

Minutes of the hearing conducted in connection with O.A No. 265/2017
on 20.08.2020 at Regional Office, Ernakulam

Meeting commenced at 11.15 AM. Chief Environmental Engineer in his welcome speech, gave a brief description on the order dated 02.03.2020 and 07.07.2020 of the Hon'ble NGT in OA 265/2017 and informed that the next date of hearing of the case is on 18.09.2020.

The details of the participants are listed below:

1. Sri. Baiju M A, Chief Environmental Engineer, KSPCB, Regional Office, Ernakulam.
2. Sri. Dinesh K.S, Environmental Engineer, KSPCB, District Office-2, Perumbavoor.(video conference)
3. Sri. Soman N G, Applicant in OA 265/2017
4. Smt. Girija Rajendran, Complainant
5. Sri. M K Ramachandran, General Manager (HSE), BPCL. (video conference)
6. Sri. Sainath C, DGM (Environment), BPCL. (video conference)
7. Smt. Shahana M A, Assistant Environmental Engineer, KSPCB, Regional Office, Ernakulam
8. Smt. Shari K B, Assistant Engineer, KSPCB, Regional Office, Ernakulam

Chief Environmental Engineer pointed out that through the order of the Hon'ble NGT dated 02.03.2020 KSPCB is directed to conduct fresh inspection and to assess Ambient Air Quality and Sound level near the house of complainant, nearby residence and inside the unit. But Board is not able to conduct monitoring as the operation is not commenced in its full capacity and hence request was made before the Hon'ble Tribunal to allow 2 months time to file the status report. The Chief Environmental Engineer further informed that the petitioner's counsel also requested to conduct inspection by KSPCB while

the units are operational in its full capacity. He invited Sri.Soman, the applicant in O.A no.265/2017 for addressing his grievances.

He pointed out the following grievances

1. Now the respondent companies are not operating in its full capacity due to the COVID 19 issues and the monitoring should be conducted while the units started its operation in full capacity.
2. Buffer zone provided is not adequate.
3. Sufficient green belt not provided.
4. Pollution and health issues faced by the residents in Chalikkara from the Sulphur Plant.
5. Safety aspects of the pipeline near the compound wall.
6. As per the RTI details, the IREP project has not yet obtained Environmental Clearance.

Smt. Girija, representative of the complainants in Chalikkara area pointed out that since smoke from sulphur plant is severe, people residing in Chalikkara area suffering from health problems such as skin irritation, respiratory problems etc.

Chief Environmental Engineer directed the representatives of the BPCL Company to reply the grievance raised by the applicant.

Sri. Sainath, DGM (Environment), BPCL give reply to the above grievances and are as follows:

1. Due to the COVID 19 issues, the demand of products is low and hence the unit has not started in its full capacity. KSPCB can conduct monitoring at any occasion.
2. Provided buffer zone for the company as per the Petroleum Safety Explosive Organization (PESO) and Oil Industry safety Directorate (OISD) standards which are the only available rule for the purpose.
3. Provided Green cover as per norms and complete details regarding the same has already been submitted to KSPCB.

4. Regarding the sulphur spillage, strict directions are there regarding the covering of the vehicles during the transportation and in case of any high spillage, cleaning activities can be done immediately.
5. All the pipelines are laid following the safety guidelines of PESO. Besides the PESO inspection, the internal safety team also conducts random checking.
6. Online monitoring of ambient air is continuously done to ensure the quality of air. Five CAAQMS stations are fixed inside the factory and the data are sent to CPCB & KSPCB.
7. Company is working with all approvals from concerned departments.

Sri. M.K Ramachandran, General Manager (HSE), BPCL explained following points in his reply and are listed as follows:

1. Company is strictly following the standard rules and regulations of the concerned departments.
2. CAAQMS machine installed in our company are frequently calibrated and maintained.

Thereafter, the CEE invited Sri. Dinesh K.S, Environmental Engineer, District office-2, Perumbavoor for his remarks.

Environmental Engineer informed that periodical water monitoring is being carried out in BPCL. In compliance with the order of the NGT and for the processing of the application of M/s Prod Air air products, ambient air quality monitoring, stack monitoring and sound monitoring also conducted. But the company was working at only 40 % capacity during the monitoring. Also weekly monitoring of real time data is verified.

Sri. Soman opined that the monitoring should be carried out only after the Company achieving the 100% production.

After the discussions, Chief Environmental Engineer concluded by taking following decisions

1. Environmental Engineer, District Office-2 shall fix the monitoring stations as early as possible and monitoring will be done when the company starts operation with approx. 70% capacity.
2. BPCL authorities shall report within a week positively the anticipated date of commencement of its operation with approx. 70% capacity.

Meeting ended at 12.00PM


CHIEF ENVIRONMENTAL ENGINEER



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Certificate No.
TC-8525

ANALYSIS REPORT

Chitrapuzha Outlet

Analysis Report No.	PCB/CL/1607/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	Chitrapuzha Outlet	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	5L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : CH1- GEN

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	4.6	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Sulphide	mg/L	BDL	APHA, 4500 S2F,4-187, 23rd Edition: 2017	1 mg/L
3	Ammonia as Nitrogen	mg/L	19.7	APHA, 4500-NH3F, 4-119 to 4-120, 23 rd Edition: 2017	0.02 mg/L
4	Biochemical Oxygen Demand (BOD)	mg/L	2.2	IS 3025 (Part 44): 1993	0.1 mg/L
5	Chemical Oxygen Demand (COD)	mg/L	36	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
6	Total Kjeldahl Nitrogen	mg/L	22.8	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
7	Oil and Grease	mg/L	BDL	APHA, 5520- B, 5-42 to 5-44, 23rd Edition:2017	5 mg/L
8	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l

-- End of Report --

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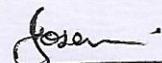
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Chitrapuzha Outlet

ANALYSIS REPORT

Analysis Report No.	PCB/CL/1612/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL Chitrapuzha outlet	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	1L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : CH1 HM

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Phosphate	mg/L	0.06	APHA, 4500-P, E, 4- 164 to 4-165,23rd Edition: 2017	0.01 mg/L
2	Cyanides	mg/L	0.09	APHA, 3111-B	0.01 mg/L
3	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
4	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.04	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

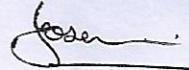
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ANALYSIS REPORT

STP outlet

Analysis Report No.	PCB/CL/1611/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL STP OUTLET	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	2L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : STP GEN

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	5.5	APHA, 4500- H+B, 4-95 to 4- 99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	72.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Biochemical Oxygen Demand (BOD)	mg/L	7.9	IS 3025 (Part 44): 1993	0.1 mg/L
4	Oil and Grease	mg/L	BDL	APHA, 5520- B, 5-42 to 5-44, 23rd Edition:2017	5 mg/L

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ANALYSIS REPORT

DHDS - ETP Outlet

Analysis Report No.	PCB/CL/1610/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL, DHDS ETP OUTLET	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	5L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : DHDS GEN

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	4.9	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Sulphide	mg/L	BDL	APHA, 4500 S2 F, 4-187 , 23rd Edition: 2017	1 mg/L
3	Ammonia as Nitrogen	mg/L	8.1	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric),23rd Edition: 2017	0.02 mg/L
4	Biochemical Oxygen Demand (BOD)	mg/L	2.2	IS 3025 (Part 44): 1993	0.1 mg/L
5	Chemical Oxygen Demand (COD)	mg/L	16.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
6	Total Kjeldahl Nitrogen	mg/L	9.24	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
7	Oil and Grease	mg/L	BDL	APHA, 5520- B, 5-42 to 5-44, 23rd Edition:2017	5 mg/L
8	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l

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ANALYSIS REPORT

DHDS ETP outlet

Analysis Report No.	PCB/CL/1615/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL, DHDS ETP OUTLET	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	1L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : DHDS HM

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Phosphate	mg/L	0.05	APHA, 4500-P, E, 4- 164 to 4-165, 23rd Edition: 2017	0.01 mg/L
2	Cyanides	mg/L	0.04	APHA, 3111-B	0.01 mg/L
3	Chromium Total	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition: 2017	0.03 mg/L
4	Copper	mg/L	0.02	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.04	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition: 2017	0.01 mg/L

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ANALYSIS REPORT

ETP-4 outlet

Analysis Report No.	PCB/CL/1608/19-20	Date	11 Jun 2020	Doc.No:	PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020		
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020		
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020		
Source	BPCL, ETP 4 GEN	Scientist-in-charge	JOSEMIN		
Sample Condition	fit for analysis	Sample Type	Waste Water		
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	5L plastic can		
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL		

Sample ID : ETP 4 GEN

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	5.0	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Sulphide	mg/L	BDL	APHA, 4500 S2F,4-187, 23rd Edition: 2017	1 mg/L
3	Ammonia as Nitrogen	mg/L	28.3	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric),23rd Edition: 2017	0.02 mg/L
4	Biochemical Oxygen Demand (BOD)	mg/L	2.4	IS 3025 (Part 44): 1993	0.1 mg/L
5	Chemical Oxygen Demand (COD)	mg/L	44.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
6	Total Kjeldahl Nitrogen	mg/L	31.4	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
7	Oil and Grease	mg/L	BDL	APHA, 5520- B, 5-42 to 5-44, 23rd Edition:2017	5 mg/L
8	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l

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ANALYSIS REPORT

ETP-4 outlet

Analysis Report No.	PCB/CL/1613/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL, ETP 4 GEN	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	1L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : ETP 4 HM

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Phosphate	mg/L	0.34	APHA, 4500-P, E, 4- 164 to 4-165, 23rd Edition: 2017	0.01 mg/L
2	Cyanides	mg/L	0.07	APHA, 3111-B	0.01 mg/L
3	Chromium Total	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition: 2017	0.03 mg/L
4	Copper	mg/L	0.02	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.05	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition: 2017	0.01 mg/L

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KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കേന്ദ്ര പരീക്ഷണശാല



Certificate No.
TC-8525

ANALYSIS REPORT

ETP-5 outlet

Analysis Report No.	PCB/CL/1614/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL ETP 5 OUTLET	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	1L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : ETP 5 HM

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Phosphate	mg/L	0.27	APHA, 4500-P, E, 4- 164 to 4-165,23rd Edition: 2017	0.01 mg/L
2	Cyanides	mg/L	0.12	APHA, 3111-B	0.01 mg/L
3	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
4	Copper	mg/L	0.02	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.06	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

-- End of Report --

GANDHI NAGAR, KOCHI - 682 020 ഗാന്ധിനഗർ, കൊച്ചി - 682020
Telephone Nos. Direct: 0484 - 220 7781, EPABX: 0484 220 7783 - 86, Fax: 0484 - 220 7781
E Mail: kspcbclm@gmail.com Web : www.keralapcb.nic.in
Certified for OHSMS (ISO 45001:2018)



0008

Checked by *Ajila V.A*

Note: The test results relate only to the sample submitted for analysis and it shouldn't be reproduced except in full without the written permission of the authorised signatory of the lab.

Josemin
Authorised by

Ajila V.A
Assistant Scientist

Dr. JOSEMIN
Assistant Environmental Scientist (H.G)





**KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY**

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കേന്ദ്ര പരീക്ഷണശാല



Certificate No.
TC-8525

ANALYSIS REPORT

ETP-5 Outlet

Analysis Report No.	PCB/CL/1609/19-20	Date	11 Jun 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/EKM/RO dated 20.03.2020	Date Of Collection	20 Mar 2020	
Received From	R O ERNAKULAM	Date Of Receipt	20 Mar 2020	
No. Of Sample	1	Period Of Analysis	20 Mar 2020 - 11 Jun 2020	
Source	BPCL ETP 5 OUTLET	Scientist-in-charge	JOSEMIN	
Sample Condition	fit for analysis	Sample Type	Waste Water	
Sample collected by	CEE, R O ERNAKULAM	Sample volume & container type	5L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : ETP 5 GEN

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	4.3	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Suspended Solids	mg/L	38.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Sulphide	mg/L	BDL	APHA, 4500 S2 F, 4-187 , 23rd Edition: 2017	1 mg/L
4	Ammonia as Nitrogen	mg/L	39.3	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric),23rd Edition: 2017	0.02 mg/L
5	Biochemical Oxygen Demand (BOD)	mg/L	2.6	IS 3025 (Part 44): 1993	0.1 mg/L
6	Chemical Oxygen Demand (COD)	mg/L	76.0	APHA, 5220 B, 5-18 to 5- 19, 23rd Edition:2017	3 mg/L
7	Total Kjeldahl Nitrogen	mg/L	42.3	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
8	Oil and Grease	mg/L	BDL	APHA, 5520- B, 5-42 to 5-44, 23rd Edition:2017	5 mg/L
9	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l

GANDHI NAGAR, KOCHI - 682 020

താസ്വീനഗർ, കൊച്ചി - 682020

Telephone Nos. Direct: 0484 - 220 7781, EPABX: 0484 220 7783 - 86, Fax: 0484 - 220 7781

E Mail: kspcbclm@gmail.com Web : www.keralapcb.nic.in

Certified for OHSMS (ISO 45001:2018)

Page 1 of 2



0008

-- End of Report --

Checked by *Ajila*

Jose
Authorised by

Note: The test results relate only to the sample submitted for analysis and it shouldn't be reproduced except in full without the written permission of the authorised signatory of the lab.

Ajila V.A
Assistant Scientist

Dr. JOSEMIN
Assistant Environmental Scientist (H.G)





KR.HSE.ENV.05.HSSE.KS/1/05.2020

26/5/2020

The Chief Environmental Engineer,
Regional Office, Girinagar, Ernakulam

Sir,

Sub: O.A no. 265/2017 (SZ):reg

Ref: 1. Letter from Regional office, PCB/RO-EKM/GEN-71/12, dated 20/4/2020

2. Order of Hon'ble NGT in OA no. 265/2017(sz) dated 02.03.2020

We here by submit the following with respect directions issued

1. *Continuous Ambient Air Quality Data and OCEMS data from:24/02/2020 to till date (Including the no of data, no of exceedance and % deviation*

CAAQMs & OCEMS reports are attached here with as **Annexure 1 & 2**. UB10 & DHH11 stacks were under shut down during the period and hence the data is not attached. Refinery has minimized its Fuel Oil use and is promoting RLNG, hence the emissions are very low compared to the Permissible values.

2. *Details of Green cover provided and required for the industry with supporting documents. Every details of green cover species with number of trees also shall be submitted.*

BPCL-KR is having a total area of 1310 acres of land of which plant area accounts for 655 acres. The statutory requirement of green belt as specified in Environmental Clearance is 33% of the plant area. Hence, the green cover requirement is 216 acres. At present KR is having total of 12563 trees having a girth of 10 cms (trees have been numbered) and above and from 2016 onwards we have planted 31227 Nos. of saplings. Based on the above tree data we are having a total green cover of 243 acres which is well above required no. of 216 acres specified in the EC conditions. The type and the count of trees are provided as **Annexure -3**.

3. *Details of buffer zone provided and required for the industry with supporting documents. Regulations if any on this also shall be submitted.*

Submission: Before undertaking any project, the Environment Impact Assessment (EIA) is conducted considering a 10Km radius from the project site. Rapid Risk Assessment (RRA) is also done as prerequisite for Environment Clearance. Subsequently Quantitative Risk Assessments (QRA) is also done for all new projects. Based on the Rapid Risk Assessment and Quantitative Risk

पोस्ट बैग नं: 2, अम्बलमुगल - 682 302, एरणाकुलम जिला, केरल, दूरभाष: 0484 - 2722061 - 69 फैक्स: 0484 - 2720961 / 2721094
पंजीकृत कार्यालय: भारत भवन, 4 & 6, क्रीमभाय रोड, बेलार्ड ईस्टेट, पी. बी. नं. 688 मुंबई - 400 001

Assessments done for IREP and PDPP projects, It was observed that no unacceptable levels of risks exists beyond the project boundary.

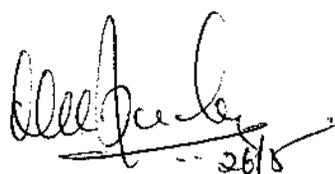
Overall plot plan of the new projects are conceived based on Oil Industry Safety Directorate (OISD) standard 118 and further approval is also obtained from Petroleum Safety Explosives Organisation (PESO). Details of distance of various facilities maintained as per OISD guidelines is given in the following table:

Sl No	From	Distance in Mts
1.0	Process Unit	60
2.0	Process Control Room	30
3.0	Class A Storage Tank	0.5 D Min 20 mts
4.0	Class B Storage Tank	0.5 D Min 20 mts
5.0	Pressured storage LPG	Max 90
6.0	Flare	90
7.0	POL Bulk Loading	Max 20
8.0	POL Bulk Loading LPG	30
9.0	Fire Station / First Aid Centre	12
10.0	Boiler House /Process Unit Heaters	50
11.0	Rail Spur	30
12.0	Cooling Tower	30
13.0	Electrical sub Station	15

Hope the details provided meets your requirement. Please let us know if any further details are required.

Yours faithfully,

For BPCL Kochi refinery



M K Ramachandran

General Manager (HSE)

P1

RENSON D'SILVA
GARDEN MAKER



Chettivalappil House,
P.O. Kadukutty-680 315
Chalaky - Thrissur Dist.
Ph: 0480-2718898
Mob : 9495223520
: 9961992520

Horticulturists ☆ Contractors ☆ Landscape Designers ☆ Civil

PAN No : AGLPR4498J
GST NO : 32AGLPR4498J1ZR

EmailId: chettivalappil.67@gmail.com
Vendor Code: 328807

RD/08/19-20

To

The Dy. General Manager (PROJECTS),
BPCL-Kochi Refinery, Ambalamugal,
Kochi-Kerala(State).

BPCL GST NO : 32AAACB2902M122

Sir,

Sub : Submission of Bill.

Name of Work : Green Belt 1 For PDPP of BPCL-KR.

Ref :P.O.No: 4506418204/06.12.2017



Date: 01/05/2019

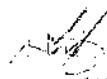
KJ - DGM (P)
FOR NA PI.
SSNS
M. dusein

Sl.No.	Description of Item	Unit	SAC Code	Qty	Rate	Amount
10	Magnifera Indica/mango Tree	EA (each)	998323	650.00	263.85	171502.50
20	Artocarpush etaphyllus/Jack Zfruit Tree	EA (each)	998323	50.00	268.40	13420.00
30	Syzygium cumini Linn/Njaval	EA (each)	998323	60.00	263.85	15831.00
40	Terminalia Arjun/Arjun Tree	EA (each)	998323	130.00	263.85	34300.50
60	Swietenia Mahogany/Mahagony	EA (each)	998323	200.00	268.40	53680.00
70	Ficus Benghalensis/Banyan Tree, Peral	EA (each)	998323	20.00	272.95	5459.00
80	Acacia Auriculformis/Australian Wattle	EA (each)	998323	35.00	263.85	9234.75
90	Albezzia Lebeck/Fry Wood Tree (vaka)	EA (each)	998323	30.00	271.13	8133.90
100	Ananardium Occidentale/Cashew	EA (each)	998323	15.00	254.75	3821.25
110	Casia Fistula/ Svarnaviram, Kanikonna	EA (each)	998323	15.00	272.85	4092.75
120	Casuarian Equisetifolia/Australian Pine	EA (each)	998323	5.00	295.70	1478.50
130	Cocus Nucifera/Cocunut	EA (each)	998323	25.00	300.25	7506.25
140	Mimusops Elinge/Bakul (Magilium-Tam)	EA (each)	998323	30.00	254.75	7642.50
150	Pongamiya Pinnata/Pongam Tree	EA (each)	998323	90.00	259.30	23337.00
160	Tamarindus Indica/ Tarmind (Puli)	EA (each)	998323	20.00	263.85	5277.00
170	Alstonia Scholaris(Linn) R.Br/Pala	EA (each)	998323	10.00	262.04	2620.40
180	Azadirachta indica A.juss/Veppu, Aruveppa	EA (each)	998323	40.00	268.40	10736.00
190	Bambusa arundinacia (Retzz) Roxb/Yellow	EA (each)	998323	20.00	277.55	5551.00
200	Calotropics gigantea R.Br (Linn)/Erukku	EA (each)	998323	5.00	265.67	1328.35

210	Emblica officinalis Gaertn/Nelli	EA (each)	998323	25.00	262.94	6573.50
220	Ficus glomerate Roxb/athi	EA (each)	998323	35.00	273.88	9585.80
240	Arthacarpus hirsute	EA (each)	998323	25.00	270.22	6755.50
250	Ficus Religiosa/Arayal	EA (each)	998323	20.00	295.77	5915.40
260	Lagerstroem hirsuta 1am/Poomaruthu	EA (each)	998323	35.00	267.49	9362.15
270	Courouptia guianensis aublet/Nagalingama	EA (each)	998323	35.00	263.85	9234.75
280	Delonix regia/Flame of Forest, Poomaram	EA (each)	998323	25.00	282.05	7051.25
290	Spathodea Campanulata p beaur/Manipoomaruthu	EA (each)	998323	40.00	270.18	10807.20
300	Peltophorum/Manivaka	EA (each)	998323	45.00	268.40	12078.00
320	Aegle Marmelos (Linn) Correa/Koovalam	EA (each)	998323	45.00	268.40	12078.00
	Total					474394.20
	SGST@9.00%					42695.48
	CGST@9.00%					42695.48
	GRAND TOTAL					559785.16

(Rupees Five Lakh Fifty Nine Thousand Seven Hundred Eighty Five and Paise sixteen Only)

Thanking You,


RENSON D'SILVA

VFPCK KRISHI BUSINESS KENDRA ,ERNAKULAM VEGETABLE & FRUIT PROMOTION COUNCIL KERALAM [Established by Govt. of Kerala] Near Doordarshan Kendra, Seaport Airport Road Kakkanad, Kochi, Ernakulam PAN: AAATV6575D, TAN: CHNV00382E GSTIN/UIN: 32AAATV6575D1ZH State Name: Kerala, Code: 32 CIN: U011221KL2001NPL014473 E-Mail: vfpck.kbk@gmail.com	Invoice No.	Dated
	EKM/KBK/1399	15-Mar-2019
	Delivery Note	Mode/Terms of Payment
	Supplier's Ref.	Other Reference(s)
	Buyer's Order No.	Dated
	Despatch Document No.	Delivery Note Date
	Despatched through	Destination
Terms of Delivery		
Buyer		
BPCL Cochin Refinery Ambalamugal		
State Name : Kerala, Code : 32		

Sl No.	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
1	Fp-Passion Fruit Yellow-Sdlg/layer(4x6)	0602.00.00	5 nos	20.00	nos	100.00
2	Fp-Pulasan-Bud(10x12)	0602	5 nos	300.00	nos	1,500.00
3	Fp- Njaval-Graft(8x10)	0602	5 nos	100.00	nos	500.00
4	Fp-Mango Alphonsao Graft(8x10)	0602	5 nos	100.00	nos	500.00
5	Fp-Mango Banganapally-Graft(8x10)	0602	5 nos	100.00	nos	500.00
6	FP-Mango Sindhuram-Graft(8x10)	0602	5 nos	100.00	nos	500.00
7	FP-Mango Mallika-Graft(8x10)	0602	5 nos	100.00	nos	500.00
8	FP-Mango Chandrakkaran-Graft(8x10)	0602	5 nos	100.00	nos	500.00
9	Fp-Mangostin Seedling (21x21)	0602	5 nos	500.00	nos	2,500.00
10	Fp- Avocado/butterfruit/vennapazham -Sdlg(5x7)	0602	5 nos	40.00	nos	200.00

continued ...

SUBJECT TO ERNAKULAM JURISDICTION

This is a Computer Generated Invoice

SALES(CREDIT)(Page 2)

VFPOCK KRISHI BUSINESS KENDRA, ERNAKULAM

VEGETABLE & FRUIT PROMOTION COUNCIL, KERALA
 (Established by Govt. of Kerala)
 Near Doorbarshan Kendra, Seaport-Airport Road,
 Kakkarakud, Kochi, Ernakulam.
 PAN: AAATV6575D, TAN: CHNV003321
 GSTIN/UIN: 32AAAATV6575D1Z1H
 State Name: Kerala, Code: 32
 CIN: U011121KL2001NPL014473
 E-Mail: vfpck.kbk@gmail.com

Buyer

BPCL Cochin Refinery Ambalamugai

State Name: Kerala, Code: 32

Invoice No

EKM/KBK/1399

Dated

15-Mar-2019

Delivery Note

Mode/Terms of Payment

Supplier's Ref.

Other Reference(s)

Buyer's Order No.

Dated

Despatch Document No.

Delivery Note Date

Despatched through

Destination

Terms of Delivery

Sl No.	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
11	FP-Seethapple/Custard Apple-Graft(6x8)	0602	5 nos	60.00	nos	300.00
12	Fp-Guava/Pera Layer(Alahabad Safeda)(6x8)	0602	5 nos	40.00	nos	200.00
13	Fp-Guava Malaysian	0602.00.00	5 nos	90.00	nos	450.00
14	Fp-Acidlime-(Cherunaragam)-Layer -Fruited(8x10)	0602	5 nos	100.00	nos	500.00
15	Fp-Chamba/Watering Roseapple(Hybrid Layer)-(8x10)	0602	5 nos	35.00	nos	175.00
16	Fp-Jackfruit Gumless-Graft/bud-Big-(10x14)	0602	5 nos	125.00	nos	625.00
17	FP-Jackfruit Thenvarikka-Graft/graft-(10x14)	0602	5 nos	125.00	nos	625.00

continued ...

SUBJECT TO ERNAKULAM JURISDICTION

This is a Computer Generated Invoice

VFPCK KRISHI BUSINESS KENDRA, ERNAKULAM
 [ESTABLISHED BY FRUIT PROMOTION COUNCIL KERALAM
 (Established by Govt. of Kerala)]
 VFPCK Doordarshan Kendra, Seaport Airport Road
 Kakkanad, Kochi, Ernakulam
 PAN: AAATV6575D, TAN: CHNV00382F
 GSTIN/UIN: 32AAATV6575D1ZH
 State Name: Kerala, Code: 32
 CIN: U01121KL2001NPL014473
 E-Mail: vfpck.kbk@gmail.com

Invoice No. **EKM/KBK/1399** Dated **15-Mar-2019**
 Delivery Note Mode/Terms of Payment
 Supplier's Ref. Other Reference(s)
 Buyer's Order No. Dated
 Despatch Document No. Delivery Note Date
 Despatched through Destination

Consignee
BPCL Cochin Refinery Ambalamugal

State Name : Kerala, Code : 32

Buyer (if other than consignee)

BPCL Cochin Refinery Ambalamugal

State Name : Kerala, Code : 32

Terms of Delivery

Sl No.	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
18	FP-Pomegranate/Mathalanaragam/Anar-Layer(8x10)	0602	15 nos	70.00	nos	1,050.00
19	FP-Mangostin SdIng-15x15	0602	5 nos	400.00	nos	2,000.00
20	FP-Kudampuli/ Garcinia Cambogia-Graft-(8x10)	0602	10 nos	100.00	nos	1,000.00
21	FP-Rambutan Budded Red -(8x10)	0602	10 nos	200.00	nos	2,000.00
22	FP-Mango All Season-Graft(8x10)	0602	10 nos	125.00	nos	1,250.00
Total			243 nos			Rs 29,800.00

Amount Chargeable (in words)

Indian Rupees Twenty Nine Thousand Eight Hundred Only

E & O/E

HSN/SAC	Taxable Value
0602.00.00	1,000.00
0602	28,800.00
Total	29,800.00

Tax Amount (in words) : **NIL**

Company's Bank Details

Bank Name : **Bank of India**
 A/c No. : **851210110002311**
 Branch & IFS Code : **Kakkanad & BKID0008512**

Company's PAN : **AAATV6575D**

for **VFPCK KRISHI BUSINESS KENDRA, ERNAKULAM**

Declaration

We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.

Authorised Signatory

SUBJECT TO ERNAKULAM JURISDICTION

This is a Computer Generated Invoice

Bharat Petroleum Corporation Ltd

Kochi Refinery

24.09.2018

Settlement of bills

An advance of Rs 40000/- was drawn by Toms Varghese, Staff No.81387 towards green Belt development scheme to purchase 500 no sapling trees. Kindly arrange to settle the following expenses/bill incurred by the company in this regard. This expense may be met from the cost centre 6363515.

Sl no	Invoice NO	Particulars	Date	Rate	Amount
1	EKM/KBR/256	Jackfruit Thenvarikka-Graft 200 no	24.09.2018	75	15000.00
2	EKM/KBR/256	Sappotta-Graft- 100 no	24.09.2018	70	7000.00
3	EKM/KBR/256	Mango Graft-200 no	24.09.2018	75	1500.00
	TOTAL				37000.00

(Rupees Thirty Seven Thousand Only)

Balance amount Rs 3000/- (Rupees Three Thousand Only) is refunded to company by cheque bearing

No-029685 dated 25.09.2018 kindly settle the advance amount.

Toms Varghese

Manager (Environ)

To: DGM (Environment)

(r)

G M (HSE)

Analysis report no.	CP-28	Date of Report	19.03.2020
Letter No.	PCB/RO-EKM/GEN-109/14	Date of collection	28.01.2020
Received from	R O Ernakulam	Date of receipt	28.01.2020
No. of Samples	60	Period of analysis	28.01.2020 to 24.02.2020
Source	Chitrapuzha	Scientist in charge	Sreeja.K.B
Sample condition	Fit for analysis	Sample type	water
Sample collected by	CEE ,RO,Ernakulam		

Sl.No.	Parameters	Unit	CP1 TOP	CP2 TOP	CP3 TOP	CP4 TOP	CP5 TOP
1.	p H		7.0	7.0	7.1	6.9	6.9
2.	SS	mg/l	12	13	13	14	12
3.	TDS	mg/l	12500	10800	10500	11000	9200
4.	Alkalinity	mg/l	65	64	59	51	48
5.	Chloride	mg/l	9572	7940	7799	8508	7303
6.	Fluoride	mg/l	0.32	0.32	0.33	0.42	0.47
7.	Sulphate	mg/l	1038	740	750	553	435
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	1.22	1.50	1.81	1.49	1.76
10.	Phosphate	mg/l	0.55	0.69	0.99	1.66	1.73
11.	NH ₃ -N	mg/l	0.09	0.06	0.16	0.02	0.02
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	3800	5100	4900	5400	4100
14.	Calcium	mg/l	840	1040	1040	720	560
15.	Magnesium	mg/l	413	608	559	875	656
16.	BOD	mg/l	1.8	1.8	1.3	0.7	0.8
17.	COD	mg/l	10	11	11	9	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		294	125	113	PCB 66	120
17.	Dissolved oxygen	mg/l	4.5	3.5	3.6	3.3	3.4
	Sample ID		CP1 O&G	CP 2 O& G	Cp3 O& G	CP 4 O& G	C P5 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp1HM	Cp2HM	Cp3HM	Cp4HM	Cp5HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	BDL	BDL	BDL	BDL	BDL
d.	Lead	mg/l	BDL	BDL	BDL	BDL	BDL
e.	Zinc	mg/l	0.03	0.02	0.01	0.02	0.02

Sl.No.	Parameters	Unit	CP6 TOP	CP7 TOP	CP8 TOP	CP9 TOP	CP10 TOP
1.	p H		6.9	6.9	6.9	7.0	6.8
2.	S S	mg/l	12	13	13	11	11
3.	TDS	mg/l	8500	5000	5500	5600	2500
4.	Alkalinity	mg/l	36	30	20	10	9
5.	Chloride	mg/l	6806	3403	3970	3970	1347
6.	Fluoride	mg/l	0.52	0.63	0.71	0.63	0.54
7.	Sulphate	mg/l	284	246	257	145	63
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	2.04	2.01	2.28	2.96	3.05
10.	Phosphate	mg/l	1.54	2.13	3.11	5.22	5.21
11.	NH ₃ -N	mg/l	0.03	0.07	0.02	0.11	0.11
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	3200	2900	2000	1400	1200
14.	Calcium	mg/l	600	640	520	320	280
15.	Magnesium	mg/l	413	316	170	146	121
16.	BOD	mg/l	1.3	0.9	0.3	0.8	0.7
17.	COD	mg/l	12	10	10	8	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		105	101	114A	108	42
17.	Dissolved oxygen	mg/l	3.7	4.8	2.8	4.0	3.7
	Sample ID		CP6 O&G	CP 7 O& G	Cp8 O& G	CP 9 O& G	C P10 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp6HM	Cp7HM	Cp8HM	Cp9HM	Cp10HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	BDL	0.02	BDL	BDL	0.03
d.	Lead	mg/l	0.06	0.07	0.05	0.04	0.08
e.	Zinc	mg/l	BDL	BDL	BDL	BDL	BDL

Sl.No.	Parameters	Unit	CP1 BOTTOM	CP2 BOTTOM	CP3 BOTTOM	CP4 BOTTOM	CP5 BOTTOM
1.	pH		7.1	7.1	7.0	7.1	6.9
2.	SS	mg/l	13	13	12	14	13
3.	TDS	mg/l	12800	11500	11200	11800	9600
4.	Alkalinity	mg/l	69	64	60	53	49
5.	Chloride	mg/l	9784	8508	8224	8933	7515
6.	Fluoride	mg/l	0.31	0.30	0.32	0.41	0.44
7.	Sulphate	mg/l	1098	744	767	554	458
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	1.05	1.29	1.27	1.32	1.53
10.	Phosphate	mg/l	0.81	0.93	0.57	1.57	1.68
11.	NH ₃ -N	mg/l	0.08	0.05	0.18	0.04	0.04
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	4100	5500	5100	5900	4400
14.	Calcium	mg/l	1000	1200	1200	800	720
15.	Magnesium	mg/l	389	608	510	948	632
16.	BOD	mg/l	2.0	1.9	1.5	0.8	0.8
17.	COD	mg/l	11	12	12	9	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		149	111	118	363	110
19.	Dissolved oxygen	mg/l	3.9	3.4	3.1	3.3	3.4

Sl.No.	Parameters	Unit	CP6 BOTTOM	CP7 BOTTOM	CP8 BOTTOM	CP9 BOTTOM	CP10 BOTTOM
1.	pH		6.8	6.8	6.9	6.7	6.9
2.	SS	mg/l	12	13	13	12	11
3.	TDS	mg/l	8800	5500	5800	5200	2600
4.	Alkalinity	mg/l	38	30	21	11	11
5.	Chloride	mg/l	6877	3545	4041	4041	1418
6.	Fluoride	mg/l	0.49	0.62	0.69	0.59	0.51
7.	Sulphate	mg/l	286	257	275	145	85
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	1.91	1.82	2.42	2.57	2.86
10.	Phosphate	mg/l	1.78	2.20	2.65	4.25	4.02
11.	NH ₃ -N	mg/l	0.06	0.08	0.03	0.14	0.14
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	3700	3300	2300	1900	1700
14.	Calcium	mg/l	640	760	840	440	360
15.	Magnesium	mg/l	510	340	170	194	194
16.	BOD	mg/l	1.5	1.0	0.4	0.5	0.8
17.	COD	mg/l	12	11	11	9	9
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		114	PCB 194	117	104	120A
19.	Dissolved oxygen	mg/l	4.9	4.9	4.8	4.2	4.3

SAMPLING STATION DETAILS

SL.NO.	STATION NAME	SAMPLE IDENTIFICATION DETAILS
1.	Thevara	CP1 Gen Top, CP1 Gen Bottom, D.O(294,149), CP1 O&G, CP1 HM
2.	Thykoodam	CP2 Gen Top, CP2 Gen Bottom, D.O (125,111), CP2 O&G, CP2 HM
3.	Chambakara	CP3 Gen Top, CP3 Gen Bottom, D.O (113,118), CP3 O&G, CP3 HM
4.	Kaniyampuzha	CP4 Gen Top , CP4 Gen Bottom, D.O (PCB66,363), CP4 O&G, CP4 HM
5.	Eroor	CP5 Gen Top, CP5 Gen Bottom, D.O (120,110), CP5 O&G, CP5 HM
6.	Vettuvellil	CP6 Gen Top, CP6 Gen Bottom, D.O (105,114), CP6 O&G, CP6 HM
7.	Irumpanam	CP7 Gen Top, CP7 Gen Bottom, D.O (101,PCB194), CP7 O&G, CP7 HM
8.	FACT III	CP8 Gen Top, CP8 Gen Bottom, D.O (114A,117), CP8 O&G, CP8 HM
9.	FACT II	CP9 Gen Top, CP9 Gen Bottom, D.O (108,104), CP9 O&G, CP9 HM
10	FACT I	CP10 Gen Top, CP10 Gen Bottom, D.O (42,120A), CP10 O&G, CP10 HM


 19/3/2020
Analysed by


Authorized by
SREEJA. K.B.
 Environmental Scientist

Analysis report no.	CP-29	Date of Report	08.05.2020
Letter No.	PCB/RO-EKM/GEN-109/14	Date of collection	20.02.2020
Received from	R O Ernakulam	Date of receipt	20.02.2020
No. of Samples	60	Period of analysis	20.02.2020to 25.03.2020
Source	Chitrapuzha	Scientist in charge	Sreeja.K.B
Sample condition	Fit for analysis	Sample type	water
Sample collected by	CEE ,RO,Ernakulam		

Sl.No.	Parameters	Unit	CP1 TOP	CP2 TOP	CP3 TOP	CP4 TOP	CP5 TOP
1.	pH		6.9	7.1	6.9	6.8	6.8
2.	SS	mg/l	13	13	14	12	12
3.	TDS	mg/l	15735	13300	18480	9540	7410
4.	Alkalinity	mg/l	62	51	45	40	34
5.	Chloride	mg/l	13500	10700	16700	8500	6500
6.	Fluoride	mg/l	0.39	0.43	0.45	0.40	0.34
7.	Sulphate	mg/l	816	655	567	325	319
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	1.11	1.81	2.48	3.12	2.90
10.	Phosphate	mg/l	0.08	0.57	0.42	2.03	1.41
11.	NH ₃ -N	mg/l	0.18	0.22	0.18	1.11	0.29
12.	Free NH ₃	mg/l	BDL	BDL	BDL	0.01	BDL
13.	Total hardness	mg/l	3900	6400	3900	2100	1700
14.	Calcium	mg/l	1082	880	560	400	400
15.	Magnesium	mg/l	292	1021	608	267	170
16.	BOD	mg/l	0.7	1.0	1.8	0.7	1.7
17.	COD	mg/l	12	12	10	10	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		108	111	114	120	149
17.	Dissolved oxygen	mg/l	6.1	4.9	4.4	3.8	4.7
	Sample ID		CP1 O&G	CP 2 O& G	Cp3 O& G	CP 4 O& G	C P5 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp1HM	Cp2HM	Cp3HM	Cp4HM	Cp5HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	BDL	BDL	BDL	BDL	BDL
d.	Lead	mg/l	BDL	BDL	BDL	BDL	BDL
e.	Zinc	mg/l	0.03	0.02	0.01	0.02	0.02

Sl.No.	Parameters	Unit	CP6 TOP	CP7 TOP	CP8 TOP	CP9 TOP	CP10 TOP
1.	p H		6.8	6.9	6.6	6.7	6.8
2.	S S	mg/l	14	13	11	11	10
3.	TDS	mg/l	5750	2265	980	1400	1030
4.	Alkalinity	mg/l	28	24	23	5	5
5.	Chloride	mg/l	5100	1900	780	1120	820
6.	Fluoride	mg/l	0.35	0.45	0.45	0.47	0.37
7.	Sulphate	mg/l	245	186	108	135	88
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	2.93	3.36	2.90	6.21	6.90
10.	Phosphate	mg/l	2.31	3.48	1.67	14.97	9.69
11.	NH ₃ -N	mg/l	0.02	0.20	0.07	0.44	3.00
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	0.02
13.	Total hardness	mg/l	1000	380	160	240	180
14.	Calcium	mg/l	320	120	56	92	68
15.	Magnesium	mg/l	49	19	5	2	2
16.	BOD	mg/l	1.5	2.2	2.0	1.3	2.5
17.	COD	mg/l	8	8	8	10	6
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		114A	110	101	117	294
17.	Dissolved oxygen	mg/l	4.6	5.0	3.1	4.6	3.8
	Sample ID		CP6 O&G	CP 7 O& G	Cp8 O& G	CP 9 O& G	C P10 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp6HM	Cp7HM	Cp8HM	Cp9HM	Cp10HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	BDL	BDL	BDL	BDL	BDL
d.	Lead	mg/l	BDL	BDL	BDL	BDL	BDL
e.	Zinc	mg/l	0.06	0.07	0.05	0.04	0.08

Sl.No.	Parameters	Unit	CP1 BOTTOM	CP2 BOTTOM	CP3 BOTTOM	CP4 BOTTOM	CP5 BOTTOM
1.	pH		7.0	7.0	7.0	6.8	6.8
2.	SS	mg/l	14	14	13	12	12
3.	TDS	mg/l	16250	13950	18800	9970	7735
4.	Alkalinity	mg/l	65	58	48	45	36
5.	Chloride	mg/l	13900	11200	16900	8800	6700
6.	Fluoride	mg/l	0.39	0.44	0.46	0.41	0.36
7.	Sulphate	mg/l	828	665	569	342	332
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	1.85	1.97	2.51	2.81	3.06
10.	Phosphate	mg/l	0.11	0.62	0.46	2.12	1.45
11.	NH ₃ -N	mg/l	0.16	0.29	0.20	1.16	0.39
12.	Free NH ₃	mg/l	BDL	BDL	BDL	0.01	BDL
13.	Total hardness	mg/l	4100	6800	4200	2500	2000
14.	Calcium	mg/l	1200	1000	680	440	440
15.	Magnesium	mg/l	267	1045	608	340	219
16.	BOD	mg/l	0.9	1.2	1.8	0.8	1.8
17.	COD	mg/l	16	12	12	10	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		118	363	104	113	125
19.	Dissolved oxygen	mg/l	5.8	4.0	4.0	4.9	3.4

Sl.No.	Parameters	Unit	CP6 BOTTOM	CP7 BOTTOM	CP8 BOTTOM	CP9 BOTTOM	CP10 BOTTOM
1.	pH		6.9	6.9	6.8	6.8	6.7
2.	SS	mg/l	14	14	12	11	11
3.	TDS	mg/l	6250	2780	1100	1480	1140
4.	Alkalinity	mg/l	30	26	24	8	10
5.	Chloride	mg/l	5500	2200	860	1160	880
6.	Fluoride	mg/l	0.37	0.45	0.46	0.48	0.38
7.	Sulphate	mg/l	234	193	118	147	101
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	3.23	3.31	2.82	6.66	6.91
10.	Phosphate	mg/l	2.35	3.51	1.73	15.02	9.77
11.	NH ₃ -N	mg/l	0.02	0.21	0.09	0.47	3.02
12.	Free NH ₃	mg/l	BDL	BDL	BDL	0.004	0.02
13.	Total hardness	mg/l	1300	410	200	260	210
14.	Calcium	mg/l	400	200	64	104	80
15.	Magnesium	mg/l	73	83	10	9	2
16.	BOD	mg/l	1.7	2.3	2.0	1.5	2.5
17.	COD	mg/l	8	8	8	10	10
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		PCB194	105	120A	42	PCB66
19.	Dissolved oxygen	mg/l	4.2	6.4	3.2	4.9	3.9

Analysis report no.	CP-30	Date of Report	09.07.2020
Letter No.	PCB/RO-EKM/GEN-109/14	Date of collection	26.05.2020
Received from	R O Ernakulam	Date of receipt	26.05.2020
No. of Samples	60	Period of analysis	26.05.2020 to 25.06.2020
Source	Chitrapuzha	Scientist in charge	Sreeja.K.B
Sample condition	Fit for analysis	Sample type	water
Sample collected by	CEE ,RO,Ernakulam		

Sl.No.	Parameters	Unit	CP1 TOP	CP2 TOP	CP3 TOP	CP4 TOP	CP5 TOP
1.	p H		6.9	6.8	7.3	7.2	7.2
2.	SS	mg/l	13	13	11	12	10
3.	TDS	mg/l	2100	1050	820	210	170
4.	Alkalinity	mg/l	45	43	43	37	35
5.	Chloride	mg/l	1489	709	553	142	92
6.	Fluoride	mg/l	0.26	0.26	0.26	0.25	0.26
7.	Sulphate	mg/l	214	117	104	4	5
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	2.39	2.49	2.53	2.81	2.80
10.	Phosphate	mg/l	1.19	1.45	1.42	1.28	1.37
11.	NH ₃ -N	mg/l	BDL	BDL	BDL	BDL	BDL
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	660	260	180	50	66
14.	Calcium	mg/l	184	72	64	12	24
15.	Magnesium	mg/l	49	19	5	5	1
16.	BOD	mg/l	1.4	1.0	1.0	1.5	1.3
17.	COD	mg/l	16	12	12	12	13
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		334	113	114	294	125
17.	Dissolved oxygen	mg/l	4.2	3.9	4.1	3.3	3.8
	Sample ID		CP1 O&G	CP 2 O& G	Cp3 O& G	CP 4 O& G	C P5 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp1HM	Cp2HM	Cp3HM	Cp4HM	Cp5HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	0.51	0.49	0.59	0.85	1.0
d.	Lead	mg/l	0.04	BDL	BDL	0.03	BDL
e.	Zinc	mg/l	0.03	BDL	0.03	0.09	0.07

Sl.No.	Parameters	Unit	CP6 TOP	CP7 TOP	CP8 TOP	CP9 TOP	CP10 TOP
1.	p H		7.0	6.9	6.8	6.9	7.0
2.	S S	mg/l	10	10	13	12	13
3.	TDS	mg/l	95	100	75	125	110
4.	Alkalinity	mg/l	20	19	16	3	3
5.	Chloride	mg/l	43	43	25	46	32
6.	Fluoride	mg/l	0.34	0.37	0.52	0.55	0.60
7.	Sulphate	mg/l	12	6	5	21	16
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	3.21	3.41	4.11	6.57	6.36
10.	Phosphate	mg/l	1.54	1.97	2.76	4.89	4.48
11.	NH ₃ -N	mg/l	BDL	BDL	BDL	BDL	BDL
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	42	44	30	46	72
14.	Calcium	mg/l	15	16	11	17	7
15.	Magnesium	mg/l	4	0.9	0.5	0.9	13
16.	BOD	mg/l	1.3	1.0	1.1	1.3	1.6
17.	COD	mg/l	10	10	8	8	6
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		118	194	111	362	363
17.	Dissolved oxygen	mg/l	4.9	4.1	3.0	4.4	4.6
	Sample ID		CP6 O&G	CP 7 O& G	Cp8 O& G	CP 9 O& G	C P10 O& G
18.	Oil &grease	mg/l	BDL	BDL	BDL	BDL	BDL
19.	Heavy metals						
	Sample ID		Cp6HM	Cp7HM	Cp8HM	Cp9HM	Cp10HM
a.	Cadmium	mg/l	BDL	BDL	BDL	BDL	BDL
b.	Copper	mg/l	BDL	BDL	BDL	BDL	BDL
c.	Iron	mg/l	1.92	1.99	2.50	1.04	1.60
d.	Lead	mg/l	0.02	0.02	0.03	0.02	0.05
e.	Zinc	mg/l	0.07	0.03	0.03	0.03	0.05

Sl.No.	Parameters	Unit	CP1 BOTTOM	CP2 BOTTOM	CP3 BOTTOM	CP4 BOTTOM	CP5 BOTTOM
1.	p H	—	6.9	6.9	7.2	7.2	7.1
2.	S S	mg/l	13	12	12	11	11
3.	TDS	mg/l	2480	1060	890	280	185
4.	Alkalinity	mg/l	44	42	42	40	35
5.	Chloride	mg/l	1673	752	624	170	113
6.	Fluoride	mg/l	0.26	0.26	0.27	0.25	0.25
7.	Sulphate	mg/l	215	119	105	6	6
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	2.36	2.48	2.53	2.85	2.79
10.	Phosphate	mg/l	1.22	1.47	1.45	1.3	1.39
11.	NH ₃ -N	mg/l	BDL	BDL	BDL	BDL	BDL
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	820	260	240	68	66
14.	Calcium	mg/l	224	88	80	23	26
15.	Magnesium	mg/l	63	8	8	2	0.5
16.	BOD	mg/l	1.6	1.2	1.2	1.6	1.5
17.	COD	mg/l	16	16	12	12	14
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		105	104	102	120	PCB114
19.	Dissolved oxygen	mg/l	4.0	3.1	3.2	3.0	3.3

Sl.No.	Parameters	Unit	CP6 BOTTOM	CP7 BOTTOM	CP8 BOTTOM	CP9 BOTTOM	CP10 BOTTOM
1.	p H	—	6.9	7.0	6.8	6.8	6.8
2.	S S	mg/l	10	10	13	12	12
3.	TDS	mg/l	125	90	95	150	120
4.	Alkalinity	mg/l	19	19	15	5	4
5.	Chloride	mg/l	64	50	39	60	43
6.	Fluoride	mg/l	0.34	0.37	0.42	0.56	0.62
7.	Sulphate	mg/l	13	6	5	23	17
8.	Sulphide	mg/l	BDL	BDL	BDL	BDL	BDL
9.	NO ₃ -N	mg/l	3.22	3.41	4.17	6.57	6.41
10.	Phosphate	mg/l	1.55	1.99	2.77	4.90	4.49
11.	NH ₃ -N	mg/l	BDL	BDL	BDL	BDL	BDL
12.	Free NH ₃	mg/l	BDL	BDL	BDL	BDL	BDL
13.	Total hardness	mg/l	40	38	38	36	42
14.	Calcium	mg/l	12	14	13	12	13
15.	Magnesium	mg/l	2	0.5	1.5	1.5	2
16.	BOD	mg/l	1.5	1.1	1.1	1.4	1.6
17.	COD	mg/l	10	10	11	8	8
18.	Phenolic compounds	mg/l	BDL	BDL	BDL	BDL	BDL
	Sample ID		117	101	66	149	110
19.	Dissolved oxygen	mg/l	5.2	4.5	2.6	4.6	4.8

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BHARAT PETROLEUM CORPORATION LIMITED
A Govt. of India Enterprise
Kochi Refinery

KR.HSE.Env.05.HSSE.KS/1/05.2020

27th August 2020

To,

The Chief Environmental Engineer
Kerala State Pollution Control Board
Regional Office, Gandhi Nagar
Ernakulam -682 020

Dear Sir

Sub: **O.A. No265 of 2017 (SZ) – Minutes of Meeting held on 20.08.2020**

As stated in the MoM, BPCL-KR wishes to indicate that the refinery is currently operating at a capacity utilisation of 65-70% due to the lower product demand on account of the COVID-19 pandemic. This is for your kind information and records.

Thanking you,

Yours faithfully

For **BPCL Kochi Refinery**

Ramachandran M K

General Manager (HSE)

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