भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड
भारत सरकार का उपक्रम
कोच्चि रिफ़ाइनरी

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

KR.HSE.ENV.05.HSSE.HECCR/01/2022/EC No: J-11011/26/2013-IA II (I)
10.06.2022

To
The Additional Principal Chief conservator of Forests (C)
Ministry of Environment, Forest & Climate Change
4th Floor, E&F Wings, Kendriya sadan, Koramangala
Bangalore-560 034

Dear Sir,

Sub: Submission of Half yearly compliance report on Environmental Clearance issued by the Ministry of Environment, Forests and Climate Change (MoEF & CC)

Ref: MoEF&CC letter no. J-11011/26/2013-IA II (I) dated 12th May, 2015 granting Environmental Clearance for **Propylene Derivatives Petrochemical Project (PDPP)** by Bharat Petroleum Corporation Limited, Kochi Refinery, Ambalamugal, Ernakulam District, Kerala:

Please find enclosed the compliance reports on the various conditions laid down by MoEF &CC, pertaining to the half year period from **1st October 2021 to 31st March 2022** for the said project.

Thanking you,

Very truly yours
For BPCL Kochi Refinery

Ramachandran. M.K
General Manager in Charge (HSE)

Encl: 1.Six Monthly Compliance Report
2. Annexure 1 - Status of Green Belt _ dated 31st March.2022

Cc:

1. The Member Secretary
Central Pollution Control Board
Parivesh Bhawan
East Arjun Nagar
Delhi - 110 032

2. The Member Secretary
Kerala State Pollution Control Board
Plamoodu Junction
Pattom Palace
Thiruvananthapuram - 695 004

3 The Member Secretary (Industry –II), Ministry of Environment, Forest & Climate Change
Indira Gandhi Paryavaran Bhavan, Jorbagh Road, New Delhi - 110003

Compliance Report of stipulated Environmental Clearance (EC) conditions for the Propylene Derivatives Petrochemical Project (PDPP) of BPCL-Kochi Refinery, EC clearance - J-11011/26/2013-IA II (I) dated 12th May, 2015.
Half Year _ Period 1st October 2021 to 31st March. 2022.

Sl No	Conditions	Status as on 31.03.2022
A.	**SPECIFIC CONDITIONS**	
1.	M/s BPCL shall comply with new standards/norms for Oil Refinery Industry and petrochemical industry notified under the Environment (Protection) Rules, 1986.	The project / facility is complying with applicable standards and norms for Oil Refinery Industry and petrochemical industry notified under the Environment (Protection) Rules, 1986.
2.	Continuous on-line stack monitoring for SO_2 NO_x and CO of all the stacks shall be carried out. Low NO_x burners shall be installed.	There are no fired heaters or fired boilers in the project facility, Waste Incinerators installed in the complex are having low NO_x Burners. Stack analysers are commissioned, calibrated and ensured to be in working condition, Continuous on-line stack monitoring is ensured.
3.	The emission standards prescribed by the MoEF under Environment (Protection) Act for petrochemical industry shall be strictly followed. At no time, the emission levels shall go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit shall not be restarted until the control measures are rectified to achieve the desired efficiency. Stack emissions shall be monitored regularly.	There are no fired process heaters /fired boilers in the PDPP Project. Two (2) Nos. of waste incinerators installed in the facility are designed to consume clean fuels like vaporized LPG/LNG. The incinerators are operating complying with the prescribed emission standards. Stack emissions are also monitored regularly.
4.	Leak Detection and Repair program shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves pipelines are required.	Detailed leak detection and repair (LDAR) program for monitoring and repair of VOC leak points, leak detection and repair survey are already identified, the frequency of monitoring of leaks and schedule of repairs of leak will be as per CPCB guidelines for LDAR program/OISD

Sl No	Conditions	Status as on 31.03.2022
	Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.	224 guidelines. Plant-wise PM check schedule for the periodic health check-up of the Rotary Equipment is prepared. All storage tank breathing vents are routed to incinerator as per design. Gas detectors are already provided at strategic locations. In order to reduce fugitive emissions of volatile organic compounds from the complex. 1. Seal less canned pumps are installed in organic liquid services 2. Special gland packing material provided in valves to reduce fugitive VOC emissions from glands. Hydrocarbon, toxic gases and VOC detectors are installed in the complex. Total number of 351 gas detectors and 8 VOC detectors are available in the complex.
5.	Total SO_2 emissions after implementation of PDPP including IREP SHALL NOT EXCEED 1561.4 Kg/hr.	The fuel for firing in Incinerators is vaporized LPG/LNG having very low sulphur content. The SO_2 emissions after implementation of PDPP including IREP is not exceeding 1561.4 kg/hr.
6.	Continuous monitoring system for VOCs at all important places/areas shall be ensured. When monitoring results indicate above the permissible limits, effective measures shall be taken immediately.	Photo ionization detectors (fixed VOC meters) installed at eight (8) important locations in and around the PDPP units/other facilities for continuous monitoring of VOCs. These detector readings are being monitored and generation of alarm is configured in case of detection at ppm level.
7.	Ambient air quality monitoring stations (PM_{10}, $PM_{2.5}$, SO_2, NO_x, H_2S, mercaptan,	One AAQMS STATION for continuous monitoring of SO2, NO-NO2, NOX, NH3, CO,

Sl No	Conditions	Status as on 31.03.2022
	non-methane-HC and Benzene) shall be set up in the complex in consultation with Kerala State Pollution Control Board, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs.	OZONE, HC, H2S, MERCAPTAN, BTX, VOC, PM 10 (SPM), PM 2.5 (RSPM) and meteorological data etc.is already installed and powered ON at the location approved by Kerala State Pollution Control Board. Continuous monitoring is ensured. Air quality is ensured to be complying with NAAQES standards. The same is being connected to display board which is positioned facing PWD (public) road for visibility.
8.	Ambient air quality data shall be collected as per NAAQES standards notified by the Ministry on 16th November, 2009 and trend analysis w.r.t. past monitoring results shall also be carried out. Adequate measures based on the trend analysis shall be taken to improve the ambient air quality in the project area.	Ambient air quality data monitoring has started from new AAQMS installed in the complex along with existing AAQMS stations available around the refinery. Air quality is ensured to be complying with NAAQES standards.
9.	The gaseous emission from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution. Besides, acoustic enclosure/silencer shall be installed wherever noise levels exceed the limit.	Complied. Gaseous emissions from DG sets are designed to be dispersed through stack heights as per CPCB standards. Acoustic enclosure is installed for DG set.
10.	Total fresh water requirement from Kochi Refinery for PDPP shall not exceed 493 m^3/hr and prior permission shall be obtained from the concerned agency. No ground water shall be	The total fresh water requirement will be less than 493 m^3/hr which is within the total sanctioned quantity of 3083.3 m^3/hr for integrated refinery complex by Govt. of Kerala.

Sl No	Conditions	Status as on 31.03.2022
	used.	
11.	Industrial effluent shall be treated in the effluent treatment plant. Treated effluent shall be recycled/reused in the existing cooling tower. As proposed, high COD effluent shall be incinerated. Water quality of treated effluent shall be monitored regularly. Online water monitoring system shall be installed for important parameters.	Industrial effluents are incinerated or treated in ETP before final disposal through existing outlets. Also online water monitoring facility available at existing refinery effluent outlet.
12.	Oil catchers/oil traps shall be provided at all possible locations in rain/storm water drainage system inside the factory premises.	Oil catchers/oil traps provided at necessary locations. Also rain /storm water outlet from each area is routed to retention pond, where quality of water is analyzed and ensured before routing to outlet.
13.	Incinerator designed shall be as per CPCB guidelines.	Two numbers of incinerators installed within the PDPP complex ensure final effluent /emission quality as per CPCB guidelines.
14	The Company should strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October, 1994 and January, 2000. Hazardous waste should be disposed of as per Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and amended time to time.	Disposal of Hazardous waste ensured complying with hazardous waste rules 2008.

Compliance Report of stipulated Environmental Clearance (EC) conditions for the Propylene Derivatives Petrochemical Project (PDPP) of BPCL-Kochi Refinery, EC clearance - J-11011/26/2013-IA II (I) dated 12th May, 2015.
Half Year _ Period 1st October 2021 to 31st March. 2022.

Sl No	Conditions	Status as on 31.03.2022
15	Proper oil spillage prevention management plan shall be prepared to avoid spillage/leakage of oil/petroleum products and ensure regular monitoring.	Oil spillage prevention is taken care at the design stage itself. adequate facilities are maintained to prevent and contain oil spillage / storm water contamination for PDPP complex
16	The company shall strictly follow all the recommendation mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	Complied to the points mentioned in CREP which is applicable to PDPP project.
17	To prevent fire and explosion of oil and gas facility, potential ignition sources shall be kept to a minimum and adequate separation distance between potential ignition sources and flammable materials shall be in place.	PDPP facility is designed as per OISD & PESO guidelines and the facilities satisfy separation distances as specified by OISD standards 118 /other applicable and relevant conditions of Petroleum rules. PESO approval for commissioning of process units and related facilities are obtained, PESO storage license for all applicable products and intermediates obtained based on completion and site inspection by PESO/OISD officials.
18	All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented. Accordingly, provision of budget to be kept.	All recommendations mentioned in rapid risk assessment report implemented. Quantitative risk assessment also conducted and all recommendations implemented at applicable stages of project. Emergency Response and Disaster Management Plan prepared including scenarios identified during risk assessment report.

Sl No	Conditions	Status as on 31.03.2022
19	All the issues raised and commitment made during the public hearing/consultation meeting held on 23rd December 2014 shall be satisfactorily implemented. Accordingly, provision of budget to be kept.	BPCL-KR has complied with commitment made during the public hearing/consultation meeting held on 23rd December 2014. Status/closing comments on Public Hearing commitments have been completed.
20	At least 2% of the total cost of the project should be earmarked towards the Enterprise Social Commitment (ESC) based on local needs and action plan with financial and physical breakup/details should be prepared and submitted to the Ministry's Regional Office at Bangalore. Implementation of such program should be ensured accordingly in a time bound manner.	Action plan prepared and already submitted .Being implemented in consultation with local authorities/ Govt. departments/ administration. Details are attached as **ANNEXURE-1**
21	Green belt shall be developed at least in 40 acres of land in and around the plant premises to mitigate the effects of fugitive emissions all around the plant as per the CPCB guidelines in consultation with DFO. Thick greenbelt with suitable plant species shall be developed around unit. Selection of plant species shall be as per the CPCB guidelines.	Green belt development completed for the project. Details are attached as **ANNEXURE-2**
22	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied; All necessary infrastructure, labour camps, medical facilities arranged during construction, pre-commissioning activities.

B.	**GENERAL CONDITIONS:**	
1.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	BPCL-KR is adhering to the stipulations made by KSPCB, State Govt. and other statutory bodies. Consent to Operate obtained from KERALA - SPCB Consent No: PCB/HO/EKM-2/ICO/09/2019 - Dated 20-08-2019
2.	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Complied.
3	The project authorities must strictly comply with the rules and regulations under manufacture, Storage and import of Hazardous Chemical Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	For this project, BPCL-KR has obtained necessary approvals from Kerala Factories & Boilers, Chief Controller of Explosives, Fire Safety inspectorate etc. wherever required. BPCL-KR will comply with the rules and regulations under manufacture, Storage and import of Hazardous Chemical Rules, 2000. PESO prior approval was obtained for overall plot plan, overall area classification, fire water layout, equipment layout of individual facilities inside the complex vide. Letter P 5(2)496 /Refinery - dated 07-12-2016 Process units commissioning approval obtained from PESO vide following letters, P 5(2)496 /Refinery II dated 04-08-2020, P 5(2)496

		/Refinery II dated 16-12-2020, and P 5(2) 496 /Refinery II dated 28-01-2020 PESO License for storage was obtained as applicable under Storage License numbers P/HQ/KL/15/1336 (P485172) & P/HQ/KL/15/1337 (P485168). Kerala Factories and Boilers had accorded permit to construct the facility vide. Permit number 109/2019 Doc No.T3/10811/2019/F&B/R Dis, Dated 08-05-2019 After completion, Factory license was amended by Kerala Factories and Boilers including PDPP project facilities. Amendment of factory license including PDPP project, Permit No.109/2019; Amendment letter dated 16-Sept-2020. NOC was obtained from Kerala Fire and Rescue department for the facility. D1-7904/2016 - Dtd.14.12.2018 from Regional fire office Ernakulam, Kerala.
4	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	The overall noise level are limited at the fence as prescribed under EPA rules/ SPCB advisory. Noise control measures including acoustic hoods and silencers, enclosures on all sources of noise generation are installed as per design of the facility. Regular monitoring of Noise levels at boundary areas conducted by dedicated team to ensure the same.
5	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	BPCL-KR is having a separate Environment Management section to carry out environmental management and monitoring functions. We have well equipped Centralized Quality Control Laboratory for PDPP project related monitoring activities.
6	Adequate funds shall be earmarked towards capital cost and recurring	BPCL-KR has earmarked adequate funds for environment pollution control measures. The

	cost/annum for environment pollution control measures and shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	funds are utilized for installing, operating and maintaining 1. Conventional and Submerged type, liquid and gaseous waste incinerators online to meet final effluent quality. 2. AAQMS station and monitoring facilities online 3. VOC meters for continuous monitoring of 4. LDAR program for operation phase of the complex. Greenbelt development and maintenance activities are also ensured.
7	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Six monthly compliance reports being submitted by BPCL-KR at stipulated interval.
8	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the Company by the proponent.	BPCL-KR has complied with this condition. Copies of clearance letter was sent to all local bodies.
9	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall	Six monthly compliance reports being submitted without fail by BPCL-KR after receipt of the Environmental Clearance for the PDPP project. The same being sent to the Regional Office of MoEFCC and also uploaded in the BPCL website.

	simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx, HC (Methane of Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx, HC, VOCs being monitored utilizing a combination of - Approx.350 Nos. of HC/Hydrogen /other detectors installed /continuously monitored in the complex. - 8 Nos. of Photo ionization detectors installed for continuous VOC detection - AAQMS station at location approved by KSPCB. Display of ambient air quality at a convenient location near the main gate of the company in the public domain is being arranged before continuous run of facility is established.
10	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry/CPCB/SPCB shall monitor the stipulated conditions.	Six monthly compliance reports were submitted by BPCL-KR after receipt of the Environmental Clearance for the PDPP project. The same was sent to the Regional Office of MoEF&CC and uploaded in the BPCL website.
11	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the Project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	BPCL-KR will comply. Environment statement will be submitted once, facility operation is stabilized to generate continuous operating data.

12	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and the copy of the same shall be forwarded to the Regional Office.	BPCL-KR has complied with this condition.
13	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Investment clearance from Board obtained on 03.12.2014 and land development started subsequently. project has been commissioned.

Annexure – 1

Enterprise Social Commitment (ESC) Status of PDPP (Propylene Derivative Petrochemical Project) for the Half year period. October 2021 to March 2022

Area of Spending	Schemes	Amount in Crores	Remarks
	Construction of roads to residential area near	25.15	Completed

	PDPP and rerouting the canal		
	Rejuvenation of ponds and Canals near Refinery/ PDPP site	0.73	Continues
	Rural road development near Refinery/ PDPP site	2.36	Continues
Infrastructure Development	Support for Indoor stadium for Local public at Kunnathunadu Grama Panchaythu	0.39	Continues
	Support for the construction of the crematorium in Poothrikka Grama Panchayathu.	0.50	Continues
	Setting up of cyber dome for social media and internet monitoring at Kochi by Kerala Police.	1.00	Completed
	Support for the construction of new building for Library in Thiruvaniyoor Grama Panchayathu.	0.23	In progress
	Rehabilitation of residents (Urban poor) of Vennalappara	0.57	Continues
Health, Nutrition & Hygiene	Covid related sanitization works in the area and related projects	0.17	Completed
	Food and provisionaries for nearby residents / colonies during lock-down period.	0.20	Completed
	Medical Camp at various locations.	0.08	Completed
	Construction of toilets in Schools at	0.60	Completed

Education	Thiruvaniyoor Grama Panchayathu.		
	Swachh Vidyalaya in Vadavucode- Puthencruz Grama Panchayathu.	0.56	Completed
	Swachh Vidyalaya in Tripunithura Muncipality.	0.27	Continues
	Construction of new school buildings for Irumpanam lower Primary scool in Tripunithura Muncipality.	0.39	Continues
	Vidyadanam project – One time scholarship scheme for children of Kochi city.	0.50	Completed
	Infrastructure development in Govt. Scools.	0.28	Completed
Skill development	Safety training vehicle for Factories and Boilers (to create safety awareness among children and industrial workers.	0.68	Completed
Total		**34.66**	

Annexure – II

Green Belt Development Status

As per the EC conditions, Green belt to be developed at least in 40 acres of land in and around the plant premises.

Green Belt details	Status	

Green belt area requirement		Specific condition xxi of EC letter	40 acres
Green belt status		40 acres of Green belt development was completed	31.03.2022
Details of Plantations		Total saplings	**25768**
Details of Plant Species.		Expert Consultation	Mr. Induchoodan (Rtd.) Forest Conservator, Kerala.
Sl.No:	**Year**	**No. of trees Survived**	**Developed area in acres**
1	2017 – 18	510	0.91
2	2018 – 19	2519	1.84
3	2019 – 20	697	1.33
4	2020 - 21	22042	36.02
		Total 25768	40.1 acres.

Bharat Petroleum

BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP **10.11.2021**

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 06.11.2021 at day time. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tank YT-30 (Near to Parking)	55	-
2.	Near T T gate (PDPP gate)	59	-
3.	South of Project warehouse	57	-
4.	220 KV line crossing near rain water harvesting pond	54	-
5.	DHDS Tower No- 1	56	
6.	Rear side of DHDS fire station	55	-
7.	Near Chalikkara gate	57	-
8.	Near TK-25	53	
9.	East of MS Block	56	-
10.	South of DHDS Flare	59	-
11.	Near NHT-CCR-AAQMS (Near MSBP boundary)	58	
12.	West of tank YT-902(DHDS)	55	-
13.	Rear side of PIBU office(opp. IPTC)	51	-
14.	Bottling plant entrance from refinery(IPTC Road)	57	-
15.	North of LNG skid (GT-2 Road end)	59	-
16.	Near IREP gate	59	-
17.	DCU	60	-
18.	South of UB-12	61	-
19.	North of VGO labour amenity building	57	-
20.	Behind IREP site office	59	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	49	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	47	Conveyor Offline
23.	Below Coke Conveyor area near outlet A --RLS-2	48	Conveyor Offline
24.	Drum Plant gate	57	-

10/11/2021

Sunil Kumar Pal
Manager (Safety)

To: DGM (F&S) (r) GM (HSE) I/C

BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP 05.02.2022

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 02.02.2022 at daytime. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tankYT-30 (Near to Parking)	53	-
2.	Near T T gate (PDPP gate)	57	-
3.	South of Project warehouse	55	-
4.	220 KV line crossing near rain water harvesting pond	52	-
5.	DHDS Tower No- 1	52	
6.	Rear side of DHDS fire station	53	-
7.	Near Chalikkara gate	55	-
8.	Near TK-25	51	
9.	East of MS Block	57	-
10.	South of DHDS Flare	57	-
11.	Near NHT-CCR-AAQMS (Near MSBP boundary)	58	
12.	West of tank YT-902(DHDS)	58	-
13.	Rear side of PIBU office(opp. IPTC)	54	-
14.	Bottling plant entrance from refinery(IPTC Road)	57	-
15.	North of LNG skid (GT-2 Road end)	55	-
16.	Near IREP gate	57	-
17.	DCU	59	-
18.	South of UB-12	61	-
19.	North of VGO labour amenity building	58	-
20.	Behind IREP site office	57	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	50	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	52	Conveyor Offline
23.	Below Coke Conveyor area near outlet A –RLS-2	51	Conveyor Offline
24.	Drum Plant gate	58	-

Smit Kumar Pal
Manager (Safety)

To: DGM (F&S) (r) GM (HSE) I/C

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well No. 9
Date of Sample: 09.10.2021
Date of Testing: 15.10.2021

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
5	pH	-	IS 3025 (P:11)	7.1	6.5 – 8.5
15	Oil	mg/L	IS 3025 (P:39)	nil	nil
	Metals				
16	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	30	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.03	0.3 (Max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	6.9	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.1	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
34	Antimony (as Sb)	mg/L	APHA:31138	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit
MDL: Minimum Detection Limit

S.Mahamed Iqbal
Manager (Quality Control)

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well No. 27
Date of Sample: 13.11.2021
Date of Testing: 17.11.2021

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limi
5	pH	-	IS 3025 (P:11)	7.6	6.5 – 8.5
15	Oil	mg/L	IS 3025 (P:39)	nil	nil
	Metals				
16	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	36	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.03	0.3 (Max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	7	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.3	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
34	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit
MDL: Minimum Detection Limit

S.Mahamed Iqbal
Manager (Quality Control)

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well No. 44
Date of Sample: 24.12.2021
Date of Testing: 26.12.2021

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
5	pH	-	IS 3025 (P:11)	7.3	6.5 – 8.5
15	Oil	mg/L	IS 3025 (P:39)	nil	nil
	Metals				
16	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	28	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.05	0.3 (Max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	6.5	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.1	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
34	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit
MDL: Minimum Detection Limit

S.Mahamed Iqbal
Manager (Quality Control)

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well No. 26
Date of Sample: 14.1.2022
Date of Testing: 20.1.2022

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limi
5	pH	-	IS 3025 (P:11)	7.8	6.5 – 8.5
15	Oil	mg/L	IS 3025 (P:39)	nil	nil
	Metals				
16	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	31	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.06	0.3 (Max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	5.0	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.1	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
34	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit
MDL: Minimum Detection Limit

S.Mahamed Iqbal
Manager (Quality Control)

Bharat Petroleum OHC

KOCHI REFINERY

HEALTH MONITORING REPORT OF EMPLOYEE'S HANDLING HAZARDOUS CHEMICALS

For the month December 2021

TEST	CHEMICAL HANDLED	PERIODICITY OF TESTING	NO.OF SAMPLES TESTED	NO.OF SAMPLES PASSED	REMARKS
URINE PHENOL	BENZENE	ONCE IN 6 MONTHS (ALL 'N' SHIFT EMPLOYEE'S)	0	0	
BLOOD	BENZENE	ONCE IN 6 MONTHS	117	117	

Dr. Rajendran K G
Chief Manager (Medical Services)

To: GM (Environment)
Cc. CGM (HR)

Bharat Petroleum OHC

KOCHI REFINERY

HEALTH MONITORING REPORT OF EMPLOYEE'S HANDLING HAZARDOUS CHEMICALS

For the month NOVEMBER 2021

TEST	CHEMICAL HANDLED	PERIODICITY OF TESTING	NO.OF SAMPLES TESTED	NO.OF SAMPLES PASSED	REMARKS
URINE PHENOL	BENZENE	ONCE IN 6 MONTHS (ALL 'N' SHIFT EMPLOYEE'S)	0	0	
BLOOD	BENZENE	ONCE IN 6 MONTHS	315	315	

Dr. Rajendran K G
Chief Manager (Medical Services)

To: GM (Environment)
Cc. CGM I/C (HR)

Bharat Petroleum OHC

KOCHI REFINERY

HEALTH MONITORING REPORT OF EMPLOYEE'S HANDLING HAZARDOUS CHEMICALS

For the month March 2022

TEST	CHEMICAL HANDLED	PERIODICITY OF TESTING	NO.OF SAMPLES TESTED	NO.OF SAMPLES PASSED	REMARKS
URINE PHENOL	BENZENE	ONCE IN 6 MONTHS (ALL 'N' SHIFT EMPLOYEE'S)	101	101	
BLOOD	BENZENE	ONCE IN 6 MONTHS	332	332	

M K Ramachandran
GM I/C (HSE)

To: GM (Environment)
Cc. CGM I/C (HR)