



NUMALIGARH REFINERY LIMITED

A GOVERNMENT OF INDIA ENTERPRISE



To,

Date: 26th Sept, 2020

The Member Secretary,
Pollution Control Board, Assam
Bamunimaidam, Guwahati, Assam

Ref: NRL/TS/ENV/34.1/

CIN- U11202AS19993GOI003893


Sub: Environmental Statement of NRL for the financial year 2019-2020.

Dear Sir,

We are enclosing herewith the duly filled in “**Environmental Statement**” of Numaligarh Refinery Ltd for the year 2019 -20 for your kind perusal.

Hope, the same shall find in order.

Yours' faithfully


(A. N. Nath)
Chief Manager, TS(Env))

CC : i)Regional Office , MoEF&CC, Shillong
ii)Regional Executive Engineer, PCBA, Golaghat.

Please reply to :

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[FORM - V]

(See rule 14)

Environmental Statement of NUMALIGARH REFINERY LIMITED
for the financial year - 2019-2020

PART - A

- (i) Name and address of the owner/occupier:
of the industry operation or process. Numaligarh Refinery Limited
P.O. Numaligarh Refinery Project
Golaghat -785699, Assam
- Co-ordination Office: Tolstoy House, 6th Floor
15-17 Tolstoy Marg
New Delhi-110001
- Registered Office : 122A , G.S.Road
Christianbasti
Guwahati-781005
- (ii) Industry category Primary ----(STC code) : Primary
Secondary----(SIC Code)
- (iii) Production capacity (Crude T'put) : 3.0 MMTPA
- (iv) Year of establishment : 22nd April ,1993
- (v) Date of the last environmental statement submitted : 28th Sept ,2019

PART - B

Water and River Material Consumption

- (1) Water consumption m3/d:
- | | | |
|----------|---|---------|
| Process | : | 2718.32 |
| Cooling | : | 3893.85 |
| Domestic | : | 3107.06 |

Name of Products : Process water consumption in m3 per MT of raw material

Crude Oil

2018-2019

2019-2020

0.296

0.416

As all the products are obtained from the same raw material i.e Crude Oil, Process Water Consumption shown above has been indicated as M3 per MT of crude processed.

NB: During 2019-20 NRL throughput was limited due to shutdown taken for scheduled Refinery Turnaround (RTA) maintenance which is done once in 3/4 years. Maintenance activities were also adversely impacted because of large scale disturbances during CAB/CAA protests in Assam. Because of mentioned factors /reasons Crude Oil processing during 2019-2020 was less, so, process water consumption in m3 per MT of raw material i.e. - Crude Oil is little higher than that of previous year (2018-19)

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ii) Raw Material Consumption
Raw material: Crude Oil

2018-19 2019-2020

Output during the year (in MT)
(Design Capacity: 3.0 MTPA)

2900385 2383338

PART - C

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

a) a) Effluent Water: 2019-20

Pollutants	CPCB Standard (mg/l)	Concen. of pollutants in discharges(av.) (mg/l)	Quantity of pollutants discharged (kg/yr, exc. pH)	Qty of pollutants in kg/1000 MT of Crude		Percentage of variation from STD. with reasons
				STD(mg/l)	Actual(mg/l)	
pH	6-85	6.9	-	-	-	All parameters are within prescribed limit/stds
Oil & G	5.0	3.6	3571.9	2.0	1.49	
TSS	20	12.55	12451.97	8.0	5.2	
Phenol	0.35	0.2	198.43	0.14	0.083	
Sulphide	0.5	<0.1	99.21	0.2	0.041	
COD	125	73.0	72429.79	50	30.39	
BOD3	15	9.8	9723.45	6.0	4.079	
CN	<0.02	<0.02	19.84	0.08	0.0078	
Ammonia as N	15	7.54	7481.1	6.0	3.13	
TKN	40	11.43	11340.72	16.0	4.758	
P	3.0	0.25	248.04	1.2	0.104	
Cr (Hex.)	0.1	Nil	00.0	0.04	0.00	
Cr (Total)	2.0	0.01	9.921	0.8	0.004	
Pb	0.1	0.01	9.921	0.04	0.004	
Hg	0.01	0.00	0.00	0.004	0.000	
Zn	5.0	0.24	238.12	2.0	0.099	
Ni	1.0	0.04	39.687	0.4	0.0166	
Cu	1.0	0.04	39.687	0.4	0.0166	
V	0.2	0.02	19.84	0.8	0.008	
Benzene	0.1	0.03	29.765	0.04	0.0124	
Benzo(a)-Pyrene	0.2	0.01	9.921	0.08	0.004	

(b) AIR

Average Sulphur Dioxide emission from the refinery during - 2019-20 :

SO2 Emission , Kg/hr	During April , 2019 to Mar,2020
As per NOC of PCB, Assam max. allowable limit is 256 kg/hr as SO2	79.84 kg/hr

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AMBIENT AIR QUALITY MONITORING DATA

During April, 2019 to Mar,2020

STATION	PARAMETER	STD NAAQS-2009	Unit	OBSERVATIONS		
				MAX	MIN	AVG.
REFINERY (WATCH TOWER NO. 6)	SO2	80 (24 hr avg.)	µg/m3	21.20	4.20	15.18
	NO2	80 (24 hr avg.)	µg/m3	27.40	12.20	19.05
	O3	100(8 hr avg.)	µg/m3	36.10	10.00	24.78
	CO	2(8 hr.avg.)	mg/m3	1.200	0.300	0.96
	NH3	400(24 hr.avg.)	µg/m3	34.2	10.0	24.17
	PM 10	100(24 hr.avg.)	µg/m3	76.8	38.0	69.95
	PM 2.5	60(24 hr.avg.)	µg/m3	54.6	21.0	46.05
	Benzene	5.0(Annual)	µg/m3	2.60	2.00	2.20
	BaP	1.0(Annual)	ng/m3	0.40	0.40	0.40
	Pb	1.0(24 hr.avg.)	µg/m3	0.40	0.02	0.14
	As	6.0(Annual)	ng/m3	1.00	1.00	1.000
	Ni	20(Annual)	ng/m3	5.68	2.10	3.30
ECO-PARK IN NRL TOWNSHIP	SO2	80 (24 hr avg.)	µg/m3	18.10	4.30	11.23
	NO2	80 (24 hr avg.)	µg/m3	32.20	9.40	14.85
	O3	100(8 hr avg.)	µg/m3	27.4	10.0	14.9
	CO	2(8 hr.avg.)	mg/m3	0.480	0.100	0.300
	NH3	400(24 hr.avg.)	µg/m3	18.6	9.20	12.83
	PM 10	100(24 hr.avg.)	µg/m3	71.6	48.0	65.78

	PM 2.5	60(24 hr.avg.)	µg/m3	48.1	18.8	30.43
	Benzene	5.0(Annual)	µg/m3	2.08	2.08	2.080
	HC	x.0(Annual)	ng/m3	1.55	0.70	0.675
	BaP	1.0(Annual)	ng/m3	0.40	0.40	0.40
	Pb	1.0(24 hr.avg.)	µg/m3	0.30	0.02	0.19
	As	6.0(.0Annual)	ng/m3	1.00	1.00	1.00
	Ni	20(Annual)	ng/m3	5.32	2.00	2.558
RAW WATER INTAKE	SO2	80 (24 hr avg.)	µg/m3	12.80	4.10	9.83
	NO2	80 (24 hr avg.)	µg/m3	28.10	8.70	12.70
	O3	100(8 hr avg.)	µg/m3	24.5	10.0	10.08
	CO	2(8 hr.avg.)	mg/m3	0.160	0.100	0.103
	NH3	400(24 hr.avg.)	µg/m3	12.8	9.80	10.45
	PM 10	100(24 hr.avg.)	µg/m3	66.1	36.0	54.95
	PM 2.5	60(24 hr.avg.)	µg/m3	48.2	15.0	31.35
	Benzene	5.0(Annual)	µg/m3	2.08	2.08	2.08
	BaP	1.0(Annual)	ng/m3	0.40	0.40	0.40
	Pb	1.0(24 hr.avg.)	µg/m3	0.30	0.02	0.02
	As	6.0(Annual)	ng/m3	1.00	1.00	1.00
	Ni	20(Annual)	ng/m3	2.00	2.00	2.00
	NH-39 BYPASS	SO2	80 (24 hr. avg.)	µg/m3	20.8	4.2
NO2		80 (24 hr avg.)	µg/m3	31.4	12.8	17.90

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O3	100(8 hr avg.)	µg/m3	31.2	10.0	20.75
CO	2(8 hr.avg.)	mg/m3	1.20	0.40	0.90
NH3	400(24 hr.avg.)	µg/m3	21.5	10.0	20.30
PM 10	100(24 hr.avg.)	µg/m3	76.8	48.0	68.90
PM 2.5	60(24 hr.avg.)	µg/m3	56.4	22.0	45.2
Benzene	5.0(Annual)	µg/m3	2.80	2.10	2.25
HC	x.0(Annual)	µg/m3	1.42	0.70	0.780
BaP	1.0(Annual)	ng/m3	0.40	0.40	0.40
Pb	1.0(24 hr.avg.)	µg/m3	0.40	0.02	0.28
As	6.0(Annual)	ng/m3	1.00	1.00	1.00
Ni	20(Annual)	ng/m3	4.80	2.20	3.17
SO2	80 (24 hr avg.)	µg/m3	11.1	4.00	8.3
NO2	80 (24 hr avg.)	µg/m3	30.4	7.4	10.44
O3	100(8 hr avg.)	µg/m3	10.00	10.00	10.0
CO	2 (8 hr.avg.)	mg/m3	0.450	0.100	0.10
NH3	400(24 hr.avg.)	µg/m3	10.00	10.00	10.00
PM 10	100(24 hr.avg.)	µg/m3	62.6	26.0	53.93
PM 2.5	60(24 hr.avg.)	µg/m3	36.2	12.0	24.0
Benzene	5.0(Annual)	µg/m3	2.08	2.08	2.08
HC	x.0(Annual)	µg/m3	2.74	0.10	0.148
BaP	1.0(Annual)	ng/m3	0.40	0.40	0.40

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Pb	1.0(24 hr.avg.)	µg/m ³	0.02	0.02	0.02
As	6.0(Annual)	ng/m ³	1.00	1.00	1.00
Ni	20(Annual)	ng/m ³	4.00	2.00	2.18

(All the parameters are found to be within limit)

PART – D
Hazardous Wastes

(As specified under Hazardous Waste Management and Handling Rules, 1989 as amended up to date)

Hazardous Wastes(Generated/disposed)	Total Quantity (In MT)	
	During the previous Financial Year (18-19)	During the current Financial year -2019-2020
a) From Process		
i) Spent Catalyst	Nil	Generated: 380 MT (under process of selling)
ii) Spent Adsorbents	Nil	Nil
iii) Tank Bottom (oily Sludge/waste)	Generated : 700 MT (kept in sealed drum for bioremediation)	Nil
b) From Pollution Control Facilities		
Chemical & Oily Sludge	11.55 MT (disposed off in the SLF)	23.66 MT (disposed off in the SLF)

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Part – E
Solid Wastes

Solid Wastes generated /disposed	Total Quantity (in M3)	
	During the previous financial year(2018-19)	During the current financial Year 2019-20
(a) From Process Generation of Incinerable substances -	1598m3	1955m3
(b) From pollution control facilities Generation at ETP Bio sludge -	158.60MT	230.15MT
(C) (1) Quantity recycled or reutilized within the unit	Nil	Nil
(2) Sold	Nil	Nil
(3) Disposal - Incinerable substances -	Entire quantity disposed through incineration	Entire quantity disposed through incineration
Bio sludge -	Entire Quantity disposed off into SLF	Entire Quantity disposed off into SLF

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Part – F

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

A typical laboratory analysis report of the Chemical & Oily Sludge is given hereunder :

Date of result	SAMPLE SOURCE	PARAMETERS	RESULTS %,wt
20.02.2020	ETP (Ex Chemical & Oily sludge Centrifuge)	Moisture Content	87.90
		Oil Content	3.60
		Organic & Volatile Matter	6.20
		Iron	0.17
		Sodium	0.14
		Sulphide	0.20
		Phenol	0.002
		SiO ₂ & Trace metals	0.016
		Chloride	0.90
		Calcium	0.29
		Magnesium	0.09
		Manganese	0.010
		Nickel	0.0010
		Sulphate	0.42
		Zinc	0.0572
		Lead	0.0002
		Copper	0.0011
Co	0.0003		

Disposal practice adopted for both categories of wastes:-

Numaligarh Refinery , popularly known as the “Accord Refinery” has been set up in the district of Golaghat, Assam as the part of fulfillment of the commitment made by the Govt. of India in the historic Assam Accord for providing the thrust towards industrial and economic development of North-East. Environment management initiatives of Numaligarh Refinery is guided by the principle of sustainable development and its corporate vision statement of committing itself to attain the excellence in environment management with a prime focus on management of environment. In its quest for environmental excellence and continual improvement, NRL has been pursuing a focused programme towards environment protection

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through well defined objectives and has taken up several initiatives that has been implemented in well defined and systematic manner. NRL being an energy efficient & environment friendly refinery, committed to control of all kinds of pollution & protection of natural environment.

- Numaligarh Refinery was conceptualized as one of the most Environment friendly Refinery in the country. Right from its inception, conscious efforts have been taken at every stage to preserve the environment and to attain the excellency in Environment Management. A fully functional "Environment Cell" is continuously working for improvement, monitoring, safe-guarding and reporting of environmental activities.

A proper solid waste management procedure is in place at Numaligarh Refinery to deal with storage / disposal of the solid wastes (hazardous /non hazardous) generated due to operation of refinery. As a part of the operation of the refinery, some amount of solid wastes are generated - to manage and to deal with the same, an environment friendly & proper solid waste management system has been prepared and as per the laid down procedure hazardous /non hazardous solid waste are handled. Considering the activities related to waste management, NRL Management has delineated a solid waste management plan with the following objective -

1. To protect human health and natural environment from the hazards posed by waste disposal.
2. To conserve energy and natural resources through waste recycling and recovery.
3. To reduce /eliminate, as far as possible, the generation of solid wastes including hazardous wastes.
4. To ensure proper management of solid wastes which protect the human health and the environment.

In-built measures had been adopted to minimize, control pollution and generation of waste in all the units with proper collection and disposal system. Adequate segregation, collection and treatment facilities for wastewater for centralized treatment has been provided to meet the stringent standards laid down in the latest MoEF Notification. An environmentally compatible management system for disposal of the ETP hazardous wastes i.e. Chemical & Oily sludge through Secure Land Fill has been developed inside the refinery premises . Types of Hazardous solid waste like - Chemical & Oily sludge which is generated at different sections of Effluent Treatment Plant (ETP) are collected in a sludge thickener through sludge collection system . Floating oil with water from the thickener, is recycled back to the Inlet Receiving Sump (IRS) of ETP for further processing and oil recovery. The thickened sludge from the bottom of the thickener is taken to the centrifuge feed sump for feeding to the specifically designed

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