सेल SAIL

Steel Authority of India Limited
Rourkela Steel Plant
Rourkela – 769011
Fax : 0661-2510183

Ref. No. : 691/EE/1/357
Date : 21/09/2020.
22

Respected Sir,

Sub : Environmental Statement of Rourkela Steel Plant & Captive Power Plant#1 for the year 2019-20

Please find enclosed herewith the Environment Statement of Rourkela Steel Plant including Captive Power Plant for the year 2019-20 for your kind information and necessary action.

Thanking you sir,

With kind regards,

Yours faithfully,

21/9/2020

(S.N Xess)
GM I/c (Env. Engg. Department)

Encl : As above

To :

The Member Secretary,
State Pollution Control Board,
A/118, Nilakantha Nagar,
Unit-VIII,
Bhubaneswar – 1

FORM – V

Environmental Statement
for the financial year ending 31st March, 2020

Part – A

I.	Name and address of the owner/occupier of the industry operation or process	:	Sri P K Dash Executive Director (Works) M/s SAIL – Rourkela Steel Plant Rourkela.
II.	Industry Category	:	Primary & Secondary
III.	Production Capacity	:	4.2 MTPA Crude Steel & 100 MW Captive Power Generations
IV.	Year of Establishment	:	1959
V.	Date of last Env. Statement submitted	:	10/09/2019.

Part – B

Water and Raw Material Consumption

1. **Water & Consumption :**

Year →	2019-20	2018-19
Water Consumption	48,759 m3/day	49164 m3/day
Process	1,066 m3/day	1052 m3/day
Cooling	32,257 m3/day	32356 m3/day
Domestic	15,436 m3/day	15756 m3/day

Name of Product	Process water consumption per unit of product output (including cooling)	
	During the current financial year 2019-20	During the previous financial year 2018-19
Crude Steel	3.81 m^3/Tonne of Crude Steel	3.66 m^3/Tonne of Crude Steel
Power Generation	3.27 m^3/Tonne of Steam	5.98 m^3/Tonne of Steam

2. **Raw Material Consumption :**

Name of Raw Material	Name of Product	Consumption of Raw Material per unit of output	
		During the current financial year 2019-20	During the previous financial year 2018-19
Iron Ore	Crude Steel	1.753 T/TCS	1.770 T/TCS
Coal		0.846 T/TCS	0.802 T/TCS
Lime Stone		0.338 T/TCS	0.310 T/TCS
Dolomite		0.231 T/TCS	0.222 T/TCS
Boiler Coal	Steam generated from Captive Power Plant	0.073 T/T of Steam	0.057 T/T of Steam
Mixed Gas		64.12 Nm3/ T of Steam	64.97 Nm3/ T of Steam
Blast Furnace Gas		226.81 Nm3/ T of Steam	276.58 Nm3/ T of Steam
Furnace Oil		0.084 Kg/ T of Steam	0.095 Kg/ T of Steam

Part – C

Pollution discharge to Environment/unit of output
(Parameter as specified in the consent order)

(a) Total Water pollution load discharged from Plant :

Parameter	Qty. of pollutant discharged (Kg/day)	Concentrations of pollutants in discharges (mass/volume)	Norm	% of variation from prescribed standards(-VE)
SS	469.52	20.2 mg/lit	100	-79.8%
TDS	5004.32	215.3 mg/lit	2100	-89.75%
BOD	264.51	11.38 mg/lit	30	-62.07%
COD	808.87	34.8 mg/lit	250	-86.08%
Oil & grease	22.08	0.95 mg/lit	10	-90.5%
Iron	40.90	1.76 mg/lit	3.0	-41.34%
Total Chromium	0.23	0.01 mg/lit	2.0	-99.5%

(b) Total Air Pollution load discharged from all major stacks:

Parameter	Qty. of pollutant discharged (Kg/day)	Concentrations of pollutants in discharges (mass/volume)	% of variation from prescribed standards with reasons
Stack emission load (Particulate Matter)	6519.6	35.09 mg/Nm3	- 29.83 % • The norms for stack emissions are different from different shops ranging from 50 mg/Nm3 (Coke Oven Stacks) to 150 mg/Nm3 (Sintering Plant stacks). • For calculation purpose the stringent norms i.e., 50 is considered.

Part – D

Hazardous Waste : As specified under Hazardous Waste (Management & Handling) Rules, 1989 and amendment thereof in 2008.

a) From Process :

SN. as per HW Authorization order	Hazardous Waste	Total Quantity (Ton/Year)	
		During the current year 2019-20	During the previous year 2018-19
1	Used/spent oil	34.6 Ton/Yr	42.2 Ton/Yr
4	Zinc Fines/ Dust/Ash/Skimmings	489.5 Ton/Yr	531.8 Ton/Yr
5	Acid Residues during pickling/ surface cleaning of coils in cold rolling mills	50Ton/Yr	50Ton/Yr
7	Spent bath/ sludge containing Sulphide, Cyanide and Toxic metals	Nil	Nil
9	Decanter Tank Tar Sludge	60 Ton/Yr	60 Ton/Yr
10	Process acidic residues, dusts or filter cakes	Nil	1Ton/Yr
15	Sulphur Muck	Nil	Nil
16	Damaged Refractory lining & residue from furnace	15 Ton/Yr	20 Ton/Yr
18	Nickle compound	1 Ton/Yr	Nil
19	Waste Asbestos	Nil.	0.5 Ton/Yr

b) From Pollution Control Facilities:

2	Wastes/ Residues containing oil	300 Ton/Yr	448 Ton/Yr
3	Tarry residues from coal chemical Dept	1 Ton/Yr	1 Ton/Yr
6	Tar storage tank residue generated from cold rolling mill	Nil	Nil
8	Tar storage tank residue generated from Coal Chemical Dept	10	1 Ton/Yr
11	Spent Catalyst	Nil	2 Ton/Yr
12	Spent Solvents	Nil	0.5 Ton/Yr
13	Spent Ion Exchange resin containing toxic metal	Nil	5 Ton/Yr
14	Chemical sludge from Waste Water Treatment	273 Ton/Yr	120 Ton/Yr
17	Rejected Sand	5 Ton/Yr	15 Ton/Yr
20	Flue gas cleaning residue	22,521 Ton/Yr	19,000 Ton/Yr
21	Gas Cleaning Plant(GCP) Sludge of LD Furnace	62,569 Ton/Yr.	65,878 Ton/Yr.

Part – E

Solid Wastes

SN.	Solid Waste	Total Quantity Ton/Yr	
		During current year 2019-20	During previous year 2018-19
a	Generation from Process		
	Blast furnace slag	13,75,999	11,24,893
	SMS slag	5,75,415	5,98,557
	Mill scale	52,905	54,073
	Acetylene sludge	0	0
	Bottom Ash/Cinder	46,768	42,107
b	Generation from Pollution Control facility		
	SMS sludge	62,569	65,878
	Fly Ash	1,02,350	76,915
c	Quantity Recycled/Reutilized within the unit		
	Mill scale	52,905	54,073
	SMS slag	1,41,555	1,14,215
	SMS sludge	797	6,950
	Fly Ash	1,02,350	76,915
	Bottom Ash/Cinder	46,768	42,107
d	Quantity Sold		
	BF slag (granulated)	13,75,999	11,24,893
	Rejected bricks	1,871	807
	Acetylene sludge	0	0
	SMS sludge	42,283	14,392
	SMS slag	184	0
	Fly Ash (Given free of cost)	19.6	145.06
	Bottom Ash/Cinder	Nil	Nil
e	Disposed		
	BF slag (Air cooled)	Nil	Nil
	SMS slag	4,33,860	4,84,342
	Rejected bricks	0	0
	Fly Ash	Nil	Nil
	Bottom Ash/Cinder	Nil	Nil

Part –F

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

SN.	Hazardous Waste	Composition	Quantum	Disposal practices
1	Tar Residue from Gas Trap & Scale	Not available	Given in Part- D a& b	Disposed in Hazardous waste pit .
2	Used Oil			Sold to outside agencies having registration with MOEF/SPCB
3	Oily Sludge/Waste contaminated with oil			Recycled/reused inside RSP/Kept in impervious pit
4	Zink Dross			Sold to outside agencies having registration with MOEF/SPCB
5	Pickling Tank Sludge			Disposed in Hazardous waste pit .
6	Tin Plating Line Sludge			Disposed in Hazardous waste pit .
7	Acid Tar			Disposed in Hazardous waste pit .
8	Decanter Tar Sludge			Recycled/Reused inside RSP
9	Catch Pit Sludge/Tarry waste			Disposed in Hazardous waste pit .
10	Acid Storage Tank Sludge			Disposed in Hazardous waste pit .
11	V2O5 Catalyst			Disposed in Hazardous waste pit .
12	Cleaning Solvent Sludge			Disposed in Hazardous waste pit .
13	DM Plant Neutralization Sludge			Disposed in Hazardous waste pit .
14	Chemical sludge from Waste Water Treatment			Disposed in Hazardous waste pit .
15	Sulphur Muck			Disposed in Hazardous waste pit .
16	Damaged Refractory lining & residue from furnace			Disposed in Hazardous waste pit .
17	Tin Ash			Disposed in Hazardous waste pit .
18	Dichromate Sludge			Disposed in Hazardous waste pit .
19	Non Ferrous Waste			Disposed in Hazardous waste pit .
20	Bag Filter Dust			Disposed in Hazardous waste pit .
21	Rejected Sand			Disposed in Hazardous waste pit .
22	Sand Blasting Bag filter Dust			Disposed in Hazardous waste pit .
23	Grinding Waste			Disposed in Hazardous waste pit .
24	Waste Asbestos			Disposed in Hazardous waste pit .
25	Flue gas residue			Recycle in Sinter Plant through OBBP

II) Solid Waste :

SN.	Solid Waste	Quantity of Generation (Tons)	Composition	Disposal methodology
1)	BFc. Slag	13,75,999	SiO2 – 17.8%; Sl2O3 – 34.6%; CaO – 9.7%; MgO – 0.58%; FeO – 0.12%, MnO5 – 0.49%	Sold to cement manufacturers.
2)	SMS Slag	5,75,415	FeO - 23.2% SiO2 – 11.7% CaO – 46.3% MnO – 0.7% Al2O3 – 1.4% P2O5 – 5.7% TiO2 – 2.6%	Recycled back to process for steel making, used as pavement material, rail ballast etc.
3)	Mill Scale	52,905	FeO - ~ 98%	Recycled back to steel making process
4)	Acetylene Sludge	0	CaO ~ 65%	Sold to external agencies for use for white washing.
5)	SMS Sludge	62,569	Total Iron – 66% SiO2 – 6.1% Al2O3 – 0.6% CaO – 18% P2O5 – 6% MnO – 0.26% TiO2 – 0.8%	Sold to external agencies for making pellets.
6)	Fly Ash, Bottom Ash & cinder	1,02,350	SiO2 : 60 – 64% Al2O3 : 12 – 23% TiO2 : 1.5% Fe2O3 : 8 – 19% Na2O : 0.1 – 0.2% MgO : 1-3.5%	Given to fly ash brick manufactures free of cost, used for reclamation of low lying areas and used for making embankments.

Part – G

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

Department / Measure	Level of Pollution		Remark	Cost (Rs. in Lakhs)
	Before	After		
Installation of Air Pollution control Systems in vertical Kiln#2, #3 & #4 of Calcining Plant#2	The old DE system outlived their life, resulting high stack emissions	Reduction of Stack emissions	Commissioned successfully	Rs. 520 Lakh
Installation of Dog House – Secondary emission control systems in BOF#1 & BOF#2 of SMS#2	High shop floor emissions	Reduction of secondary emissions and fugitive emissions	Commissioned successfully	Rs. 470 Lakh

Part – H

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

- **Augmentation of 20 no. of Continuous Emission Monitoring Systems (CEMS) – dust by providing remote calibration facility. – Rs. 60 Lakhs.**
- **Tree plantation inside the steel plant premises – 1,01,456 nos.**

PART – I

Any other particulars for improving the quality of the environment.

Tree Plantation :

Description	2019-20	2018-19
Tree plantation in and around Rourkela Steel Plant	1,16,397	1,02,870
Free distribution of saplings in Educational institutions and peripheral villages	30,000	1 lakh