



Dr. Amit Ranjan Chakraborty
Chief Environment Management

EMD/C-23/408/20
September 18th, 2020

The Member Secretary

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

**Subject: Environmental Statement 2019-2020 for Tata Steel Limited –
Main Steel Works, Jamshedpur**

Dear Sir,

This has reference to the captioned subject. Please find enclosed the **“Environmental Statement”** for Tata Steel Limited– Main Steel Works, Jamshedpur including JCAPCPL for the year 2019-2020 duly filled in the prescribed format is enclosed for your kind consideration.

Thanking you

Yours faithfully,
For Tata Steel Limited

Dr. Amit Ranjan Chakraborty
Chief, Environment Management

Encl: As Above

Copy to: Regional Officer, Jharkhand State Pollution Control Board,
Adityapur, Jamshedpur – 831 013

TATA STEEL LIMITED

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**ENVIRONMENTAL STATEMENT
FOR THE YEAR 2019-2020**

**Main Steel Works
TATA STEEL LIMITED**

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

Environmental Statement – 2019-20

[Form V]

Environmental Statement for the Financial Year ending 31st March 2020

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	10.2 Million Tons Crude Steel Production during 2019-20 (Major units are: RMM, Blast Furnaces, Coke ovens, Sinter Plants, Pellet Plant, LD Shops, HSM, CRM, WRM, MM, NBM, CAPL*, Captive Power Plant and Utilities, JAMIPOL**) <i>*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, JAMIPOL a joint venture of Tata Steel</i>
(iv)	Year of Establishment	1907
(v)	Date of last Environment Statement submitted	September 20, 2019 vide letter no. EMD/C-23/209/19

PART-B

WATER & RAW MATERIAL CONSUMPTION

i) Water Consumption (m³/day)

Water Consumption	During the previous Financial Year (2018-19)	During the current Financial year (2019-20)
Industrial Consumption (inside Works as Makeup water)	91,540	78,212
Domestic Consumption (Inside Works as drinking water)	10,680	10,691

Name of the product	Process water consumption/unit of product output (m³/tcs)	
Crude Steel	During the previous Financial Year (2018-19)	During the current Financial Year (2019-20)
Specific Water Consumption	3.27	2.80

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 (2018-19)	During the current Financial year (2019-20)
Iron Ore	Crude Steel	1662.8	1645.8
Coking Coal		612.4	575.0
Lime Stone		301.7	303.3
Non-Coking Coal		210.2	222.7
Dolomite & Pyroxenite		105.0	95.4
Purchase Pellet		34.8	23.8
Purchase Coke		-	-
Middling Coal		0.4	-
Quartzite and Other materials		7.8	8.2
Zinc & Zinc Alloys		1.0	0.9

Environmental Statement – 2019-20

Ferro Manganese - High Carbon Lumps		0.9	0.7
Ferro Manganese - Medium Carbon		1.5	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)		
(a) Water	2018-19	2019-20	2018-19	2019-20	2019-20
TSS	1.069	0.942	36.24	39.47	-
COD	2.046	1.580	94.83	64.57	-
Ammonia as N	0.201	0.093	15.88	4.22	-
BOD	0.281	0.193	12.3	8.26	-
Oil & grease	0.074	0.104	2.75	4.33	-
Phenols	0.005	0.005	0.21	0.20	-
Cyanide as CN ⁻	0.003	0.003	0.15	0.14	-
(b) Air	2018-19	2019-20	2018-19	2019-20	2019-20
	(Tons/day)		(mg/Nm³)		
PM	10.35	9.12	19.9	15.64	-
SO ₂	18.02	20.78	106.4	105.90	-
NO _x	19.72	20.16	114.7	102.43	-

Environmental Statement – 2019-20

(c) Effluent Quality (2019-20)

Parameter	UoM	Norms	Susungaria Drain			HSM Drain		
			Max	Min	Avg	Max	Min	Avg
Ammoniacal Nitrogen (as N)	mg/L	50	24.26	0.16	3.11	39.82	0.7	5.33
Free Cyanide (as CN ⁻)	mg/L	0.2	0.17	0.01	0.15	0.16	0.03	0.13
Phenolic compounds (as C ₆ H ₅ OH)	mg/L	1	0.89	0.01	0.26	0.5	0.01	0.15
Oil & Grease	mg/L	10	6.8	1.2	4.4	7	1.2	4.26
Total Suspended solids	mg/L	100	96	4	39.4	94	6	39.5
Chemical Oxygen Demand, COD	mg/L	250	240	28	67.4	176	22	66
Biological Oxygen Demand, BOD	mg/L	30	24.2	3.1	8.3	25.6	3.1	8.1
pH	-	6.0-8.5	8.47	7	7.78	8.48	6.72	7.98
Parameter	UoM	Norms	BOT Plant Treated Effluent					
			Max	Min	Avg			
Ammoniacal Nitrogen (as N)	mg/L	50	19.68	0.16	1.91			
Free Cyanide (as CN ⁻)	mg/L	0.2	0.18	0.07	0.15			
Phenolic compounds (as C ₆ H ₅ OH)	mg/L	1	0.49	0.01	0.15			
Oil & Grease	mg/L	10	8	1.2	4.27			
Total Suspended solids	mg/L	100	95	11	45.7			
Chemical Oxygen Demand, COD	mg/L	250	246	101	188.2			
Biological Oxygen Demand, BOD	mg/L	30	25.8	6.4	20.2			
pH	-	6.0-8.5	8.45	6.56	7.32			

Environmental Statement – 2019-20

(d) Ambient Air Quality (2019-20)

Parameter	UoM	Norm	WEST PLANT FIRST AID STATION (WPFA)			COLD ROLL MILL (CRM)			POWER HOUSE # 3 GATE			POWER HOUSE # 6 GATE		
			Max.	Min.	Avge	Max.	Min.	Avge	Max.	Min.	Avge	Max.	Min.	Avge
Particulate Matter, PM₁₀	µg/m ³	100	260.5	61	142	294.1	61	175.8	385.1	80	223	274.5	88	174.4
Particulate Matter, PM_{2.5}	µg/m ³	60	115.9	30	61.3	128.9	28	74.1	155.4	31	88.7	124	36	69.4
Sulphur Dioxide (SO₂)	µg/m ³	80	23	9	14.9	19.9	8	14.8	19	11	14.6	23.4	10.3	17.8
Nitrogen Dioxide, (NO_x)	µg/m ³	80	49	19	31.4	53	17.4	31.8	52	19.7	33.2	69	15.1	33.2
Carbon Monoxide(CO)	µg/m ³	2000	0.4	0.1	0.3	1.4	0.3	0.7	0.7	0.5	0.6	0.9	0.5	0.6
Ammonia (NH₃)	µg/m ³	400	148.2	43.4	73.3	140	41.1	82.6	95	44.2	66	214	35	103.2
Ozone (O₃)	µg/m ³	100	29.7	12	16.5	29.7	13.8	17.9	23	11	16.4	24	9	16.1
Lead (Pb)	µg/m ³	1.0	1.3	0	0.3	0.6	0	0.2	0.7	0	0.2	0.6	0	0.2
Arsenic (As)	ng/m ³	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Nickel (Ni)	ng/m ³	20.0	18.8	0.2	11.6	30.4	0.3	12.5	14.6	0.2	9	18.2	0.3	10.9
Benzene (C₆H₆)	µg/m ³	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/m ³	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 (2018-19)	During the current Financial year (2019-20)
(a) From Process		
Waste Oil	2543	3232
Tar Sludge	3435	6295
Zinc dust Ash	39.98	208
Iron Oxide	6792	12117
Iron Hydroxide Sludge	345	419.5
Chrome Sludge	1.4	2.0
Waste Grease	117	158.7
(b) From Pollution Control Facilities		
GCP Sludge*	5,08,966	5,35,499
BOT Sludge	821	288
*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)	
	During the previous Financial Year (2018-19)	During the current Financial year (2019-20)
(a) From Process		
BF Slag	41,24,476	41,55,373
LD Slag	17,42,810	17,04,502
Mill Scale & Mill Sludge	1,02,652	1,04,081
Lime Fines	2,12,283	2,13,417
Dolo & Kiln Dust	18,315	18,364
Bottom Ash	322	0
(b) From Pollution Control Equipment		
Process Dust	1,57,125	1,76,079
Fly Ash	1289	0

Environmental Statement – 2019-20

(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 (2018-19)	During the current Financial year (2019-20)
BF Slag	-	8,019
LD Slag	6,81,804	7,56,932
Mill Scale	99,855	1,01,204
Lime Fines	2,09,706	1,95,522
Dolo & Kiln Dust	18,431	18,407
Flue Dust	1,12,196	1,28,050
GCP Sludge	3,61,955	4,19,444
Mill Sludge	2,968	2,478

(c)(2) Total Quantity Sold

Name of the Waste	Total Quantity Sold (tonnes)	
	During the previous Financial Year (2018-19)	During the current Financial year (2019-20)
BF Slag	40,72,885	40,16,057
Lime Fines	12,075	18,250
GCP Sludge	93,741	19,390

(c)(3) Total Quantity Disposed

Name of the Waste	Total Quantity Disposed (tonnes)	
	During the previous Financial Year (2018-19)	During the current Financial year (2019-20)
BF Slag	-	96,800
Fly Ash + Bottom Ash	1,612	0
LD Slag	5,47,363	93,687

Environmental Statement – 2019-20

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 ₂ O ₃ – Nil; Al ₂ O ₃ – 1.2 S – 1.4; TiO ₂ – 1.2; FeO – 0.33	<ul style="list-style-type: none"> • Sold to cement plant • Used in construction
GCP Sludge from Blast Furnace	Fe(T) – 33.65; MnO – 0.14 CaO – 3.45; Al ₂ O ₃ – 3.64 SiO ₂ – 6.40; S – 0.230; P ₂ O ₅ – 0.307 TiO ₂ – 0.30; MgO – 1.40 Alkali – 0.5 to 0.7; C – 21-24	<ul style="list-style-type: none"> • Sold to Outside Parties • 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 ₂ O ₃ – 0.8-1.0 P ₂ O ₅ – 3.5-4.0; S – 0.2 TiO ₂ – 0.8-1; Alkali – 0.18	<ul style="list-style-type: none"> • 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 ₂ O ₃ - <0.5 P ₂ O ₅ – 0.29; TiO ₂ - <0.1	<ul style="list-style-type: none"> • Land Filling • Used in Sinter Plant
Mill Scale	Fe(T) – 72-75; MnO - <0.5 SiO ₂ - <0.5; Al ₂ O 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 ₂ O ₃ – 0.50 P ₂ O ₅ – 0.089; TiO ₂ – 0.03 Cr ₂ O ₃ – 0.03; Oil – 10-12	Used in Sinter Plant
Lime Fines	CaO – 66.5; Al ₂ O ₃ – 0.26 SiO ₂ – 1.53; MgO – 5.68	<ul style="list-style-type: none"> • Sold • Used in Sinter Plant

Environmental Statement – 2019-20

PART-G

Sl. No.	Pollution abatement Measures taken in 2019-20	Impact on conservation of natural resources & others
1	Effluent recycling facility	Reduction of specific water consumption to be continued
2	Green Belt Development	We have planted approx. 1,06,927 nos. saplings during April 2019 to March 2020 inside the works, Township and Jugsalai Muck Dump area. Every year plantation done in available space. The following plant species are being planted: <i>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</i> etc.

Details of Plantation (nos.) done during April 2019 – March 2020

Month	Plantation in Town and JMD	Plantation in Works	Species
Apr-19	1692	510	<i>Bakul, Ashoka, Arica, Palm</i>
May-19	2406	405	<i>Karanj, Mahogany, Tabbia, Karbi</i>
Jun-19	8916	750	<i>Bakul, Sita Ashoka, Arica Palm, Techoma, Karanj, Putranjiva Alstonia</i>
Jul-19	15777	627	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Karbi</i>
Aug-19	7191	506	<i>Kanchan, Calendra, Ashoka, Karbi, Hemelia, Ticoma, Aricapalm, Palm</i>
Sep-19	8052	645	<i>Cicilipania, Bakul, Putranjiva, Karanj, Tababia, Spathodia</i>

Environmental Statement – 2019-20

Oct-19	5088	410	<i>Bakul , Ashoka , Arica Palm, Techoma , Karanj ,Putranjiva, Bakul</i>
Nov-19	10928	410	<i>Bakul, Arica palm, Plumeria</i>
Dec-19	10005	510	<i>Bakul, Arica palm, foxtail palm</i>
Jan-20	21000	512	<i>Foxtail Palm, Bakul, Ashoka, Concorpous.</i>
Feb-20	5045	273	<i>Conocarpus, Ashoka, foxtail Palm, Arica Palm, Tacoma, Cicilipania</i>
Mar-20	4995	274	<i>Cezium, Thuja, golden juniperious Techoma , conocarpous</i>
Total	1,01,095	5,832	Total= 1,06,927

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 waste water discharge
- Commissioning of Central (Integrated) Effluent Treatment Plant for effluent treatment

PART-I

Any other particulars for improving the quality of environment

Clean technologies to be implemented	Current Status
Energy recovery of top Blast Furnace (BF) gas	TRT has been commissioned in G, H & I Blast Furnace.
De-dusting of Cast House at tap holes, runners, skimmers, ladle and charging points.	De-dusting facility in the cast house has been provided in Sinter Plant, G Blast Furnace.
To study the possibility of slag and fly ash transportation back to the abandoned mines, to fill up the cavities through empty railway wagons while they return back to the mines and its implementation.	None of our mines are abandoned so far. However, all the coal-fired boilers in Steel Works have been converted to gas firing.
Processing of the waste containing flux & ferrous wastes through waste recycling plant.	We have a metal recovery and slag processing plant for the same and such material is used in iron and steel making processes.
Implement rain water harvesting	Rainwater harvesting is in practice inside the Steel Works. Surface run-off is collected in cooling ponds/ catchments and pick up of fresh water from river is reduced during rainy seasons. Rainwater Harvesting has been installed in 38 locations (Steelenium Hall, SHE, MPDS, LD 3, new bar mill ECR, R&D and ITS Building) within Works.
Coke Dry Quenching at Coke Oven Battery 10 & 11	Coke Dry quenching (CDQ) facility is commissioned in the new Coke Oven Battery #10 and 11. The project is completed in FY'19.