स्वच्छ भारत
एक कदम स्वच्छता की ओर

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
रिफाइनरीज प्रभाग: गुवाहाटी रिफाइनरी
नूनमाटी, गुवाहाटी-७८१०२० (असम)
Indian Oil Corporation Limited
Refineries Division : Guwahati Refinery
Noonmati, Guwahati-781020, Assam
Fax : 0361-2657250, 2657251
EPABX : 0361-2597000
Website : www.iocl.com
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Indian Oil
Guwahati Refinery

रिफाइनरीज प्रभाग
Refineries Division

GR/HSE/ENV /301/E /21-22

Date: June 28,2022

To,
The Sr. Environmental Engineer,
Regional Office,
Pollution Control Board, Assam
Bamunimaidan,
Guwahati – 781021.

Subject: **Environmental Statement for the year 2021-22**

Sir,

Please find enclosed a duly filled in Environmental Statement of Guwahati Refinery in the prescribed format "Form –V' for the year 2021-22.

Thanking you,

Yours faithfully,

Receipt 28/6/22
Regional Office, Guwahati-1
Pollution Control Board, Assam
Guwahati-21

28.6.2022
(G.C.Das)

Deputy General Manager (HSE)

Encl : a/a

CC:

1. The Hon'ble Chairman, Pollution Control Board, Bamunimaidam ,Assam ,for information please.
2. The Member Secretary,Pollution Control Board ,Baminimaidam ,Assam

[FORM – V]

(See rule 14)

Environmental Statement for the financial year ending the 31st March, 2022

PART – A

(i) Name and address of the owner/occupier of the industry operation or process : GUWAHATI REFINERY IOCL, Noonmati, Guwahati – 781020

(ii) Industry category : Petroleum Refining

(iii) Production capacity : 1 MMTPA

(iv) Year of establishment : 1962

(v) Date of the last environment statement submitted :5.5.2021

PART – B

Water and Raw Material Consumption

(i) Water consumption:

Water consumption, m^3/day	**2020-21**	**2021-22**
Process	2089	1537
Cooling	1069	787
Domestic	12607	13955
Total	**15765**	16278

Water and raw material consumption:

	2020-21	**2021-22**
Industrial water consumed per MT of crude processed (m3/ MT of crude)	1.51	1.34

As products are not separately processed, and all products are obtained from the same raw material i.e., crude oil, water consumption shown above has been indicated as m3 per MT of crude processed.

(ii) Raw Material Consumption :

Name of raw material : Crude Oil

Consumption of raw material per unit of products in MT in the financial year

Raw Material	**Crude oil**
Consumption in 2020-21 (MT)	849195
Consumption in 2021-22 (MT)	730213

AM(HSE)

Product Pattern:

3.0 YIELD PATTERN		(ALL FIGS. IN MT)	
INPUT/OUTPUT		**2021-22**	
		Qty. MT	**% WT**
A. INPUT			
	Crude intake		
	ASSAM CRUDE *	250628	34.3
	IMPORTED CRUDE	479585	65.7
	Total Intake	730213	100.0
B. OUTPUT			
1. Finished products :	LPG	30186	4.1
	SRN	33057	4.5
	MRN	1095	0.1
	Premium BS VI Octane MS	-488	-0.1
	Ethanol Blended MS	13526	1.9
	MS BS-VI	152874	20.9
	Mixed Naphtha to HR/PR	4830	0.7
	Heavy Gasoline to BGR	2437	0.3
	Less Reformate blended in MS	-66612	-9.1
	Less Alkylate blended in MS	-2190	-0.3
	Less PyGas_PR blended in MS	-2590	-0.4
	Less Ethanol blended in MS	-1332	-0.2
	Less Mktg. MS_Imported	-26033	-3.6
	Total light distillate	**138759**	**19.0**
	ATF	55014	7.5
	SKO	24378	3.3
	HSD-BS-VI	504119	69.0
	HDT Feed to BR	37146	5.1
	Less SKO ex. BR/HR/PR/BGR	-25955	-3.6
	Less HSD_Imported	-41695	-5.7
	Less IND SKO ex. PR	0	0.0
	Less ATF	-55424	-7.6
	Less BR HDT FEED	-5777	-0.8
	Total middle distillate	**491804**	**67.4**
	Sulphur	371	0.1
	RPC	46189	6.3
	Total heavy ends	**46560**	**6.4**
Total Finished products		677124	92.7
2. ISD		-7716	-1.1
3. Product Recovery :		669407	91.7
4. Own fuel :	Oil	73830	10.1
	Gas	18205	2.5
	Total fuel	**92034**	**12.6**
5. Loss :	Liq. loss	3325	0.5
	Flare loss	1477	0.2
	Total loss	**4801**	**0.7**
6. Fuel & Loss		96836	13.3
7. Imports consuption:			
	FO ex. AOD	-36030	-4.9
	Total Imports consumption.	**-36030**	**-4.9**
Grand total		**730213**	**100.0**

Reformate imports blended in MS are shown along with light distillate.
SKO import shown as SKO, deducted from middle distillate

Chemical Consumption:

17.0	UNITWISE CONSUMPTION OF CHEMICALS		
			(FIG. IN MT)
SL.NO.	CHEMICAL	Consuming unit	Upto the Month
1	ALUM	ETP	1.9
		WTP	197
2	AMMONIA	CDU	0.63
3	CAUSTIC SODA	CDU	31.15
		DCU	15.02
		DM PLANT	100.0
		INDMAX	44.0
		HDT	0.00
		ETP	0.0
		ISOM	30.2
		INDAdeptG	38.8
4	COMMON SALT	ETP	54.7
		TPS (TPSCT+UCT+NPCT)	67.2
5	CORROSION INHIBITOR	INDMAX	0.38
		ISOM	0.58
		CDU	0.80
		DCU	0.38
6	DE-EMULSIFIER	CDU	0.90
7	DI-AMMONIUM PHOSPHATE	ETP	3.21
8	MDEA	ATU	8.64
9	CETANE IMPROVER	OM&S	0.00
10	DBPC	HDT (ATF MODE)	0.00
11	HCL	DM PLANT	377
12	HYDRAZINE	HGU	0.71
		TPS	0.65
13	MFA	O&MS	11.27
14	MORPHOLINE	HGU	1.59
		TPS	6.70
15	POLY ELECTROLYTE (DOPE)	ETP	4.14
16	POLY ALLUMINUM CHLORIDE	ETP	38.9
17	PPD	OM&S	0.00
18	POLY LIQUID (L)	ETP	1180
19	SILICON	DCU	0.36
20	STADIS-450	HDT (ATF MODE)	0.00
21	TSP	HGU	0.12
		INDMAX	0.18
		TPS	0.89
		SRU	0.23
22	UNICOR-C	HDT	0.5
23	DMDS	ISOM	5.20
24	C2CL4	ISOM	11.9
25	UREA	ETP	3.38
26	DWPE	ETP	0.74
27	LUBRICITY ADDITIVE	OM&S	83.9
28	FREON,R134A_SRU	SRU	0.44
29	RL-46H (EMKARATE)/SERVO SYSTEM 46	SRU	0.13
30	ETHYLENE GLYCOL_SRU	SRU	0.00
31	CATALYST : COMPONENT A	INDMAX	28.3
32	CATALYST : COMPONENT B	INDMAX	122.5
33	CATALYST : COMPONENT C	INDMAX	16.4
34	CATALYST : E-CAT	INDMAX	-78.7
35	CO-PROMOTER	INDMAX	0.48
43	NYCOLUBE 7040_SRU	SRU	0.22
45	SERVO PRIME 32T_SRU	SRU	1.54
46	SERVO SYSTEM 150_SRU	SRU	0.06
47	DYE	OM&S	0.36

PART – C

Pollution discharged to environment/unit of output: 2021-22
(Parameter as specified in the consent issued)

(i) Water Pollutants:

Parameter	Quantum Value (Kg/TMT of Crude processed)		Quantity of pollutants discharged (kg/day)	Concentrations of pollutants in discharge (mg/L)		Percentage of variation from prescribed standards with reasons
	Limit	**Actual**	**Actual**	**Limit**	**Actual**	
pH	-	-	-	**6.0 - 8.5**	7.05	All parameters are within range of prescribed standards
Oil & Grease	**2.0**	0.063	0.1264	**5**	2.86	
BOD	**6.0**	0.183	0.3670	**15**	7.96	
COD	**50**	1.231	2.4634	**125**	59.43	
TSS	**8.0**	0.149	0.2981	**20**	6.44	
Phenols	**0.14**	0.004	0.0079	**0.35**	0.19	
Sulfides	**0.2**	0.000	0.0009	**0.5**	0.02	
CN	**0.08**	0.000	0.0001	**0.20**	0.00	
Ammonia as N	**6.0**	0.283	0.5660	**15.0**	8.11	
TKN	**16**	0.490	0.9811	**40.0**	14.13	
P	**1.2**	0.023	0.0464	**3.0**	0.72	
Cr (Hexavalent)	**0.04**	**BDL**	BDL	**0.1**	BDL	
Cr (Total)	**0.8**	0.003	0.0051	**2.0**	0.06	
Pb	**0.04**	**BDL**	BDL	**0.1**	BDL	
Hg	**0.004**	BDL	BDL	**0.01**	BDL	
Zn	**2.0**	0.007	0.0147	**5.0**	0.19	
Ni	**0.4**	0.002	0.0033	**1.0**	0.05	
Cu	**0.4**	**BDL**	BDL	**1.0**	BDL	
V	**0.8**	0.002	0.0032	**0.2**	0.20	
Benzene	**0.04**	0.002	0.0038	**0.1**	0.05	
Benzo (a)-Pyrene	**0.08**	0.002	0.0032	**0.2**	0.04	

(ii) Air Pollutants:

The Assam Crude has low Sulphur content due to which, the internal fuel burnt in furnaces/ boilers has very low sulphur content. Therefore, the atmospheric pollution caused by sulphur dioxide emissions has been very low.

The average emission through stacks during 2021-22 was as follows:

April-June 2021
STACK EMISSION DATA

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated									
			SO2		NOX		PM		CO(ppm)		Ni+V	
			Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
CDU	Apr-21	FO/FG	1700	221.0	450	106.0	100	24.7	200	19.1	5	0.0225/BDL
	May-21	FO/FG	Unit under shutdown at the time of sampling									
	Jun-21	FO/FG										
DCU	Apr-21	FO/FG	1700	213.8	350	131.4	100	17.9	150	13.5	5	0.0192/BDL
	May-21	FO/FG	Unit under shutdown at the time of sampling									
Blr-6&7	Apr-21	FO/FG	957	249.0	405	120.0	59	43.8	177	18.2	5	0.0308/BDL
	May-21	FO	1700	247.3	450	121.0	100	42.5	200	18.3	5	BDL/BDL
	Jun-21	FO	1700	252.8	421	122.5	74	45.1	186	18.5	5	0.0305/BDL

Q2 Jul'21 to Sept'21

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated									
			SO2		NOX		PM		CO(ppm)		Ni+V	
			Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
CDU	Jul-21	FO/FG	1275	N/A	424	N/A	77	N/A	187	N/A	5	N/A
	Aug-21	FO/FG	1218	226.3	421	109.5	74	27.3	185	19.7	5	0.0228/ BDL
	Sep-21	FO/FG	1394	225.8	431	109.3	83	26.9	191	19.8	5	0.0225/BDL
DCU	Jul-21	FO/FG	285	N/A	364	N/A	23	N/A	157	N/A	5	N/A
	Aug-21	FO/FG	285	215.9	364	133.0	23	18.6	157	20.5	5	0.0190/BDL
	Sep-21	FO/FG	402	216.0	371	133.8	29	18.3	161	20.7	5	0.0191/BDL
HDT	Jul-21	FG	50	N/A	350	N/A	10	N/A	150	N/A	5	N/A
	Aug-21	FG	50	42.5	350	58.7	10	9.2	150	15.6	5	BDL/BDL
	Sep-21	FG	50	42.8	350	59.0	10	9.0	150	15.4	5	BDL/BDL
HGU	Jul-21	Naphtha	1700	N/A	450	N/A	100	N/A	200	N/A	5	N/A
	Aug-21	Naphtha	1700	59.0	450	92.8	100	15.7	200	11.8	5	BDL/BDL
	Sep-21	Naphtha	1700	59.6	450	93.1	100	15.2	200	11.0	5	BDL/BDL
ISOM	Jul-21	FG	50	N/A	350	N/A	10	N/A	150	N/A	5	N/A
	Aug-21	FG	50	19.2	350	64.2	10	8.5	150	9.3	5	BDL/BDL
	Sep-21	FG	50	19.5	350	64.8	10	8.4	150	9.1	5	BDL/BDL
Blr5	Jul-21	FO/FG	1529	N/A	440	N/A	91	N/A	195	N/A	5	N/A
	Aug-21	FO/FG	1438	239.6	434	125.8	86	39.1	192	14.5	5	0.0266/BDL
	Sep-21	FO/FG	1317	239.1	427	126.0	79	38.7	188	14.7	5	0.0269/BDL
Blr-6&7	Jul-21	FO/FG	1475	N/A	436	N/A	88	N/A	193	N/A	5	N/A
	Aug-21	FO/FG	1404	253.8	432	123.9	84	45.8	191	18.4	5	0.0304/BDL
	Sep-21	FO/FG	1394	254.0	431	123.9	83	46.0	191	18.3	5	0.0302/BDL

Oct-Dec 2021
STACK EMISSION DATA

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated									
			SO2		NOX		PM		CO(ppm)		Ni+V	
			Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
CDU	Oct-21	FO/FG	1394	223.9	431	106.00	83	24.7	200	19.80	5	0.0226/BDL
	Nov-21	FO/FG	1361	233.6	429	104.80	81	26	189	19.60		0.0094/BDL
	Dec-21	FO/FG	1449	226.4	436	105.90	86	26	192	19.30		0.0231/BDL
DCU	Oct-21	FO/FG	402	213.8	371	132.50	100	24.8	161	19.60	5	0.0193/BDL
	Nov-21	FO/FG	323	215.6	367	136.50	29	19.6	158	21.60	5	BDL/BDL
	Dec-21	FO/FG	451	226.6	374	132.80	26	19.8	162	20.90	5	BDL/BDL
HDT	Oct-21	FG	50	41.8	350	58.6	10	9.1	150	15.40	5	BDL/BDL
	Nov-21	FG	50	42.8	350	58.7	10	9.3	150	15.80	5	BDL/BDL
	Dec-21	FG	50	41.3	350	57.2	10	8.9	150	15.30	5	BDL/BDL
HGU	Oct-21	Naphtha	1700	57.4	450	91.8	100	15.9	200	11.00	5	BDL/BDL
	Nov-21	Naphtha	1700	58.6	450	92.6	100	16.0	200	11.80	5	BDL/BDL
	Dec-21	Naphtha	1700	58.7	450	92.8	100	15.3	200	11.60	5	BDL/BDL
ISOM	Oct-21	FG	50	18.6	350	64.8	10	8.4	150	9.60	5	BDL/BDL
	Nov-21	FG	50	18.3	350	64.8	10	8.5	150	9.50	5	BDL/BDL
	Dec-21	FG	50	18.6	350	63.8	10	8.1	150	10.56	5	BDL/BDL
Blr5	Oct-21	FO/FG	1317	234.6	427	125.8	79	38.7	188	19.60	5	0.0279/BDL
	Nov-21	FO/FG	1246	238.7	422	124.9	75	38.6	186	19.63	5	0.0076/BDL
	Dec-21	FO/FG	1700	238.6	450	123.6	100	38.6	200	18.90	5	0.0263/BDL
Blr-6&7	Oct-21	FO/FG	957	249.0	431	122.8	83	43.8	191	18.2	5	0.0264/BDL
	Nov-21	FO	1700	247.3	435	123.8	86	42.5	192	18.3	5	0.0084/BDL
	Dec-21	FO	1700	252.8	421	123.5	74	45.1	186	18.5	5	0.0305/BDL

Jan-March 2022
STACK EMISSION DATA

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated							
			SO2		NOX		PM		CO(ppm)	
			Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
CDU	Jan-22	FO/FG	1394	227.3	431	109.4	83	26.3	200	19.5
	Feb-22	FO/FG	1351	227.4	429	109.5	81	27.3	189	19.7
	Mar-22	FO/FG	1449	226.5	435	109.3	86	26.9	192	19.8
DCU	Jan-22	FO/FG	402	217.8	371	132.8	100	17.4	161	20.7
	Feb-22	FO/FG	323	215.9	367	133.0	29	18.6	158	20.5
	Mar-22	FO/FG	451	216.0	374	133.8	25	18.3	162	20.7
HDT	Jan-22	FG	50	43.8	350	59.6	10	9.5	150	15.2.
	Feb-22	FG	50	42.5	350	58.7	10	9.2	150	15.6
	Mar-22	FG	50	42.8	350	59.0	10	9.0	150	15.4
HGU	Jan-22	Naphtha	1700	58.0	450	90.1	100	14.2	200	12.0
	Feb-22	Naphtha	1700	59.0	450	92.8	100	15.7	200	11.8
	Mar-22	Naphtha	1700	59.6	450	93.1	100	15.2	200	11.0
ISOM	Jan-22	FG	50	19.6	350	63.7	10	8.9	150	9.1
	Feb-22	FG	50	19.2	350	64.2	10	8.5	150	9.3
	Mar-22	FG	50	19.5	350	64.8	10	8.4	150	9.1
Blr5	Jan-22	FO/FG	1317	240.7	427	124.7	79	37.1	188	14.3
	Feb-22	FO/FG	1246	239.6	422	125.8	75	39.1	186	14.5
	Mar-22	FO/FG	1700	239.1	450	126.0	100	38.7	200	14.7
Blr-6&7	Jan-22	FO/FG	957	252.8	431	122.5	83	43.5	191	18.2
	Feb-22	FO	1700	253.8	435	123.9	86	45.8	192	18.4
	Mar-22	FO	1700	254.0	421	123.9	74	46.0	186	18.3

Parameters	Limit for Existing SRU	Actual Values(AVERAGE)
Sulfur Recovery %	94	94.2
NOx, mg/Nm3	350	150.8
CO, ppm	150	11.3

- BDL- Below detection limit
- For all units, average sulphur content in fuel oil is 0.38-0.41 %wt against limit of 1 %wt.

The Ambient Air Quality around the refinery for 2021-22 is as follows:

Q1 April to June'21

AMBIENT AIR QUALITY MONITORING REPORT												
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	enzo(O) Pyren	Arsenic (As)	Nickel (Ni)
	Concentration of Pollutants											
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	Benzo(O) Pyrene	Arsenic (As)	Nickel (Ni)
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	ng/m3
Limit as per CPCB notification, New Delhi,18th Nov, 2009,for Ambient air quality	80	80	100	60	100	1	2	400	5	1	6	20
Location : Adm Building												
Max	7.9	25	81.5	50.9	25.0	0.03	0.92	12.5	4.20	0.50	1.0	5.3
Min	<6	15.1	47.2	25.8	<20	<0.01	0.25	<10	<4.2	<0.5	<1	<5
Avg.	6.5	19.1	63.9	37.2	21.1	0.01	0.50	10.6	4.20	0.50	1.0	5.0
Location : Guest House												
Max	9.5	32.8	90.7	56.4	30.0	0.05	0.98	15.0	4.20	0.50	1.0	8.2
Min	<6	15.1	53.8	30.4	<20	<0.01	0.45	<10	<4.2	<0.5	<1	<5
Avg.	7.3	23.2	73.2	43.0	23.2	0.02	0.72	11.6	4.20	0.50	1.0	5.2
Location : Sector II												
Max	8.5	27.1	87.3	52.2	26.3	0.03	0.85	13.2	4.20	0.50	1.0	10.3
Min	<6	15.1	48.7	25.8	<20	<0.01	0.25	<10	<4.2	<0.5	<1.0	<5.0
Avg.	6.7	20.2	66.5	38.9	21.6	0.01	0.50	10.8	4.20	0.50	1.0	5.5
Location : WTP												
Max	7.9	25.0	81.5	50.9	25.0	0.02	0.92	12.5	4.20	0.5	1.0	5.0
Min	<6	15.1	47.2	26.9	<20	<0.01	0.26	<10	<4.2	<0.5	<1.0	<5.0
Avg.	6.5	6.5	63.6	36.8	21.1	0.01	0.50	10.6	4.20	0.5	1.0	5.0

AMBIENT AIR MONITORING REPORT: QUARTER Q2 Jul'21 to Sept'21

Sampling and analysis done by M/S Mitrask pvt. Ltd.

AMBIENT AIR QUALITY MONITORING REPORT												
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	Benzo(O) Pyrene	Arsenic (As)	Nickel (Ni)
	Concentration of Pollutants											
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	Benzo(O) Pyrene	Arsenic (As)	Nickel (Ni)
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	ng/m3
Limit as per CPCB notification, New Delhi,18th Nov, 2009.for Ambient air quality	80	80	100	60	100	1	2	400	5	1	6	20
Location : Adm Building												
Max	8.9	29.7	89.3	49.6	28.5	0.03	0.99	14.3	<4.2	<0.5	<1.0	7.4
Min	<6.0	6.9	48.2	25.1	<20.0	<0.01	0.54	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	7.0	21.5	68.8	36.1	22.7	0.02	0.73	11.4	<4.2	<0.5	<1.0	5.6
Location : Guest House												
Max	8.9	30.5	91.3	49.5	28.3	0.06	0.89	14.1	<4.2	<0.5	<1.0	12.8
Min	<6.0	17.3	48.7	24.5	<20.0	<0.01	0.34	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	7.1	24.1	70.5	37.3	22.8	0.02	0.62	11.4	<4.2	<0.5	<1.0	7.3
Location : Sector II												
Max	8.5	29.0	82.9	48.6	26.9	0.04	0.70	13.5	<4.2	<0.5	<1.0	9.6
Min	<6.0	15.5	47.3	26.3	<20.0	<0.01	0.34	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	6.7	22.2	67.3	35.8	21.8	0.02	0.49	10.9	<4.2	<0.5	<1.0	6.5
Location : WTP												
Max	7.2	25.0	74.3	41.5	24.0	<0.01	0.45	12.0	<4.2	<0.5	<1.0	<5.0
Min	<6.0	14.8	45.5	24.2	<20.0	<0.01	0.20	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	6.2	19.0	60.0	31.5	21.0	<0.01	0.33	10.5	<4.2	<0.5	<1.0	<5.0

Note : BDL= Below Detections Limit :

Detection Limit of O3 : 19.62 µg/m3, Pb : 0.02 µg/m3, Ni: 1.0 ng/m^3 As : 2 ng/ m3, C6H6: 2.08 µg/m3, Benzo(a)pyrene : 0.4 ng/m3

Q3 Oct to Dec'21

AMBIENT AIR QUALITY MONITORING REPORT												
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	enzo(O) Pyren	Arsenic (As)	Nickel (Ni)
	Concentration of Pollutants											
	SO2	NO2	PM10	PM2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	Benzo(O) Pyrene	Arsenic (As)	Nickel (Ni)
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	ng/m3
Limit as per CPCB notification, New Delhi,18th Nov, 2009.for Ambient air quality	80	80	100	60	100	1	2	400	5	1	6	20
Location : Adm Building												
Max	7.8	25	77.8	52.5	26.8	0.03	0.86	12.8	4.20	0.50	1.0	5.3
Min	<6	14.9	48.6	25.9	<20	<0.01	0.25	<10	<4.2	<0.5	<1	<5
Avg.	7.4	20.0	66.4	37.6	25.5	0.01	0.64	12.7	4.20	0.50	1.0	5.0
Location : Guest House												
Max	9.8	32.6	92.5	58.7	31.5	0.05	0.98	15.6	4.20	0.50	1.0	8.2
Min	<6	15.1	52.8	29.5	<20	<0.01	0.45	<10	<4.2	<0.5	<1	<5
Avg.	7.2	23.1	72.8	42.3	23.8	0.02	0.71	11.8	4.20	0.50	1.0	5.2
Location : Sector II												
Max	8.5	27.1	87.3	52.2	26.3	0.03	0.85	13.2	4.20	0.50	1.0	10.3
Min	<6	15.1	48.7	25.8	<20	<0.01	0.25	<10	<4.2	<0.5	<1.0	<5.0
Avg.	6.7	20.2	66.5	38.9	21.6	0.01	0.50	10.8	4.20	0.50	1.0	5.5
Location : WTP												
Max	8.1	24.8	73.4	49.1	25.0	0.01	0.52	10.7	4.20	0.5	1.0	5.0
Min	<6	14.5	49.8	27.6	<20	<0.01	0.48	<10	<4.2	<0.5	<1.0	<5.0
Avg.	6.5	19.4	64.7	37.4	21.1	0.01	0.06	10.7	4.20	0.5	1.0	5.0

AMBIENT AIR MONITORING REPORT: QUARTER Q4 Jan'22 to March'22

Sampling and analysis done by M/S Mitrask pvt. Ltd.

AMBIENT AIR QUALITY MONITORING REPORT												
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	enzo(O) Pyren	Arsenic (As)	Nickel (Ni)
	Concentration of Pollutants											
	SO2	NO2	PM 10	PM 2.5	Ozone (O3)	Lead (Pb)	CO	Ammonia (NH3)	Benzene (C6H6)	Benzo(O) Pyrene	Arsenic (As)	Nickel (Ni)
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	ng/m3
Limit as per CPCB notification, New Delhi,18th Nov, 2009.for Ambient air quality	80	80	100	60	100	1	2	400	5	1	6	20
Location : Adm Building												
Max	8.5	27.6	89.3	49.6	28.5	0.03	0.99	14.3	<4.2	<0.5	<1.0	7.4
Min	<6.0	6.9	48.2	25.1	<20.0	<0.01	0.54	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	7.0	21.5	68.8	36.1	22.7	0.02	0.73	11.4	<4.2	<0.5	<1.0	5.6
Location : Guest House												
Max	8.4	30.5	92.3	49.5	28.3	0.06	0.89	14.1	<4.2	<0.5	<1.0	12.8
Min	<6.0	17.3	48.7	24.5	<20.0	<0.01	0.34	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	7.1	24.1	70.5	37.3	22.8	0.02	0.62	11.4	<4.2	<0.5	<1.0	7.3
Location : Sector II												
Max	8.5	29.0	82.9	48.6	26.9	0.04	0.70	13.5	<4.2	<0.5	<1.0	9.6
Min	<6.0	15.5	47.3	26.3	<20.0	<0.01	0.34	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	6.7	22.2	67.3	35.8	21.8	0.02	0.49	10.9	<4.2	<0.5	<1.0	6.5
Location : WTP												
Max	7.2	25.0	74.3	41.5	24.0	<0.01	0.45	12.0	<4.2	<0.5	<1.0	<5.0
Min	<6.0	14.8	45.5	24.2	<20.0	<0.01	0.20	<10.0	<4.2	<0.5	<1.0	<5.0
Avg.	6.2	19.0	60.0	31.5	21.0	<0.01	0.33	10.5	<4.2	<0.5	<1.0	<5.0

Note : BDL= Below Detections Limit

Detection Limit of O3 : 19.62 µg/m3, Pb : 0.02 µg/m3, Ni: 1.0 ng/m3, As : 2 ng/ m3, C6H6: 2.08 µg/m3, Benzo(a)pyrene : 0.4 ng/m3

PART – D

Hazardous Wastes:

(As specified under Hazardous Wastes Management & Handling Rules, 1989/ amendment 2008).

Waste	Total Generated Quantity in MT
	2021-22
Oily sludge (Sch 4.1)(including tank bottom sludge and residual oily sludge)	2379
Spent catalyst (Sch 4.2)	286.91
Slop Oil (Sch 4.3)	10465

PART – E

Other Solid Wastes:

Hazardous Waste	Total Quantity Generated	
	During the current financial year (2020-21)	During the current financial year (2021-22)
From process		
Waste Paper	2454 kg	8038
Organic Kitchen Wastes	164.76 MT	7.124
Drums	850 no.	1239

PART – F

Characteristics of Hazardous substance and solid wastes:

Characteristics of oily sludge are given below:

S.No.	Parameter	Unit	Oily sludge
1	Chromium	mg/kg	21.6
2	Nickel	mg/kg	27.4
3	Lead	mg/kg	38.4
4	Vanadium	mg/kg	6.2
5	Zinc	mg/kg	93.5
6	Mercury	mg/kg	0.18

Treatment of Oily Sludge and Slop Oil:

Guwahati Refinery has completed the bio-remediation of two batches of residual sludge (725 m^3) (<10% oil content) generated from oily sludge processing. The bioremediation was carried out in house with the help of microbes received from IOCL, R&D.

10465 MT of slop oil was processed in DCU in 2021-22

PART – G

Pollution Control & Conservation Measurement:

Reduction in treated effluent discharge is achieved by maximizing the reuse of treated effluent as makeup for fire water and make up to cooling tower. In 2021-22, the average reuse of treated effluent was 99.4 %.

- Specific treated effluent discharge reduced from 13.62 m3/TMT crude processed in 2020-21 to 11.1 m3/TMT crude processed in 2021-22 by maximizing ETP treated effluent reuse.
- Under the able guidance of ED&RH, GR, an awareness campaign for water conservation has been initiated by HSE Dept. since 15th October, 2021 for saving and conserving Water.
- Guwahati Refinery conducted a workshop and quiz competition among the township ladies on the topic "Water conservation". The workshop was Chaired by First lady of Guwahati Refinery, Mrs. Neerja Singh and attended by around seventy ladies of Guwahati Refinery township in December, 2021.
- Guwahati Refinery organized a Webinar on 4th June, 2021 on the WED 2021 theme of "Ecology Restoration" by Sh. Bibhab Kumar Talukdar, Secretary General, and CEO, Aaranyak (A Scientific and Industrial Research Organization).
- Chairman, PCBA, Dr Arup Mishra appreciated the tremendous efforts made by GR for Environment Protection.
- Fresh water consumption for the Refinery reduced from 145 m^3/hr in 2020-21 to 111.9 m^3/hr in 2021-22 by implementation of following measures:
    - Installation of New makeup filter for ETP treated water to UCT and NPCT was commissioned on 14th October, 2021. This has helped in improving ETP make up water quality (by reducing turbidity) to Cooling towers, thereby increasing ETP water reuse.
    - Recovery of pump seal cooling water in INDMAX, HGU, HDT for routing to CT sump for onward reuse & reduction of fresh water makeup at Cooling tower was implemented in M&I shutdown of April'21.
    - Process scheme for recovery of Stripper Sour water and routing to CDU desalter @ 6 m^3/hr as wash water in place of ETP after SWS Revamp was implemented in December, 2021. This has helped in replacing the condensate which was earlier used.
    - Process scheme for recovery of steam condensate (6 m^3/hr) from DCU, INDADeptG, INDMAX and DH tanks was implemented in April, 2021.