden.
Annexure -3

(b) **Air : Acid mist and SO_2**

1) Process Scrubber-	0.03 kg/d	0.85 mg/m3	Nil (CFO- 35 mg/Nm3)

(c) **Ambient and Noise : Annexure-4**
(AAQM monitoring, Noise, Stack & water monitoring compilation details has been attached)

PART - D

HAZARDOUS WASTES

Sl. No.	Description of waste	Total Quantity (kg)	
		During the current financial year 2019-20	During the current financial year 2020-21
A	From Process:	Please refer attached Annexure – 5	Pls. see the attached Annexure – 6
B	From pollution Control facilities:		

HIKAL LIMITED BANGALORE

PART E
Solid waste

Sl. No.	Description of waste	Total Quantity (kg)	
		During the current financial year 2019-20	During the current financial year 2020-21
a	**From Process:**	**Pls. see the attached Annexure – 5**	**Pls. see the attached Annexure – 6**
b	**From pollution Control facilities:**		
c	i. Qty recycled or re-utilized within the unit	Nil	
	ii. Sold	6505	
	iii. Disposed	23954	

PART F

Please specify the ccharacterization (in terms of composition and quantum) of hazardous as well as solid wastes and disposal practice adopted for both these categories of wastes.

A focused approach to solid waste management is in place and waste is segregated at source

S. No	Type of waste & Sources	Physical & Chemical Characteristics	Mode of Treatment and Disposal adopted
1	5.1 Used Spent Oil	Liquid – Organic	Shall be collected in leak proof containers and handed over to authorized re-processors.
2	28.1 Process Residue and wastes	Solid – organic	Shall be stored in secured manner & handed over to authorized incinerator
3	28.2 Spent catalyst	Solid - Organic and Inorganic	Shall be stored in secured manner & handed over to authorized recycler/sent back to the supplier.
4	28.3 Spent carbon	Solid – organic	Shall be stored in secured manner & handed over to authorized incinerator
5	28.4 Off specification products	Solid/Liquid - Organic and Inorganic	Shall be stored in secured manner & handed over to authorized incinerator
6	28.5 Date-expired products	Solid/Liquid - Organic and Inorganic	Shall be stored in secured manner & handed over to authorized incinerator
7	28.6 Spent solvents	Liquid - Organic	Shall be stored in secured manner & handed over to authorized recycler.
8	33.1 Empty barrels/containers /liners contaminated with hazardous chemicals /wastes	Solid - MS/HDPE	Shall be stored in secured manner & handed over to authorized recycler.

9	33.2 Contaminated cotton rags or other cleaning materials	Solid – organic	Shall be stored in secured manner & handed over to authorized incinerator
10	34.1 Chemical-containing residue arising from decontamination.	Solid – organic	Shall be stored in secured manner & handed over to authorized incinerator
11	34.2 Sludge from treatment of wastewater arising out of cleaning / disposal of barrels/containers	Solid – organic	Shall be stored in secured manner & handed over to authorize TSDF.
12	35.3 Chemical Sludge from Wastewater Treatment	Solid – organic	Shall be stored in secured manner & handed over to authorize TSDF.
13	36.1 Any process or distillation residue	Solid/Liquid - Organic and Inorganic	Shall be stored in secured manner & handed over to authorize TSDF.
14	37.3 Concentration or evaporation residues	Solid - Inorganic	Shall be stored in secured manner & handed over to authorize TSDF.
15	B2020 Glass wastes in non-dispersible form	Solid - Inorganic	Shall be stored in secured manner & handed over to authorized actual user
16	B3050 Wood waste and scrap,	Solid – organic	Shall be stored in secured manner & handed over to authorized actual user
17	B4010 Wastes consisting mainly of water-based or latex paints, inks and hardened varnishes	Solid – organic	Shall be stored in secured manner & handed over to authorized actual user
18	B3020 Paper, paperboard and paper product wastes	Solid – organic	Shall be stored in secured manner & handed over to authorized actual user
19	DB1010 Metal and metal-alloy wastes	Solid - Inorganic	Shall be stored in secured manner & handed over to authorized actual user

PART G

Impact of the pollution abatement measures taken on conservational of natural resources and on the cost of production.

Following measures have been adopted for abatement of pollution, conservation of Natural resources:-

- LTDS and HTDS effluent stream are segregated at source and collected in separate storage tanks for holding & treated in ZLD Systems Effluent recycling systems comprising of Reverse osmosis plant, multiple effect evaporation and drying systems are installed in our unit to achieve Zero Liquid discharge to eliminate water pollution.
- For Boiler and thermic fluid heater Natural gas is used.
- VFD are fixed for conversing the energy.
- Developed the Konasandra village lake for conserving water and given life to flora and fauna the area nearby

HIKAL LIMITED BANGALORE

- Natural gas is used as fuel to boilers.
- Low Sulphur diesel is used for DG set.

By installing the above systems and practices, we have totally avoided the effluent discharge and also the recovered water from effluent recycling plant is reused in our cooling towers as make up water which has resulted in conservation of natural resources i.e. fresh raw water intake to cooling tower make up is avoided.

Effluent Treatment Plant (ETP) will consist of the following

I. For High TDS Effluent streams

- Collection Tank with pumps for High TDS effluents from RO Reject stream and HTDS stream.
- Reactor with Agitator for High TDS Effluent neutralization act as feed to MEE
- MEE Feed Tank with pumps for treated High TDS effluents
- HTDS effluent evaporated in MEE plant.
- MEE concentration dried in ATFD system.

II. For Low TDS Effluent Streams

- Effluent Collection tank with transfer pump
- Neutralization Tanks with Agitators and dosing tanks with gravity flow
- Anaerobic tank with gravity flow
- First Stage aeration tank with diffused aeration system and effluent transfer pumps
- Second Stage Aeration Tank with diffused aeration system and effluent transfer pumps
- Sludge Holding Tank with diffused aeration system and effluent transfer pumps and filter press feed pumps
- Filter Press for Sludge De-watering
- Polishing Tank with filter feed pumps
- Pressure Sand Filter
- Activated Carbon Filter
- Treated Holding Tank with treated effluent transfer pumps
- RO plant 1st and 2 stage.
- RO Permeate Holding Tank with RO Permeate Transfer Pumps

HIGH TDS EFFLUENTS:

Approximately 20 m3 capacity (High TDS Collection Tank) for holding RO rejects and HTDS from process. Pumps are provided for pumping to Reactor for neutralization after neutralization HTDS effluent feed to the MEE System and partially dried salt is collected in bags.

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LOW TDS EFFLUENTS: Batch System

ETP Primary Treatment

Floating material will be removed manually. The clear effluent is directed to the Equalization cum Neutralization tanks in batch wise. Operation is by fill and draw method. Tank in which agitator is provided for proper mixing. Dosing tanks are provided for HCl and Caustic addition based on pH of incoming effluent.

After neutralization effluent coagulants/flocculants will be added and then it will be allowed to settle in the same tank for solid-liquid separation. Solids settle at the bottom of the tank, which will be pumped to Sludge holding tank. The equalized / neutralized clarifier overflow shall be directed to anaerobic tank.

ETP Biological Treatment (Secondary Treatment)

After neutralization effluent will be directed to Aeration tank -1. Diffused Aerators are provided in aeration tanks to provide oxygen to the aerobic bacteria. The microbial culture developed in the Aeration tank is of semi solid nature and is normally known as Mixed Liquor Suspended Solids (MLSS), having a concentration in the range of 3,500 to 4,500 mg/lit. The Aeration Tank and the oxygenation system sized on the efficiency of BOD removal so that the sludge to be wasted will be less compared to conventional system and shall be non-putrescible. Domestic sewage will be pumped to the aeration tank. Then Aeration effluent is allowed to settle and clear top liquid is pumped to Aeration tank-2 again aeration is provided to wastewater for 4-5 hrs and allowed to settled for 1- 2 hrs, biomass settles and is partly recycled to the aeration tank -1 in order to maintain the required concentration of MLSS. The excess sludge shall be directed to Sludge Holding Tank and dewatering shall be done by Filter Press.

ETP Tertiary Treatment

The supernatant clear liquid taken into treated water tank holding tank. Then treated water is pumped through feed pumps to Pressure Sand Filter and Activated Carbon Filter for further reduction of the suspended solids. The filtrate from these filters is collected in the Treated Holding Tank. Backwash from the filters and filtrate from the filter press is directed to sludge tank. Treated effluent shall be pumped to the RO system. Permeate from RO System is collected in a RO Permeate Holding Tank and RO Permeate Transfer Pumps are provided for transfer

III. SEWAGE TREATEMENT PLANT Batch System

Sewage Treatment Plant which comprises of:

- Collection cum equalisation Tank
- Aerator blower with Aeration Tanks
- Pre filtration tank
- Pressure Sand Filter and
- Activated Carbon Filter
- Chlorine Dosing Tank
- Final treated holding Tank.

The capacity of sewage treatment plant is 5 KL per day. The sewage is being collected in raw sewage tank where blowing is being done for homogenization of raw sewage water. Then this

homogenized sewage water comes to Aeration tank (SBR) for sufficient aeration of sewage and then aerated sewage is allowed settle for MLSS. After this supernatant water collected in intermediate holding tank called pre filtration tank and sludge settled at the bottom of SBR is transferred to dewatering system in case excess. Now the water from the intermediate tank is passed through pressure sand filter and then activated carbon filter and ultimately collected in the final holding tank. The treated water is being reused in, green belt development & STP sludge is being used as manure for Green Belt Development.

IV. Recycling of steam condensate from header lines to boiler.

V. Adequate stack height for all emission's so that ground level concentrations are well within the permissible limit.

VI. Surface run off water is being collected in a separate 30 KL tank and reused after filtration in garden.

VII. Roof rainwater is being collected and used for gardening.

VIII. All hazardous wastes that are generated are stored separately and sold to only those Vendors registered with KSPCB as Recyclers and having Consents/Authorization from State Pollution Control Boards.

IX. Online Continuous Emission Monitoring System for STP outlet station have been installed. Monitoring data being transmitted to CPCB/KSPCB server and

X. Online monitoring system comprising digital flow meter to measure the quantity of trade effluent recycled and PTZ camera for monitoring the operation of same and data being transmitted to CPCB/KSPCB server.

PART H

Additional measures / investment proposal for environmental protection abatement of pollution.

Additional measures being taken for prevention of Pollution are as follows:

1. Scheduled maintenance and monitoring of all Air Pollution Control Device's (APCD's) being regularly undertaken to ensure their efficient operations in order to keep emissions level within the prescribed limit.

2. The STP treated water is being reused in green belt development and & STP sludge is being used as manure for Green Belt Development.

3. Awareness programs like plantation activities, Slogan competition, Speech competition was organized for employees for awareness on environment protection/ water conservation on 5thJune -2021(World Environment Day).

4. We continuing to spread awareness among all employees on conservation practices.

HIKAL LIMITED BANGALORE

5. Slogans on Safety and Pollution control, environmental protection, tree plantation and energy conservation to be displayed in prominent location.

6. Effluents collection will be made above ground tank.

7. Process optimisation is followed to reduce our energy and water consumption.

8. Recycling of Treated water in boilers.

9. Increasing of steam condensate recovery purpose and reduction of effluent generation invested around 1.50 lakhs

10. Hydro Jet cleaning of MEE plant to improve efficiency of the plant - 0.38 Lakhs.

PART I

Any other particulars for improving the quality of the environment.

1. Green belt is maintained and planned to continuously improve the greenery in the plant.

2. Around 400 number of saplings has been planted nearby Konasandra Lake area and another 100 number of sapling plantation is planned for this financial year 2021-2022

3. We carry out environmental quality monitoring for process stack emissions & ambient air quality once in a month and reports are being submitted monthly.

4. We are ensuring segregation at source.

5. We have continuously ensured that reduce, reuse and recycle and dispose the waste responsibly.

6. Wherever possible water and electricity consumption reduction measures will be adopted.

7. Every effort is made to reduce the generation of effluent/emission/wastes at the source itself and to explore the possibility of reusing/recycling of the wastes that are generated

8. Hikal Limited has been certified to ISO-14001 -2015 and ISO-45001 2018.

HIKAL LIMITED BANGALORE

Annexure-1

Process Water Consumption per unit of product output

Sl. No.	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
1	CF3 KETONE	-	2.75
2	OXYPENTIFYLLINE (PENTOXIFYLLINE)	0.56	0.56
3	QUETIAPINE	-	9.1
4	4-BENZYLOXY ANILINE HCl (PBA.HCl)	-	12.4

HIKAL LIMITED BANGALORE

Annexure-2

Consumption of Raw Materials per unit of the product

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
DMF	Oxypentifylline	2.67	2.67
Theo bromine		0.83	0.83
K2CO3		0.51	0.51
Chlorohexanone		0.71	0.71
Methanol		6.1	6.1
Carbon		0.052	0.052
Hyflo supercell		0.028	0.028

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
QTP-2	QUETIAPINE	-	0.81
N,N Dimethyl aniline		-	0.26
POCL3		-	0.66
Toluene		-	9.03
NaHCO3		-	0.01
NaCL		-	1.22
Water		-	14.77
Piperzine anhydrous		-	1.08
IPA HCl		-	0.68
Acetone		-	1.27
Sodium Sulphate		-	0.08
Hyflow		-	0.04
Water		-	9.12
NaHCO3		-	8.60

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
Piperidine	CF3 KETONE STAGE-I	-	0.52
Ethyl Trifluoro Acetate (ETFA)		-	1.04

HIKAL LIMITED BANGALORE

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
CF Ketone Stage-I	CF3KETONE STAGE-II	-	1.37
THF		-	0.98
Ary Bromide		-	1.37
Magnesium turnings		-	0.17
Hydrochoric acid		-	0.89
Water		-	2.75
Toluene		-	4.12

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
Crude CF Ketone Stage-2	CF3KETONE STAGE-III	-	1.44

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
P nitro Phenol sodium salt	PBA HCl STAGE -I	-	0.83
DMF		-	0.49
Catalyst A		-	0.02
Benzyl Chloride		-	0.80
Water		-	9.35
Caustic Soda		-	0.37

Name of the Raw materials	Name of the Product	Process Water Consumption per unit of product output	
		During the current financial year 2019-20	During the current financial year 2020-21
PBNB	PBA HCl STAGE -II	-	1.02
Ferric chloride		-	0.06
Activated Carbon		-	0.10
Toluene		-	3.59
Hydrazine Hydrate		-	0.82
Hyflo supercel		-	0.04
HCL in IPA		-	0.82
Iso Propyl alcohol		-	0.64
Water		-	3.07

HIKAL LIMITED BANGALORE

Annexure -3

STP Treated water

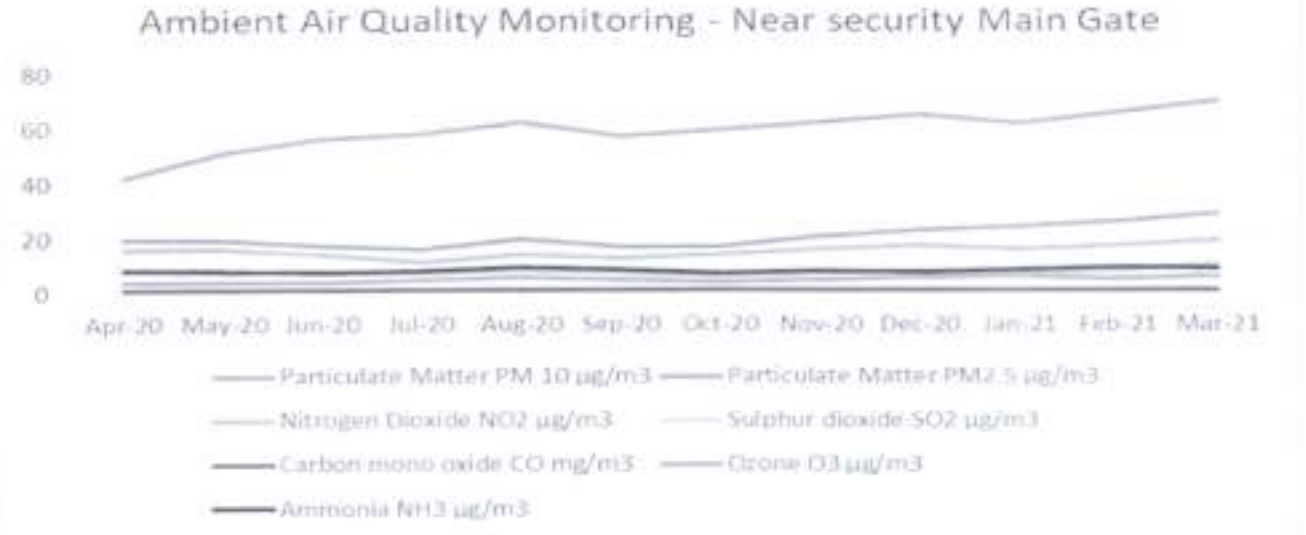
Parameter/ Month	pH	Total Suspended Solids, mg/L	Total dissolved Solids, mg/L	Chemical Oxygen Demand, mg/L	Bio chemical oxygen demand (3 days @ 27°C)	Total Nitrogen mg/L	Ammoniacal Nitrogen, mg/L	Fecal Coliform /100ml
Apr-20	7.5	8.0	156.0	31.7	5.7	3.9	2.7	12 cfu
May-20	7.0	8.0	542.0	23.9	4.8	6.2	3.8	10 cfu
Jun-20	7.7	6.0	416.0	15.7	3.6	5.4	3.1	7 cfu
Jul-20	7.95	6.0	422.0	23.9	3.9	3.3	4.9	11 cfu
Aug-20	6.6	12.0	792.0	46.3	5.4	3.7	5.4	10 cfu
Sep-20	7.6	10.0	33.0	23.2	5.7	3.8	5.8	18 cfu
Oct-20	7.1	12.0	326.0	39.5	5.4	3.6	6.9	22 cfu
Nov-20	7.3	18.0	570.0	31.3	6.9	4.0	7.1	21 cfu
Dec-20	7.2	6.0	464.0	15.85	3.0	2.7	6.1	17 cfu
Jan-21	7.2	16.0	344.0	25.6	6.8	2.9	7.4	22 cfu
Feb-21	7.5	12.4	406.0	34.8	7.0	3.5	7.2	24 cfu
Mar-21	7.4	5.0	434.0	33.0	7.3	3.2	6.5	18 cfu
Limits (KSPCB)	**6.5 – 9.0**	**Max 20**	-	**50**	**Max 10**	**10**	**5**	**<100.0**

HIKAL LIMITED BANGALORE

Annexure -4

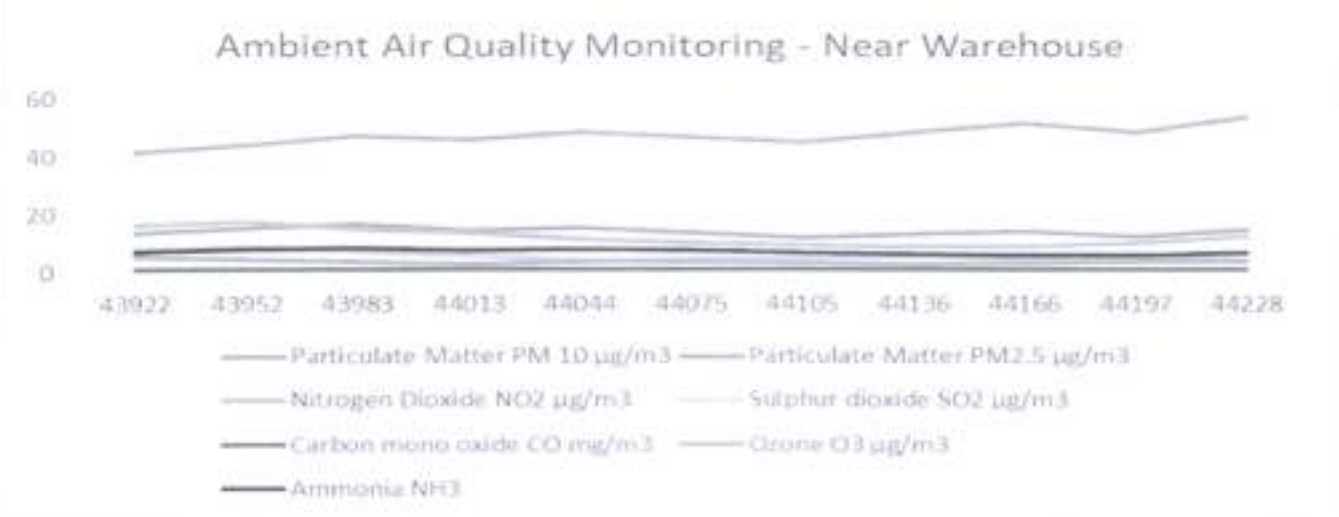
Ambient Air Quality Results for the year 2020-2021

Near Security Main Gate							
Parameter	**Particulate Matter PM_{10} $\mu g/m^3$**	**Particulate Matter $PM_{2.5}$ $\mu g/m^3$**	**Nitrogen Dioxide NO_2 $\mu g/m^3$**	**Sulphur dioxide SO_2 $\mu g/m^3$**	**Carbon mono oxide CO mg/m^3**	**Ozone O_3 $\mu g/m^3$**	**Ammonia NH_3 $\mu g/m^3$**
Apr-20	41.9	19.7	16.0	8.3	1.0	4.2	8.7
May-20	51.3	19.2	15.7	7.8	1.0	3.9	8.2
Jun-20	56.2	17.5	13.9	8.3	1.0	4.2	7.5
Jul-20	58.2	16.0	11.2	7.4	1.0	5.0	8.1
Aug-20	62.3	19.5	14.1	8.0	1.0	5.8	9.5
Sep-20	57.3	16.8	12.5	7.2	1.0	4.9	8.4
Oct-20	59.6	17.0	14.2	6.0	1.0	4.0	7.2
Nov-20	62.4	20.7	15.9	7.1	1.0	4.8	8.2
Dec-20	64.8	22.6	17.4	7.9	1.0	5.7	7.8
Jan-21	61.7	24.3	15.8	7.4	1.0	6.2	8.4
Feb-21	65.8	26.1	17.4	8.2	1.0	5.4	9.6
Mar-21	70.2	28.6	19.3	11.0	1.0	6.2	8.8
Limits (As per NAAQS)	**100**	**60**	**80**	**80**	**4**	**180**	**400**



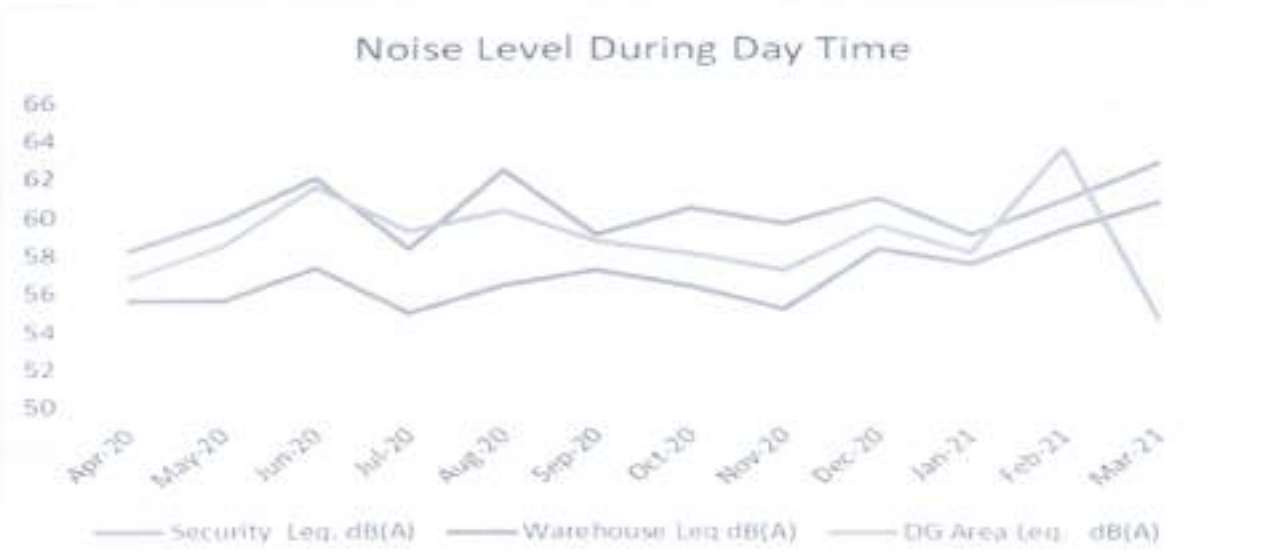
HIKAL LIMITED BANGALORE

Location: Nearby Warehouse area							
Parameter	**Particulate Matter PM $_{10}$ µg/m^3**	**Particulate Matter $PM_{2.5}$ µg/m^3**	**Nitrogen Dioxide NO_2 µg/m^3**	**Sulphur dioxide SO_2 µg/m^3**	**Carbon mono oxide CO mg/m^3**	**Ozone O_3 µg/m^3**	**Ammonia NH_3 µg/m^3**
Apr-20	41.7	13.8	16.2	8.1	1.0	5.4	7.2
May-20	44.3	15.4	17.6	8.9	1.0	4.8	8.0
Jun-20	47.2	17.0	15.1	7.3	1.0	3.7	8.6
Jul-20	45.8	14.6	13.7	6.0	1.0	3.0	7.5
Aug-20	48.3	15.7	11.4	4.2	1.0	4.0	8.1
Sep-20	46.9	13.7	10.5	4.8	1.0	3.7	7.6
Oct-20	44.8	11.9	9.6	5.2	1.0	3.2	6.8
Nov-20	48.3	13.5	8.9	5.7	1.0	3.0	6.5
Dec-20	51.3	14.1	9.0	4.8	1.0	3.5	5.9
Jan-21	48.6	12.6	10.2	5.1	1.0	3.8	6.0
Feb-21	53.7	14.8	12.5	6.0	1.0	4.0	6.7
Mar-21	56.8	16.7	15.0	7.8	1.0	3.3	7.3
Limits (As per NAAQS)	**100**	**60**	**80**	**80**	**4**	**180**	**400**



NOISE LEVEL MONITORING DATA (dB (A)

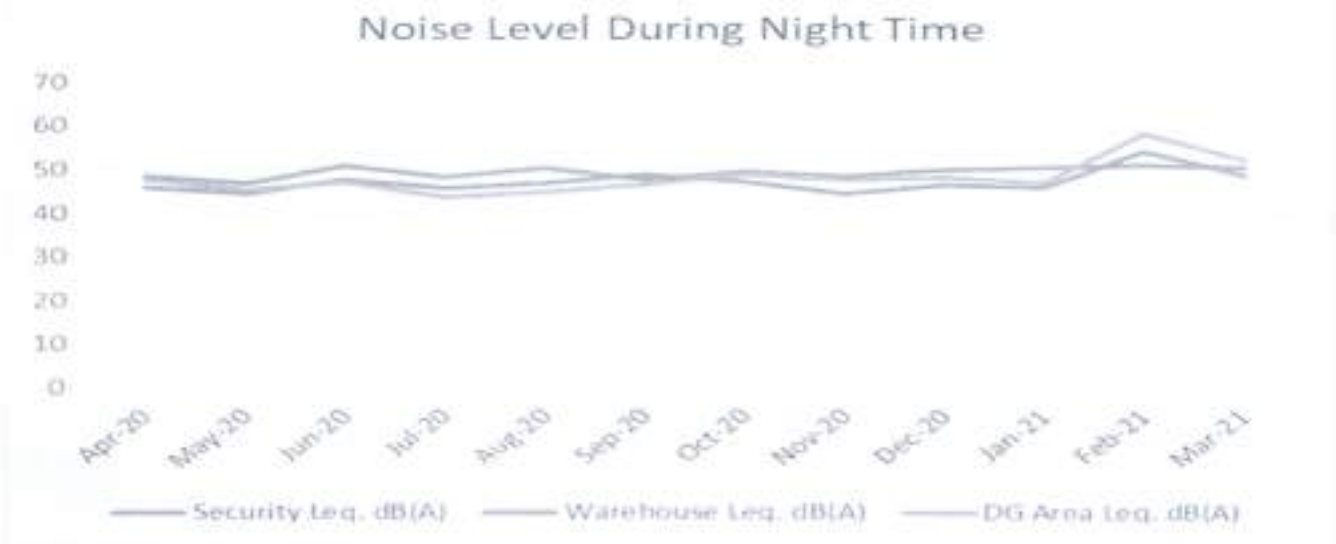
Noise -Day									
MONTH	Near security Main Gate			Near warehouse			DG Surrounding Area		
	L min dB(A)	L max dB(A)	Leq. dB(A)	L min dB(A)	L max dB(A)	Leq dB(A)	L min dB(A)	L max dB(A)	Leq. dB(A)
Apr-20	53.7	63.1	58.2	51.3	60.3	55.6	52.4	61.6	56.8
May-20	55.3	64.7	59.8	50.6	61.2	55.6	54.5	62.8	58.5
Jun-20	57.3	67.1	62.0	53.4	61.5	57.3	58.1	65.2	61.5
Jul-20	53.2	63.8	58.3	50.1	60.1	54.9	55.2	63.5	59.2
Aug-20	56.9	68.4	62.4	52.6	60.4	56.4	55.8	65.1	60.3
Sep-20	54.5	63.8	59.0	52.1	62.7	57.2	55.3	62.4	58.7
Oct-20	56.3	64.8	60.4	51.5	61.5	56.3	53.1	63.4	58.0
Nov-20	55.9	63.5	59.6	51.7	58.7	55.1	52.1	62.7	57.2
Dec-20	58.6	63.2	60.9	54.3	62.5	58.3	57.6	61.4	59.5
Jan-21	56.3	61.9	59.0	54.8	60.3	57.5	55.4	61.0	58.1
Feb-21	57.3	64.6	60.8	56.9	61.8	59.3	59.2	68.2	63.5
Mar-21	55.6	70.8	62.7	57.8	63.8	60.7	59.8	69.8	54.6
Avg	55.9	59.6	60.25	53.09	61.23	57.01	55.7	63.92	58.82
Min	53.7	61.9	59	50.1	60.1	55.1	52.1	61	54.6
Max	58.6	70.8	62.7	57.8	63.8	60.7	59.8	69.8	63.5
Limits	**75 dB(A)**								



HIKAL LIMITED * BANGALORE *

NOISE LEVEL MONITORING DATA (dB (A)

MONTH	Noise -Night								
	Near security Main Gate			Near Warehouse			DG Surrounding Area		
	L min dB(A)	L max dB(A)	Leq. dB(A)	L min dB(A)	L max dB(A)	Leq. dB(A)	L min dB(A)	L max dB(A)	Leq. dB(A)
Apr-20	44.6	52.4	48.3	42.2	49.6	45.7	43.7	51.3	47.4
May-20	42.7	50.9	46.6	40.5	48.6	44.4	41.8	49.2	45.3
Jun-20	46.5	55.2	50.7	43.2	52.4	47.6	42.8	51.7	47.0
Jul-20	43.8	52.6	48.0	41.6	49.9	45.6	40.7	46.8	43.6
Aug-20	45.6	54.7	50.0	43.3	50.2	46.6	41.4	48.0	44.6
Sep-20	42.5	52.8	47.4	44.2	53.6	48.7	42.0	51.2	46.4
Oct-20	44.1	55.3	49.4	41.3	53.8	47.1	43.8	54.1	48.7
Nov-20	46.7	50.4	48.5	41.5	47.2	44.3	42.6	52.9	47.5
Dec-20	48.2	51.4	49.8	43.7	49.2	46.4	45.8	50.5	48.1
Jan-21	47.6	53.6	50.5	42.7	49.1	45.8	44.8	49.3	47.0
Feb-21	49.8	52.3	51.0	50.3	58.1	54.1	52.7	64.3	58.2
Mar-21	43.6	58.6	50.5	44.2	53.8	48.8	47.3	57.5	52.2
Avg	41.98	49.25	45.44	39.90	47.35	43.47	40.72	48.22	44.31
Min	49.8	58.6	51	50.3	58.1	54.1	52.7	64.3	58.2
Max	42.5	50.4	46.6	40.5	47.2	44.3	40.7	46.8	43.6
Limits	**70 dB(A)**								



Annexure-5

Hazardous Waste and Solid Waste Generation & Deposal Details and storage at the end of the year 2019-2020

Sl. No.	Hazardous Waste Description	Cat. No	Consent QTY	UOM	Opening Stock	Month	Total	Closing Stock
1	Used Oil	5.1	5 KL/A	Ltrs	0	Generation	305	305
						Disposal	0	
2	Organic Residue	28.1	115 MT/A	Kgs	0	Generation	3926	0
						Disposal	3926	
3	Spent Carbon / Catalyst	28.2	1 MT/A	Kgs	0	Generation	6405	0
						Disposal	6405	
4	Spent Organic Solvents	28.5	77 MT/A	Kgs	0	Generation	1150	0
						Disposal	1150	
5	Discarded Containers	33.3	8 MT/A	Kgs	0	Generation	24	0
						Disposal	24	
6	ETP Sludge	34.3	8 MT/A	Kgs	0	Generation	1125	485
						Disposal	640	

Annexure-6

Hazardous Waste and Solid Waste Generation & Deposal Details and storage at the end of the year 2020-2021

Sl. No.	Hazardous Waste Description	Cat. No	Consent QTY	Opening Stock	Month	Total	Closing Stock
1	Used Oil	5.1	5 KLT/A	305	Generation	0.445	0.110
					Disposal	0.335	
2	Process Residue and wastes	28.1	115 MT/A	0	Generation	5.568	0.890
					Disposal	4.678	
3	Spent Catalyst	28.2	1 MT/A	0	Generation	0	0
					Disposal	0	
4	Spent Carbon	28.3	77 MT/A	0	Generation	4.850	1.055
					Disposal	3.795	
5	Off Specification Products	28.4	8 MT/A	0	Generation	0.680	0.680
					Disposal	0	
6	Date Expired Products	28.5	8 MT/A	0	Generation	0.960	0.960
					Disposal	0	
7	Spent Organic Solvents	28.6	251.2 MT/A	0	Generation	8.480	0.639
					Disposal	7.841	
8	Empty Barrels/Containers/Liners contaminated With Hazardous Chemicals/Wastes	33.1	85 MT/A	0	Generation	3.745	0.525
					Disposal	3.220	
9	Contaminated Cotton Rags or Other Cleaning Materials	33.2	5 MT/A	0	Generation	0.410	0.410
					Disposal	0	
10	Chemical containing residue arising from decontamination	34.1	2 MT/A	0	Generation	1.940	0.080
					Disposal	1.860	
11	Sludge from treatment of waste water arising out of cleaning / disposal of barrels/ containers	34.2	1.2 MT/A	0	Generation	0	0
					Disposal	0	
12	Chemical sludge from wastewater treatment	35.3	50 MT/A	485	Generation	1.79	0.695
					Disposal	1.58	
13	Any process or distillation Residue	36.1	101.2 MT/A	0	Generation	0	0
					Disposal	0	
14	Concentration or evaporation residue	37.3	215 MT/A	0	Generation	7.150	2.948
					Disposal	4.200	
15	Glass wastes in non-dispersible form	B2020	2 MT/A	0	Generation	0	0
					Disposal	0	
16	Wood waste and scrap	B3050	30 MT/A	0	Generation	3.000	0.050
					Disposal	2.950	
17	Wastes consisting mainly of water based or latex paints, inks and hardened varnishes	B4010	1 MT/A	0	Generation	0	0
					Disposal	0	
18	Paper, Paperboard and paper product wastes	B3020	10 MT/A	0	Generation	0	0
					Disposal	0	
19	Metal and metal-alloy wastes	DB1010	30 MT/A	0	Generation	0	0
					Disposal	0	

HIKAL LIMITED * BANGALORE *

ಫ್ಯಾಕ್ಸ್/Fax : 080-25586321
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ವೆಬ್‌ಸೈಟ್/Website : http://kspcb.gov.in

25581383, 25589112
25588151, 25589270
25588142, 25586520

Annexure 14

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರ ಭವನ", 1 ಅಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು – 560 001, ಕರ್ನಾಟಕ, ಭಾರತ
"Parisara Bhavane" 1st to 5th Floor, # 49, Church Street, Bengaluru - 560 001, Karnataka, INDIA

No:PCB/179/HPC/2021-22/ 4872 Dated: 20 DEC 2021

ADDENDUM

Sub: Consent for sending 20 KLD Pre-treated Trade effluent of M/s Kumar Organics Products Private Limited , Plot No. 62, Road. No.3, Jigani Industrial Arear, Bangalore to authorised Common Effluent Treatment Plant for a period of 3 months – reg.

Ref: 1) Combined Consent for Operation Order NO. AW-327132 PCB ID -10545 Dated: 29/06/2021

2) Request of the industry vide letter dated: 13/12/2021

<><><><>

M/s Kumar Organics Private Limited is an existing industry located at Plot No. 62 No. 3, Jigani Indl. Area, Bangalore. Board has issued Combined Consent for Operation under the Water Act and the Air Act for the period upto 30/06/2026 with a condition to treat the trade effluent in effluent treated plant with MEE in house . The in house MEE provided is being used to treat the trade effluent generated from Unit _I located at Plot 62 and Unit located at Plot No. 60, 65 and 64.

The industry vide letter cited at ref. (2) has informed that, they are enhancing the capacity of effluent treatment i.e., MEE from 20 KLD to 50 KLD and the work is expected to be completed within three months. The industry has also submitted that, they are planting to take up cleaning of sludge in the aeration tank, and during this time, annual maintenance work of primary treatment will be taken up. The industry further stated that, the work of enhancement of MEE capacity requires three months time and requested permission for hand over the trade effluent of 20 KLD to authorised Common Effluent Treatment Plant The request of the industry is examined keeping in view of the upgradation and maintenance of Effluent treatment , following addendum is issued.

ADDENDUM

In the combined consent for operation cited at ref. (1) issued for the period upto 30/06/2026, in the mode of discharge in the table indicated in Additional conditions No. III, page NO. (3) , the mode of disposal of trade effluent Following paragraph is added

The industry is permitted to dispose off 20 KLD of pre-treated trade effluent to Common Effluent Treatment Plant authorised by the Board for a period of three months from the date of issue of this order, Subjected to following conditions;

1)The industry shall pre-treat the trade effluent of 20 KLD to inlet standards of Common effluent Treatment plant authorised by the Board and having valid Consent for Operation of the Board.

2)The industry shall dispose the pre-treated effluent to ht nearest Common effluent treatment using tankers authorised by the Board fitted with GPS system. In case the industry intends to dispose the

effluent o CETP other than the nearest one, proper justification shall be submitted the Regional Office and get their consent,

3) Transport manifest shall be maintained and submitted to regional Office for verification.

4) The quantity shal not exceed 20 KLD

5) The industry is completely responsible and liable to pay Environmental Compensation and clean-up changes, in case of release of effluent due to unforeseen conditions or illegal discharge either by CETP or by transporter.

All other terms and conditions of the consent order cited at ref. (1) remains unaltered.

Sd/-

MEMBER SECRETARY

To:

The Managing Director,
M/s Kumar Organi Products Private Limited,
Plot NO. 62, Road, No. 3, Jigani INdil Area, Bangalore

Copy to RO- Anekal for information and to ensure compliance to this order. RO shall furnish the status of installed of MEE and maintenance of ETP on monthly basis.

SENIOR ENVIRONMENTAL OFFICER

Zinc Electoplating Industry list

Sl. No	Name & address of the industry	Product	Validity	Discharging Point	Remarks
1	Chemtreat Consultants, Plot no. 6-B, Veerasandra Industrial Area, Hosur Road, Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
2	Coroseal Industries, Shed No.D-83, Veerasandra Industrial Estate, Hosur Road, Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
3	Dural Technologies Pvt. Ltd. Shed No.B-91, Veerasandra Industrial Area, Hosur Road, Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
4	SFO Technologies Private Limited, Plot No. 14 / A, 2nd Stage, KSSIDC Industruial Estate, Veerasandra,Anekal Taluk, Bengaluru Urban District	Electroplating	Consent sought by the industry has been refused by the Board on 13.01.2020	CETP- Green concept INC	This office recommended to issue NPD for operating the industry without valid consent of the Board since July- 2017.
5	Sunanda Industries, Shed No. R 10, KSSIDC Industrial Estate,Veerasandra, Hosur Road, Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
6	S S Industries, Plot No. 7 A, Veerasandra Industrial Area, Hosur Road Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
7	3C Components, Shed No. C-29, C-30 & C-47, KSSIDC Industrial Estate, Veerasandra, Hosur Main Road,Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2022	CETP - VIWA Eco Club	
8	Technocrats India, No. B-7, KSSIDC Industrial Estate, Veerasandra, Hosur Road,Anekal Taluk, Bengaluru Urban District	Electroplating	30.06.2024	CETP - VIWA Eco Club	
9	Finishing System, No.R 17, 3rd Main, Kishore Highrech Gen Engg Compound, KSSIDC Industrial Area, Veerasandra 2nd Phase, Huskur Road, Off Hosur Road, Bangalore-560 100	Electroplating	30.06.2024	CETP - VIWA Eco Club	