

भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड

भारत सरकार का उपक्रम

आई.एस.ओ. 9001:2015, आई.एस.ओ. 14001:2015, आई.एस.ओ. 45001:2018
एवं आई.एस.ओ. 50001:2018 प्रमाणित रिफाइनरी



BHARAT PETROLEUM CORPORATION LIMITED

A Govt. of India Enterprise

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 AND
ISO 50001:2018 CERTIFIED REFINERY

BPCL/MPPCB/Consents/2022/17

Date: 26/07/2022

To,
Member Secretary,
M.P. Pollution Control Board,
E-5, Arera Colony, Paryavaran Parisar,
BHOPAL – 462 016 (MP)

SUB: Submission of Form-V for the year 2021-22 under Environmental (Protection) Rules, 1986.

REF: 1. Consent No: AW-54607 dated 10/11/2021
2. Hazardous waste authorization No H-49476 dated 04/02/2019

Dear Sir,

With reference to the above, please find enclosed herewith the Environmental Statement in the prescribed Form-V for the period from 1st April, 2021 to 31st March, 2022 as required under "The Environment (Protection) Rules, 1986.

Thanking You,

Yours Faithfully,

(Samarendu Chatterjee)

Encl: as above

Copy to: Regional Office, M.P. Pollution Control Board, Sagar.

बीना रिफाइनरी : बीना - 470124, जिला - सागर, मध्यप्रदेश, भारत फ़ोन : 07580-226000, 276000 फ़ैक्स : 07580-271013
रजिस्टर्ड ऑफिस : भारत भवन, 4 & 6, करीमभाँय रोड, बेलार्ड इस्टेट, मुंबई - 400 001

Bina Refinery : Bina - 470124, District - Sagar, Madhya Pradesh, India Tel.: 07580-226000, 276000 Fax : 07580 - 271013
Registered Office : Bharat Bhavan, 4 & 6, Currimbhoy Road, Ballard Estate, Mumbai - 400 001
E-mail : info@bharatpetroleum.in Website : www.bharatpetroleum.in CIN : L23220MH1952GO1008931

FORM V**ENVIRONMENTAL STATEMENT for the financial year ending March 31, 2022****PART-A**

- (i) Name and Address: Samarendu Chatterjee
Sr. Vice President
Bharat Oman Refineries Limited,
Administrative Building, Refinery Complex
Post BORL Residential Complex, Bina - 470124
Dist. Sagar (MP), India
- (ii) Industry Category: Petroleum Refinery
- (iii) Production Capacity: 7.8 Million Metric Tonnes per annum of Crude Processing (installed capacity)
- (iv) Year of Establishment: Commissioned on 30th June 2011
- (v) Date of last Environmental Statement: 27th July, 2021
Report submitted

PART – B**WATER AND RAW MATERIAL CONSUMPTION****(i) Water Consumption**

S. No	Water Consumption	2020-21 (m ³ / day)	2021-22 (m ³ / day)
1	Process	1964	2020
2	Cooling	15645	17503
3	Domestic	1889	1996

S. No	Name of Products	Process water consumption in m ³ /ton of crude processed	
		2020-21	2021-22
1	LPG	0.109	0.094
2	Naphtha		
3	MS BS IV		
4	MS BS VI		
5	SKO		
6	ATF		
7	HSD BS IV		
8	HSD BS VI		
9	Sulphur		
10	Pet coke		

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(ii) Raw Material Consumption

Name of Raw Materials	Name of Products	Consumption of raw material per unit of output	
		2020-21	2021-22
Crude Oil	LPG	1.07	1.06
	Naphtha		
	MS BS IV		
	MS BS VI		
	SKO		
	ATF		
	HSD BS IV		
	HSD BS VI		
	Sulphur		
	Pet coke		

PART-C

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

WATER

a) Treated Industrial Effluent:

S. No	Pollutants	Quantity of pollution discharged (Kg/day)		Concentrations of pollutants in discharges (mg/Liter) except pH		Percentage of variation from prescribed standards with reasons
		Actual	Limit	Actual	Limit	
1	pH	-	-	7.57	6-8.5	100% Compliance
2	Oil & Grease	34.43	36.84	<1	5	
3	BOD ₃ at 27 ⁰	34.43	110.52	10.17	15	
4	COD	221	921	37.5	125	
5	TSS	3.43	147.36	12	20	
6	Phenols	0.68	2.578	<0.001	0.35	
7	Sulphides	0.631	3.68	<0.08	0.5	

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b) Treated Domestic Sewage of Township:

S. No	Pollutants	Quantity of pollution discharged (Kg/day)		Concentrations of pollutants in discharges (mg/Liter) except pH		Percentage of variation from prescribed standards with reasons
		Actual	MPPCB Limit	Actual	MPPCB Limit	
1	pH	-	-	7.51	6.5-9	100% Compliance
2	BOD ₃ at 27°C	6.41	33	12.33	30	
3	TSS	17.9	110	38	100	
4	Fecal coliform	305	<1000	-	-	

AIR

Stack Emissions:

S. No	Pollutants	Avg. Concentrations of pollutants in discharges (mg/NM ³)		Percentage of variation from prescribed standards with reasons
		Actual	Limit (Avg.)	
1	Oxides of Sulfur (SO ₂)	120.31	267.64	100% Compliance
2	Oxides of Nitrogen (NO _x)	129.47	254.06	
3	Particulate Matter (PM)	10.46	18.73	
4	Carbon Monoxide (CO)	15.41	102.92	

PART-D

Hazardous Wastes

[as specified under Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008] Hazardous Wastes	Total Quantity (KG)	
	2020-21	2021-22
a) From Process	Spent Catalyst (4.2) = 47.21 MT Spent Clay (4.5) = 163.11 MT	Spent Catalyst (4.2) = 76.51 MT Spent Clay (4.5) = 87.63 MT Spent ion exchange resin containing toxic metals (35.2) = 1.93 MT Wastes or residues containing oil (5.2) = 1.24 MT
b) From Pollution Control Facilities	*Slop Oil (4.3) = 7744 MT *Oily sludge & BSW (4.1) = 288.15MT	*Slop Oil (4.3) = 19662 MT *Oily sludge & BSW (4.1) = 236MT

Note: *

1. Oily sludge generated is recycled to Delayed Coker Unit.
2. Slop Oil recovered from the ETP is reprocessed along with crude oil in refinery.

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PART-E**Solid Wastes**

Solid Wastes	Total Quantity (kg)	
	2020-2021	2021-2022
a) From Process	Nil	Nil
b) From Pollution Control Facilities	113985000	164234000
c) 1. Quantity recycled or re-utilized within the unit	18000000	7746000
2. Sold	95852000	133147000
3. Disposed	Nil	Nil

PART-F

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

During the year 2021-22 following hazardous and solid waste are generated. All the generated hazardous wastes are collected, transported and sold to authorized recyclers as per the Hazardous and Other Wastes (Management & Handling) Rules, 2016

1. Spent Catalyst of 76.51 MT (including drum weight) was generated from process units.
2. Spent clay of 87.63 MT was generated from ATF merox unit of CDU /VDU plant.
3. Oily sludge of 236 MT was recycled through Delayed Coker Unit.
4. Slop& used oil generated from the units and oil recovered from the Effluent treatment plant was recycled and processed along with crude oil in refinery.
5. Approximately 164234 MT of fly-ash was generated and 133147 MT of fly-ash was sold and utilized to nearby industries for manufacturing of fly-ash based bricks. Around 7746 MT was internally used as base material for construction of roads and pavements & low lying areas filling / levelling etc.,

PART-G

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

Various clean technologies incorporated in the Refinery design from the project conception itself. Adequate funds are earmarked in the capital expenditure for implementation of environmental protection measures. Most of these have been incurred out of this total planned capital investment apart from operational & maintenance expenditure of these facilities. Some salient features of these measures are as follows:

- A modern Effluent Treatment Plant has been installed in the refinery. Advanced biological treatment in ETP ensures all effluents are suitably treated.
- Sulphur recovery block with tail gas treatment unit is provided to achieve 99.5% recovery.
- Use of Low Sulfur Fuels in Furnaces to reduce SO_x emission.
- Use of low NO_x burners in Furnaces to reduce NO_x emission.
- Stacks of sufficient heights to ensure adequate dispersal of pollutants from furnaces.
- Noise silencers and acoustic barriers used in equipment's to ensure noise levels in the surrounding area within the prescribed limits.
- Floating roof tanks including crude oil tanks are provided with primary and secondary seal to reduce fugitive emissions and provision of Double Mechanical Seals in Lighter H/C Pumps
- Close – Blow Down (CBD) system in offsite and process units to minimize VOC emission from the operations
- Green belt development of 200-meter width around the Refinery boundary for attenuation of fugitive emissions.
- Rainwater harvesting in township through percolation pits.
- Modification in Bearing cooling water supply system in refinery process units for reduction in water consumption.
- Refinery railway siding with wagon tippler was installed for direct coal receipt/unloading operation inside refinery.
- Drum type oil skimmers and oil containment booms for control of oil spills in surface water run-off.
- Installation of PM₁₀ & PM_{2.5} analyzers for all the four fixed ambient air quality monitoring stations and the mobile van to strengthen the monitoring infrastructure as per new national ambient air quality standards
- Installation of Dry Fog Dust Suppression system for dust control in coal unloading area in CPP
- Oil containment boom for control of oil spills in surface water runoff are installed.
- Oil skimmers for control of oil spills in surface water runoff are installed.
- Installation of view cutter for pet coke yard is completed for reduction of dust.
- Implementation of Rain water harvesting pond in more than 12 acres area with artificial recharge pits for ground water recharge.

- Implementation of Real Time Emission Monitoring Systems – Additional analyzers such as Particulate Matter (PM) and Carbon Monoxide (CO) are installed in all the stacks in refinery for emission monitoring.
- Implementation of Real Time Effluent Monitoring Systems – Additional analyzers such as Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), pH and Suspended Solids (SS) are installed to monitor the quality of treated effluent.
- Extension of existing gray water network of around 3 Km for reusing of treated water for greenbelt and lawns within refinery.
- Reuse of Storm water for fire water purpose thereby reducing the usage of Raw water.
- Ash Water Recycling System (AWRS) for recycling of water from Ash Storage yard
- Procurement of floating oil skimmer for collection of oil spill if any.
- Installation of two additional CRWS tanks at ETP for collection and use of contaminated rain water.
- Reusing of treated water from ETP in coke cutting at DCU.

PART-H

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

- Procurement of High Volume Sampler for manual monitoring of ambient air quality as per National Ambient Air Quality Standards.
- Procurement of Integrated Sound pressure level meter for measuring sound levels as per the Noise Pollution (Regulation & Control) Rules 2000.
- Procurement of Flue Gas analyzer for flue gas monitoring from the stacks.
- Procurement of water quality monitoring equipment for water quality analysis like pH, TDS etc.,
- Procurement of Stack monitoring kit for manual monitoring of the emissions from Stacks
- Procurement of Ultrasonic Leak Detector for detecting the Hydro Carbon leakages in the refinery.
- Procurement of portable VOC & Benzene monitor for VOC and Benzene leakage identification and control of fugitive emissions and for resource conservation.
- Procurement of portable cyclone incinerator for in-house incineration of hazardous material if any.
- Construction of additional permanent shed for coal storage for dust control.
- Construction of Permanent Sulphur Storage Yard.
- Regular Leak Detection and Repair program (LDAR) for identification and control of fugitive emissions and for resource conservation.
- Monitoring of Oily sludge from the Effluent Treatment Plant regularly
- Construction of new pet coke yard with drainage system provided for collection of pet coke fines.
- Construction of Vermi-Composting facility for converting the food waste to organic manure.
- Two nos of weather monitoring stations are also installed for continuous weather monitoring.

- Installation of view cutter and water sprinkling systems completed at fly ash storage yard for dust minimization.
- Development of rain water harvesting pond to collect the surface runoff and to recharge the ground water.
- Installation of Carbon filter at the inlet of RO feed for increasing the recycling of ETP water for DM water generation.
- Rooftop Rain Water Harvesting with ground water recharge pit has been created in C1-cluster within the township premises for conserving the rain water
- Replacement of CS - SS pipeline to improve the Silt Density Index (SDI) in the RO feed.
- Installation of cooling tower blow down tank for maximization of recycling of blow down.
- Installation of photo-voltaic solar power plant of 4 MW capacity within BURL premises.
- Installation of Solar Power based electric fencing to township boundary wall for security at township and refinery
- Construction of Hazardous storage shed for storage of hazardous waste.
- Installation of Organic Waste Converter (OWC) at residential township for making the organic manure.
- Installation of high pressure pumps for utilization of gray water network for greenbelt.
- Installation of Blowdown Ring Compressor resulted in recovery of flare gas.
- Augmentation of Existing Sewage Treatment Plant from 500 KLD to 750 KLD at township.
- Installed solar power plant of 140 KW installed on admin building car parking area.
- Conventional light fittings in process units were replaced by LED light fittings, saving around 120 kW power
- Modifications in Electrostatic precipitator (ESP) has resulted in reduction of Particulate matter emissions at CPP.
- Implementation of closed loop sampling system for Pressurized Dome Roof tanks resulted in reduction of HC emissions & vapour cloud formation and nitrogen consumption.
- Installation of Advance oil containment booms at oil catchers within refinery.

PART-I

Any other particulars for improving the quality of the environment

- Continuous Ambient Air Monitoring Stations (CAAMS) (4 nos) are in operation to measure ground level concentration of SO_x, NO_x, HC, PM 10, PM 2.5 and CO etc. in ambient air. Third party monitoring is also being done on regular basis.
- Raising the wall height of OWS pits which are prone to submerge during the heavy rains.
- The development of greenbelt has been started in a phased manner from the year 2008 onwards. During the period from 2008 to 2011, the plantation work was carried out through Forest Development Corporation of Madhya Pradesh. From 2011 onwards, M/s IFFDC, a subsidiary of M/s IFFCO has been engaged for carrying out additional plantation work.
- As an effort to improve greenery in the villages around refinery, a tree plantation drive was under taken in government schools close to refinery in par village. The saplings were also provided with tree guards. The school students, teachers and children supported this initiative with their active participation.

- 200,000 Nos of trees are already planted in surrounding villages and Bina.
- Being an organization that has always been committed to the cause of a better environment in the global perspective, the World Environment Day was celebrated with huge participation from all direct, indirect employees and township residents. In line with the theme, the focus was mainly on tree plantation drive in an effort to green the premises. Apart from tree plantation, many other awareness programs were conducted, like slogan, online quiz & awareness broadcasts were launched on the eve of World Environment Day 2020, with fixing of posters with tips to spread awareness as per the theme among surrounding community, township residents and employees.
- BORL organized a workshop on benefits of fly ash as a material for brick making for promotion of brick plants in this region.
- BORL published the availability of fly ash on local newspapers for encouraging the users and information on availability of fly ash
- Scheme implemented for reusing of Bearing Cooling Water (BCW) Return in RO-DM plant for reduction of fresh water consumption.
- Implementation of RWH system and recharge pit at cluster C1 in the residential township.
- During the year, under 'Project URVI', a water conservation initiative such as construction of a check dams, dugout ponds, fields, bunding and soil conservation jobs were completed in nearby villages
- During the year 2021-22, 20,000 nos of plantation carried out with in refinery as gap filling.