EMD/C-23/168/22
September 22, 2022

The Member Secretary
Jharkhand State Pollution Control Board
T.A. Division Building, HEC Campus, Dhurwa
RANCHI – 834004

Subject: Environmental Statement 2021-2022 for Tata Steel Limited - Main Works, Jamshedpur

Dear Sir,

This has reference to the captioned subject. Please find enclosed the **"Environmental Statement"** for Tata Steel Limited - Main Works, Jamshedpur for the year 2021-2022 duly filled in the prescribed format is enclosed for your kind consideration.

Thanking you

Yours faithfully,
For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Head, Environment Monitoring Testing & Analysis (TSJ)

Encl: As Above

Copy to: Regional Officer, Jharkhand State Pollution Control Board, Adityapur, Jamshedpur – 831013

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Environment Management Jamshedpur 831 001 India
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Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

ENVIRONMENTAL STATEMENT
FOR THE YEAR 2021-2022

Main Steel Works
TATA STEEL LIMITED

Submitted by:
ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR-831001
JHARKHAND

[Form V]

Environmental Statement for the Financial Year ending 31st March 2022

PART-A

(i)	**Name & address of the owner/occupier of the industry operation or process:**	Mr. T.V. Narendran Managing Director- Tata Steel India & Southeast Asia Tata Steel Limited Jamshedpur-831001 Jharkhand
(ii)	**Industry Code**	3312
	Primary STC Code:	Metallurgical industry
	Secondary SIC Code	Integrated Iron & Steel Industry
(iii)	**Production Capacity**	Production Capacity-11 MTPA Crude Steel 10.24 million Tons Crude Steel Production during 2021-22 (Major units are: RMM, Blast Furnaces, Coke ovens, Sinter Plants, Pellet Plant, LD Shops, HSM, CRM, WRM, MM, NBM, CAPL*, Captive Power Plants, JAMIPOL** and Utilities) **CAPL is being owned and operated by M/s Jamshedpur Continuous Annealing and Processing Company (JCAPCPL), a joint venture formed by Tata Steel and Nippon Steel and Sumitomo Metal Corporation (NSSMC) to manufacture and market high-quality, automotive- grade continuous annealed products inside premises of Jamshedpur steel works.* ***Lime Grinding Plant and Bentonite Grinding Plant of JAMIPOL is a joint venture of Tata Steel inside premises of Jamshedpur steel works.*
(iv)	**Year of Establishment**	1907
(v)	**Date of last Environment Statement submitted**	September 22, 2021 vide letter no. EMD/C-23/249/21

PART-B

WATER & RAW MATERIAL CONSUMPTION

i) Water Consumption (m^3/day)

Water Consumption	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Industrial Consumption (inside Works as Makeup water)	54,497	61,214
Domestic Consumption (Inside Works as drinking water)	10,586	10,071

Name of the product	**Process water consumption/unit of product output (m^3/tcs)**	
Crude Steel	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Specific Water Consumption	2.25	2.18

ii) Raw Material Consumption (Works):

Name of raw material	**Name of products**	**Consumption of raw material per unit of output (kg/ton of crude steel)**	
		During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Iron Ore	Crude Steel	1682.9	1644.0
Coking Coal		599.8	621.2
Limestone		316.2	318.7
Non-Coking Coal		208.7	3171.9
Dolomite & Pyroxenite		82.2	129.6
Purchase Pellet		1.0	1.4
Quartzite and Other materials		6.3	6.9
Zinc & Zinc Alloys		0.7	0.7
Ferro Manganese - High Carbon Lumps		0.8	0.7
Ferro Manganese - Medium Carbon		1.6	1.6

PART-C

Pollution Discharged to Environment/Unit of Output
(Parameter As Specified in the Consent Issued)

(i) Works:

Pollutants	**Quantity of pollutants discharged (mass/day)**		**Concentrations of pollutants discharged (mass / volume)**		**% of variation from prescribed standards**
	(Tons/day)		**(mg/L)**		**In %age (referring CTO)**
(a) Water	**2020-21**	**2021-22**	**2020-21**	**2021-22**	**2021-22**
TSS	0.858	0.949	43.7	72	-28%
COD	1.779	2.070	91.4	128	-49%
Ammonia as N	0.103	0.087	6.0	6.0	-88%
BOD	0.189	0.179	9.8	10	-67%
Oil & grease	0.067	0.029	3.3	1.5	-85%
Phenols	0.004	0.003	0.2	0.3	-70%
Cyanide as CN^-	0.003	0.003	0.1	0.17	-15%
(b) Air	**2020-21**	**2021-22**	**2020-21**	**2021-22**	**2021-22**
	(Tons/day)		**(mg/Nm^3)**		
PM	7.39	7.253	12.91	15.2	-90%
SO_2	15.76	16.769	67.63	72.6	-
NOx	14.99	16.351	80.40	84.70	-

Effluent Quality (2021-22)

Parameter	**UoM**	**Norms**	**Susungaria Drain**		
			Max	**Min**	**Avg**
pH	-	6.0-8.5	8.4	7.2	7.9
Total Suspended solids	mg/L	100	97	17	54.3
Oil & Grease	mg/L	10	3.6	0.1	1.6
Ammonical Nitrogen (as N)	mg/L	50	28.2	0.2	5
Free Cyanide (as CN^-)	mg/L	0.2	0.19	0.04	0.16
Biological Oxygen Demand, BOD	mg/L	30	16.2	4.5	10.1
Chemical Oxygen Demand, COD	mg/L	250	230	42	118.4
Phenol	mg/L	1	0.9	0.01	0.2

Ambient Air Quality (2021-22)

Parameter	UoM	Norm	Near west plant first aid station (WPFA)			Near Cold roll mill (CRM)			Near Power House # 3 Gate			Near Power House # 6 Gate		
			Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg
Particulate Matter, PM_{10}	µg/m³	100	268.4	74.8	163.3	368	81	237.4	386.6	63.4	246.3	339.9	52.2	194.1
Particulate Matter, $PM_{2.5}$	µg/m³	60	83.9	28.1	53	95.3	33.4	66.1	97.4	22.9	69.3	85.3	19.2	59.6
Sulphur Dioxide (SO_2)	µg/m³	80	15.3	2.9	9.1	20.3	4	10.7	15.3	4.5	8.8	21.8	3.8	11.7
Nitrogen Dioxide, (NO_x)	µg/m³	80	60.5	24.5	42.8	66.2	25	39.8	67.1	14.1	38.2	65.5	12.7	35
Carbon Monoxide (CO)	µg/m³	2000	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.3	0.4
Ammonia (NH_3)	µg/m³	400	102.2	48.4	66.6	88	37.7	58.3	102.9	0	48.7	111	7.1	61.8
Ozone (O_3)	µg/m³	100	18.3	3.8	9.7	20.5	1.6	9.5	21	0	8.7	25.8	1.5	9.1
Nickel (Ni)	µg/m³	1.0	4.3	3.6	4	4.6	4.1	4.4	3.7	3.3	3.5	4.1	3.7	3.9
Arsenic (As)	ng/m³	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Lead (Pb)	ng/m3	20.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1
Benzene (C6H6)	µg/m3	5.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo alpha Pyrene (BaP)	ng/m3	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

PART-D

Hazardous Waste
[As Specified under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016]

Hazardous Waste	Total Quantity (Tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
(a) From Process		
Kiln Dust	17,196	18,862
GCP Sludge*	5,10,322	5,65,567
Mill Scale	91,208	99,412
Mill Sludge	2,147	2,499
Waste Oil	2099	2,325
Waste Grease	160.7	185
Fe bearing Muck	14,397	13,531
Muck Waste	9406	5,846
Tar Sludge	2858	1,946
Zinc dust Ash	197	158
Iron Oxide	8482	10,948
Iron Hydroxide Sludge	309.3	357
Chrome Sludge	0.125	73.5
(b) From Pollution Control Facilities		
APCE Dust	1,46,292	163,051
BOD Sludge	567	396
*GCP Sludge includes Sludges from LD Shops and Blast Furnaces		

PART-E

Solid Waste

Total Quantity Generated

Name of the Waste	**Total Quantity Generated (tonnes)**	
(a) From Process	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	38,93,580	43,51,309
LD Slag	15,04,717	16,14,344
Lime Fines	1,99,282	2,14,666
(b) From Pollution Control Facilities- Nil		

(c)(1). Total Quantity Recycled/ Reutilized within the unit

Name of the Waste	Total Quantity Recycled/ Re utilized within the unit (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	288	14,018
LD Slag	5,64,728	3,39,308
Lime Fines	1,79,804	1,96,088

(c)(2). Total Quantity Sold

Name of the Waste	Total Quantity Sold (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	40,56,484	43,05,189
LD Slag	10,42,293	15,33,948
Lime Fines	15,993	17,772

(c)(3). Total Quantity Disposed

Name of the Waste	Total Quantity Disposed (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2020-21)
BF Slag	0	0
LD Slag	0	0

PART-F

Chemical Composition of majority of waste as produced in process of Tata Steel's operation is given below:

Name of Wastes	Chemical Composition (%)	Disposal Method
Coal Tar Sludge	C – 90-95; Moisture – 1.3 S – 0.3-0.7; CV – 8800 KCal/kg Sp. Gr. – 1.2; Ash – 0.04-0.05	Mixed with coal & used in Coke Plant
BOD Sludge	VM – 50; Ash – 26 Moist. – 20; CV – 5800 KCal/kg	Mixed with coal & used in Coke Plant
B F Slag	CaO – 32; MgO – 9 SiO_2 – 34.5; MnO – 0.25 P_2O_3 – Nil; Al_2O_3 – 1.2 S – 1.4; TiO_2 – 1.2; FeO – 0.33	• Sold to cement plant • Used in construction

Name of Wastes	Chemical Composition (%)	Disposal Method
GCP Sludge from Blast Furnace	Fe(T) – 33.65; MnO – 0.14 CaO – 3.45; Al_2O_3 – 3.64 SiO_2 – 6.40; S – 0.230; P_2O_5 – 0.307 TiO_2 – 0.30; MgO – 1.40 Alkali – 0.5 to 0.7; C – 21-24	• Used in Sinter Plant • Used in Pellet Plant
L D Slag	Fe(T) – 18-25; MgO – 1-2 CaO – 45-55; MnO – 0.5-1.0 SiO_2 – 10-12; Al_2O_3 – 0.8-1.0 P_2O_5 – 3.5-4.0; S – 0.2 TiO_2 – 0.8-1; Alkali – 0.18	• Used in construction • Used in Sinter Plant
GCP Sludge from LD Shops	Fe(T) – 55 to 60; MgO - <1.0 CaO – 10-15; MnO - <0.5 SiO_2 – 1.5-2.0; Al_2O_3 - <0.5 P_2O_5 – 0.29; TiO_2 - <0.1	• Used in Sinter Plant
Mill Scale	Fe(T) – 72-75; MnO - <0.5 SiO_2 - <0.5; Al_2O_3 - <0.5 MgO – 0.1; Oil – 10-12	• Used in Sinter Plant
Mill Sludge	Fe(T) – 42.76; MgO – 0.35 CaO – 0.65; MnO – 0.27 SiO_2 – 1.12; Al_2O_3 – 0.50 P_2O_5 – 0.089; TiO_2 – 0.03 Cr_2O_3 – 0.03; Oil – 10-12	• Used in Sinter Plant
Lime Fines	CaO – 66.5; Al_2O_3 – 0.26 SiO_2 – 1.53; MgO – 5.68	• Sold • Used in Sinter Plant

PART-G

Sl. No.	Pollution abatement Measures taken in 2021-22	Impact on conservation of natural resources & others
1	Effluent recycling facility	Reduction of specific water consumption to be continued
2	Installation of APCE	Reduction in specific PM emission and to be continued
3	Green Belt Development	We have planted approx. 1,34,738 nos. saplings during April 2021 to March 2022 inside the works, Township and JMD area. Every year plantation done in available space. The following plant species are being planted: *Ficus, karanj, Cicilipinia, Palm, Ashoka, Mahogany, Caesalpinia Arjun, Sita Ashok, Bakul, Spathodia, Kanchan, Jural, Tabulia, Sissam, Termanelia Sp., Arica palm, foxtail palm, Tecoma, Kannel, Tababia, Ghandhraj, calendra, Tagar, Hemelia, Kamani, Karbi, Calendra* etc.

Details of Plantation (nos.) done during April 2021 – March 2022

Month	Plantation in Town and JMD	Plantation in Works	Species
Apr-21	125	270	-
May-21	250	580	-
Jun-21	11144	560	*Kadam,Arjun, Bixa, Bakul, Cesselpiniya , Tecoma, Neem, Karanj, Simarouba glauca, Lakshmi taru, Amaltas*
Jul-21	17046	730	*Neem, Cesselpiniya Bakul, Champa, Arjun, Karanj, Ashoka, Karam*
Aug-21	30384	1305	*Neem, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Karam Peltaform, Tababia*
Sep-21	30142	897	*Tababia, palida, Neem, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Karam, Peltaform, Kanchan*
Oct-21	30160	347	*Bakul, Karnaj, Tababiya*
Nov-21	2874	470	*Bakul, Arjun, Karanj, Baken, Sirish, Gulmohar, Arjun, Jacaranda, Peltaform, Tababia*
Dec-21	133	3737	*Bottel brush, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Peltaform, Tababia, Tababiya*
Jan-22	150	676	*Sita Ashok, Bakul, ficus, Bottelbrush, Ashok, Simarobuagloca, foxtail palm,Syzyiem, Phonex palm, juniperious*
Feb-22	1534	732	*Hara, Behra, Ashoka, foxtail palm, Syzygium, Phonex palm, juniperious, Arjun, Tejpata*
Mar-22	134	358	*Arica Palm, Foxtail Palm, Harsingra, Jatropha, Arjun, Hara, Bahara, Sita Ashok, Ashoka, Acacia biflora, Tacoma*
Total	**1,24,076**	**10,662**	**Total= 1,34,738**

PART-H

Additional Measures Investment Proposal of Environmental Protection Including Abatement of Pollution

- Upgradation of the existing pollution control equipment to bring down dust level
- New pollution control equipment is with more stringent design emission value
- Improvement in water recycling facility for reducing the wastewater discharge
- Upgradation of Central Effluent Treatment Plant for effluent treatment from 4 MGD to 9 MGD is under progress.

PART-I

Any other particulars for improving the quality of environment

- All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant.
- LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works.
- BF Slag is being granulated through online slag granulation facilities available at BFs and made available to the Cement plants for cement making.
- Zero effluent discharge (ZED) has been achieved in 4 out of 5 designated outlets. Action plan to achieve ZED in remaining one is under progress.
- Energy efficiency improvement in operations of TSJ Works by installing Variable Frequency Drive and Back Pressure Turbo Generator.