

**ENVIRONMENT STATEMENT
(FORM V)
FOR FY 2022-23**



**GAIL (INDIA) LIMITED
PATA PETROCHEMICAL COMPLEX**

[FORM -V]
(See Rule 14)

Environmental Statement for the financial year ending the 31st March 2023.

PART- A

(i) Name and Address of the owner / occupier of the industry operation or process:

Shri Ajay Tripathi
Executive Director (PC-O&M) & OIC
GAIL (India) Limited
Petrochemical Complex
P.O. Pata, District - Auraiya
Uttar Pradesh - 206 241

(ii) Industry Category: Primary – (STC Code-AAACG1209JST006)

(iii) Production Capacity:

Name of Unit	Capacity (MT/Annum)
High Density Polyethylene Unit- I (HDPE I)	100,000
High Density Polyethylene Unit- II (HDPE II)	100,000
Linear Low-Density Polyethylene Unit- I (LLDPE-I)	210,000
Linear Low-Density Polyethylene Unit- II (LLDPE-II)	400,000
Liquefied Petroleum Gas Unit (LPG)	271,059

(iv) Date of the last environmental statement submitted- Submitted for FY 2021-22 on 20.09.2022

(v) Year of establishment- 1999

PART-B

Water and Raw Material Consumption

(i) Water Consumption m³/day

Process - 7,825 m³/ day *

Cooling - 19,211 m³/ day

Domestic - 346 m³/ day

* Water consumption in Process includes mainly Demineralized Water & Service Water etc.

Name of Product	Process Water Consumption per unit of product output	
	During the Previous Financial Year 2021-22	During the Current Financial Year 2022-23
(1) Liquefied Petroleum Gas (LPG) (2) Propane, Pentane & Naphtha (3) High Density Polyethylene (HDPE) (4) Linear Low Density Polyethylene (LLDPE)	3.78 m ³ /MT of product	3.97 m ³ /MT of product
Total Production	10,71,109 MT	7,18,436 MT
Total Process Water	40,45,676 m ³	28,56,106 m ³

(ii) Raw Material Consumption

Name of Raw Material	Name of Products/unit	Consumption of Raw Material per unit of Output	
		During the Previous financial Year 2021-22	During the Current Financial Year 2022-23
Natural Gas*	LPG	476 SCM / MT of LPG	469 SCM / MT of LPG
Natural Gas*	Propane	536 SCM / MT of Propane	536 SCM / MT of Propane
Natural Gas*	Pentane	328 SCM / MT of Pentane	328 SCM / MT of Pentane
Natural Gas*	Naphtha	277 SCM / MT of Naphtha	277 SCM / MT of Naphtha
Ethylene	HDPE	1.01 MT / MT of HDPE	1.024 MT / MT of HDPE
Ethylene	LLDPE	0.98 MT / MT of LLDPE	0.972 MT / MT of LLDPE

*Consumption as Process Gas.

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

PART-C

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

Pollutants	Quantity of pollutants discharged* (mass/day)	Concentration of pollutants in discharges (mass/volume)*	Percentage of variation from prescribed standards with reasons
(a) Water	Qty of Treated water discharged: 2,977 MT/day	BOD: 21 mg/l	0
		COD: 97 mg/l	0
		Oil & Grease: <4 mg/l	0
		TSS: 23 mg/l	0
(b) Air	Qty of Flue gases discharged: 23,070 MT/day	PM: 3.2 mg/Nm ³	0

*Average data for Financial Year 22-23.

PART-D

HAZARDOUS WASTES

(As specified under Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016)

Hazardous Waste	Total Quantity	
	During the previous Financial Year (2021-22) (MT)	During the current Financial Year (2022-23) (MT)
(a) From process		
Spent Activated Carbon ⁽²⁾	172.3	123.6
Spent Coke ⁽²⁾	25.3	25.6
Tar ⁽²⁾	17.4	15.8
Spent Resins ⁽²⁾	0.0	30.7
Waste Mineral Oil ⁽²⁾	15.5	11.2
Waste Oil ⁽³⁾	50.0	33.6
Used Lube Oil Filter Cartridges	0.0	0.0
Contaminated Cotton Rags ⁽²⁾	2.3	2.0
Used Paint Drums ⁽²⁾	0.6	0.0
Spent Catalysts ⁽²⁾	37.6	222.5
(b) From pollution control facilities.		
WWTP Sludge ⁽²⁾	415	2430
Slop Oil ⁽³⁾	2777	907.9

Note:

- Hazardous Waste Authorization has been renewed on 08.07.2021 and is valid up to 07.07.2026

2. Presently Spent Activated Carbon, Spent Coke, Tar, Spent Resins, Waste Mineral Oil, Oily WWTP sludge (dry basis), Contaminated Cotton Rags, Used Paint Drums, Spent Catalysts are being disposed off through authorized TSDF facility.
3. Waste Oil and Slop Oil from WWTP are sent to authorized recyclers.

PART-E
SOLID WASTE

Solid Waste	Total Quantity	
	During the previous Financial Year (2021-22) in MT	During the current Financial Year (2022-23) in MT
(a) From process		
Spent Silica Gel	57	199.6
(b) From pollution control facility		
(c) (1) Quantity recycled or re-utilized within the unit	-	-
(2) Sold		
Spent Alumina	1,159	966
Metal Scrap	293	543
Plastic Scrap	247	135
Wooden Scrap	142	375
Spent Ceramic Materials	7.72	15
Cables scrap	10	25
Waste Cartons	12	25
Used Tires	0	9.32
(3) Disposed	-	-

PART-F

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

TYPICAL CHARACTERISTICS OF HAZARDOUS WASTE

SOLID/SEMI-SOLID:

SL NO.	PARAMETERS	UNIT	TAR	SPENT CARBON	SPENT COKE	OILY SLUDGE
1.	Calorific value	Kcal/Kg	7.73	6.12	6.60	8.08
2.	Moisture	%	14.68	1.60	4.35	11.10
3.	Total solids	%	64.73	98.00	93.35	89.57
4.	Volatile solids	%	29.75	6.60	20.95	84.38
5.	Ash contents	%	32.36	33.70	52.20	5.18
6.	Oil & Grease	%	4.20	<0.1	Nil	5.16

LIQUID HAZARDOUS WASTE:

TYPICAL CHARACTERISTICS OF SLOP OIL

SL NO.	PARAMETERS	UNIT	SLOP OIL	USED OIL
1.	Calorific value	Kcal/Kg	9.7	9.8
2.	Moisture	%	38.4	0.46
3.	Total solids	%	61.6	0.17
4.	Volatile solids	%	7.3	98.3
5.	Ash contents	%	11.7	0.1
6.	Oil & Grease	%	38.2	-

Source: Third Party Environment monitoring report by Third-party environment monitoring agency.

PART -G

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

The following proactive initiatives have been taken for the conservation of Natural Resources:

Water Conservation

A comprehensive Waste Water Treatment Plant has been set up, primarily to ensure that our wastewater is treated so as to maintain the river water quality at the discharge point. Part of treated wastewater is recycled and used for horticulture purposes. The water demand of the complex is met by canal water, thereby reducing/eliminating the use of precious groundwater. Membrane Bio Reactor (MBR) based Sewage Treatment Plant has been set up in the GAIL Gaon Township and the treated water is used for irrigation of lawns/gardens etc. The efficient sewage treatment process ensures an odorless & clean environment which adds to the hygiene level.

Green Belt Development

Regular plantation at GAIL Pata and GAIL Gaon Township is being carried out and an extensive greenbelt is being maintained. Mass tree plantation drives are carried out on the occasion of World Environment Day, Van Mahotsav, Birthday Tree Plantation, etc. for increasing awareness among the employees, family members, and other stakeholders.

Leak Detection & Repair Program (LDAR)

The leak Detection & Repair Program (LDAR) is carried out for all the process units of GAIL Pata for the detection of fugitive emissions (VOCs) if any and thereby saving precious resources and reduction in energy consumption.

Environment Statement for financial year ending 31st March 2023 for GAIL, Pata

Rain Water Harvesting

Rain Water harvesting measures have been implemented in major buildings and approximately 18,000 m³ of rainwater has been harvested in FY 2022-23 at GAIL Pata. Also, a pond has been developed to store rainwater and use it in emergency due to water scarcity and also helps to avoid inundation of nearby villages due to heavy monsoon.

Energy Conservation

As per requirement of Energy Conservation Act'2001 and PAT Cycle, a dedicated energy management team and an energy management cell exists in the complex comprising of a designated energy manager and other engineers who are involved in monitoring, computation & analysis of energy usage, taking timely corrective actions in case of deviation in target performance, conducting energy audits and implementation of energy saving measures for energy efficient operation of the complex. Energy Performance parameters are benchmarked against global standards and are being monitored regularly and reviewed by top management on monthly basis.

External Energy Audits are carried out at specified intervals and Internal Energy Audits are conducted through BEE certified internal energy auditors and energy managers available in the complex. Some of the key initiatives undertaken for energy performance improvement in the last FY 22-23 are Revamping of damaged insulations in Furnaces & Boilers, Energy conservation through condensate recovery, Operational optimization of running equipment, Monitoring/Rectification of leakages/ Passing Valves, Steam Trap Sustenance Management, Phase wise replacement of HPMV lamps with LEDs, Replacement of Old Rewound Motors with Higher Efficiency IE3 class motors.

In addition to this, GAIL Pata has installed 0.5 MWp capacity roof top grid connected solar PV in FY 2022-23 to the existing Solar PV capacity of 5.76 MWp resulting into total installed capacity of ~ 6.26 MWp. Apart from this, another of 2.14 MWp is under installation and commissioning.

PART-H

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

- Adequate stacks height has been provided for effective dispersion of pollutants.
- Low NOx burners are used in all the furnaces in the complex.
- Liquid hydrocarbon loading facilities are provided with vapor return circuits.
- Gas detectors have been installed to ensure quick detection of a gas leak.
- Five numbers of fixed Continuous Ambient Air Quality Monitoring Station (CAAQMS) and one mobile van has been installed for ambient air quality monitoring.
- All the boiler and furnace stacks are equipped with on-line analyzers for monitoring stack air quality on continuous basis.
- Data from EQMS and OCEMS are transmitted on real-time basis to CPCB & SPCB servers.

- Electronic Display board has been installed at plant main gate for public view of ambient air and stack quality, and discharged effluent quality parameters.
- Advanced Daylighting System has been installed in Mechanical Workshop on pilot basis.
- Waste paper collection trays have been installed at various sources of generation and collected paper is sent to recyclers.
- Old critical motors are being replaced with energy efficient motors in a phase wise manner.
- Biodiversity assessment was carried out in the plant as well as township premises and measures are being taken for conservation of identified flora & fauna species.
- GAIL, Pata has implemented GreenCo rating system and has been rated “GreenCo Gold” by M/s CII Godrej GBC.
- GAIL, Pata has setup a pilot scale plant for utilization of CO₂ by microbial route to utilized one MT of CO₂ per day.
- GAIL, Pata carried out plantation of 1,50,000 saplings based on Miyawaki Methodology. The Plantation was carried out in an Area of 4.3 Hectares nearby GAIL, Pata. This is the largest Miyawaki Plantation in U.P. The Plantation was carried out through Uttar Pradesh State Forest Department (UPSFD) on the occasion of Van Mahotsav 2022.

PART-I

Any other particulars for improving the quality of the environment.

GAIL management has already initiated many projects related to the improvement of the quality of the environment some of which are described below:

- Ecological Park has been developed in GAIL Gaon Township by carrying out afforestation, fencing of the demarcated area to avoid unauthorized access, fish seeding in eco-ponds, and random dispersion of seed balls in the area.
- Butterfly garden has been developed in GAIL Gaon township by planting various species of Larval Host Plants and Nectar Plants to attract different species of butterflies.
- Installation of Hand pumps, Solar Home lights through CSR.
- Support towards Construction of CC Roads in nearby villages of Pata Plant
- Organic waste generated from Plant and Township is being converted into compost in Organic Waste Convertor plant installed at both the plant and township premises and the compost generated is used as manure in gardens.