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EMD/C-23/ 209 /19  
September 20<sup>th</sup>, 2019

Shubhanand Mukesh  
Head Environment Management

**The Member Secretary**

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

**Subject: Environmental Statement 2018-2019 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 for the year 2018-2019 duly filled in the prescribed format is enclosed for your kind consideration.

Thanking you

Yours faithfully,

**For Tata Steel Limited**

*Shubhanand Mukesh*

**Shubhanand Mukesh  
Head, 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 2018-2019**

**Main Steel Works  
TATA STEEL LIMITED**

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

# Environment Statement – 2018-19

[Form V]

**Environmental Statement for the Financial Year ending 31<sup>st</sup> March 2018**

## **Part A**

<b>(i)</b>	<b>Name &amp; address of the owner/occupier of the industry operation or process:</b>	Mr. T.V. Narendran Managing Director- Tata Steel India & Southeast Asia  Tata Steel Limited Jamshedpur-831001 Jharkhand
<b>(ii)</b>	<b>Industry Code</b>	3312
	<b>Primary STC Code:</b>	Metallurgical industry
	<b>Secondary SIC Code</b>	Integrated Iron & Steel Industry
<b>(iii)</b>	<b>Production Capacity</b>	10.22 Million Tons Crude Steel Production during 2018-19 (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)  <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.</i>
<b>(iv)</b>	<b>Year of Establishment</b>	1907
<b>(v)</b>	<b>Date of last Environment Statement submitted</b>	September 26, 2018 vide letter no. EMD/C-23/377/18

**Part B**

**WATER & RAW MATERIAL CONSUMPTION**

**i) Water Consumption (m<sup>3</sup>/day)**

<b>Water Consumption</b>	During the previous Financial Year (2017-18)	During the current Financial year (2018-19)
<b>Industrial Consumption</b> (inside Works as Makeup water)	1,00,464	91,540
<b>Domestic Consumption</b> (Inside Works as drinking water)	11,486	10,680

<b>Name of the product</b>	<b>Process water consumption/unit of product output (m<sup>3</sup>/tcs)</b>	
<b>Crude Steel</b>	During the previous Financial Year (2017-18)	During the current Financial year(2018-19)
<b>Specific Water Consumption</b>	3.68	3.27

**ii) Raw Material Consumption (Works):**

<b>Name of raw material</b>	<b>Name of products</b>	<b>Consumption of raw material per unit of output (kg/ton of crude steel)</b>	
		During the previous Financial Year (2017-18)	During the current Financial year (2018-19)
Iron Ore	Crude Steel	1734.4	1662.8
Coking Coal		418	612.4
Lime Stone		313.1	301.7
Non-Coking Coal		207.3	210.2
Dolomite & Pyroxenite		103.1	105.0
Purchase Pellet		10.6	34.8
Purchase Coke		-	-
Middling Coal		0.5	0.4
Quartzite and Other materials		6.69	7.8
Zinc & Zinc Alloys		4.1	1.0
Ferro Manganese - High Carbon Lumps		1.3	0.9
Ferro Manganese - Medium Carbon		1.3	1.5

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### 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	2017-18	2018-19	2017-18	2018-19	2018-19
TSS	1.210	1.069	27.37	36.24	-
COD	1.171	2.046	35.52	94.83	-
Ammonia as N	0.226	0.201	3.88	15.88	-
BOD	0.491	0.281	14.24	12.3	-
Oil & grease	0.036	0.074	0.78	2.75	-
Phenols	0.004	0.005	0.09	0.21	-
Cyanide as CN <sup>-</sup>	0.002	0.003	0.05	0.15	-
(b) Air	2017-18	2018-19	2017-18	2018-19	2018-19
	(Tons/day)		(mg/Nm <sup>3</sup> )		
PM	11.04	10.35	24.1	19.9	-
SO <sub>2</sub>	20.44	18.02	108.7	106.4	-
NO <sub>x</sub>	21.43	19.72	127.1	114.7	-

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**(c) Effluent Quality (2018-19)**

Parameter	UoM	Norms	Susungaria Drain			HSM Drain		
			Max	Min	Avg	Max	Min	Avg
Ammoniacal Nitrogen (as N )	mg/L	50	45.30	0.90	9.84	43.50	0.00	7.72
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2	0.20	0.08	0.15	0.19	0.01	0.12
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1	0.82	0.01	0.23	0.79	0.01	0.23
Oil & Grease	mg/L	10	8.80	1.00	3.26	9.60	0.10	3.24
Total Suspended solids	mg/L	100	98	7	51	97	10	39
Chemical Oxygen Demand, COD	mg/L	250	241	16	90	218	0	83
Biological Oxygen Demand, BOD	mg/L	30	30	3	11	27	3	11
pH	-	6.0-8.5	8.50	6.50	7.97	8.50	6.70	8.08
Parameter	UoM	Norms	Jugsalai Drain			BOT Plant Treated		
			Max	Min	Avg	Max	Min	Avg
Ammoniacal Nitrogen (as N )	mg/L	50	NT	NT	NT	49.40	0.20	30.07
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2	NT	NT	NT	0.20	0.05	0.17
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1	NT	NT	NT	0.61	0.01	0.20
Oil & Grease	mg/L	10	6.00	0.10	1.88	9.60	0.20	3.57
Total Suspended solids	mg/L	100	69	5	20	98	15	59
Chemical Oxygen Demand, COD	mg/L	250	216	10	61	249	64	198
Biological Oxygen Demand, BOD	mg/L	30	29	3	11	29	6	18
pH	-	6.0-8.5	8.50	6.40	7.75	8.50	6.40	7.58
Parameter	UoM	Norms	Ram Mandir Drain			Garam Nala		
			Max	Min	Avg	Max	Min	Avg
Ammonical Nitrogen (as N)	mg/L	50	Achieved Zero Effluent Discharge			NT	NT	NT
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2				NT	NT	NT
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1				0.71	0.08	0.20
Oil & Grease	mg/L	10				9.20	0.20	1.82
Total Suspended solids	mg/L	100				65	2	11
Chemical Oxygen Demand, COD	mg/L	250				210	4	42
Biological Oxygen Demand, BOD	mg/L	30				29	3	10
pH	-	6.0-8.5	8.50	6.56	8.15			

(d) Ambient Air Quality (2018-19)

Parameter	UoM	Norm	WEST PLANT FIRST AID STATION (WPFA)			COLD ROLL MILL (CRM)			POWER HOUSE # 3 GATE			POWER HOUSE # 6 GATE		
			Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg
Particulate Matter, PM <sub>10</sub>	µg/m <sup>3</sup>	100	203.05	95.2	124.6	214.16	97.1	127.0	2191.26	98.3	132.9	176.17	106.3	130.3
Particulate Matter, PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	69.34	53.6	61.4	69.50	57.1	61.8	71.68	56.4	62.3	68.64	55.4	63.1
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	25.27	12.3	18.7	28.13	11.7	18.8	25.53	11.3	17.5	30.07	11.5	17.7
Nitrogen Dioxide, (NO <sub>x</sub> )	µg/m <sup>3</sup>	80	39.63	15.5	25.8	40.10	15.1	24.8	35.10	15.0	23.3	38.40	15.3	23.4
Carbon Monoxide(CO)	µg/m <sup>3</sup>	2000	0.58	0.3	0.5	0.76	0.5	0.6	0.74	0.4	0.5	0.68	0.4	0.5
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	69.33	36.3	53.2	65.00	21.7	51.2	63.67	19.0	46.8	66.33	26.7	48.5
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	100	33.50	19.5	26.5	33.50	20.5	27.9	42.00	19.0	28.3	31.00	20.0	26.2
Lead (Pb)	µg/m <sup>3</sup>	1.0	0.39	0.3	0.3	0.61	0.3	0.4	0.44	0.2	0.3	0.37	0.2	0.3
Arsenic (As)	ng/m <sup>3</sup>	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

<b>Nickel (Ni)</b>	ng/m <sup>3</sup>	20.0	0.50	0.2	0.3	0.76	0.4	0.5	0.56	0.3	0.4	0.56	0.2	0.3
<b>Benzene (C<sub>6</sub>H<sub>6</sub>)</b>	µg/m <sup>3</sup>	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
<b>Benzo alpha Pyrene (BaP)</b>	ng/m <sup>3</sup>	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 (2017-18)	During the current Financial year (2018-19)
<b>(a) From Process</b>		
Waste Oil	2133	2543
Tar Sludge	6838	3435
Zinc dust Ash	247	39.98
Iron Oxide	4367	6792
Iron Hydroxide Sludge	362	345
Chrome Sludge	1.6	1.4
Waste Grease	182	117
<b>(b) From Pollution Control Facilities</b>		
GCP Sludge	150112	157415
BOT Sludge	774	821

**Part E**

**Solid Waste**

**Total Quantity Generated**

Name of the Waste	Total Quantity Generated (tonnes)	
	During the previous Financial Year (2017-18)	During the current Financial year (2018-19)
<b>(a) From Process</b>		
BF Slag	38,95,992	41,24,476
LD Slag	15,24,908	17,42,810
Mill Scale & Mill Sludge	98761	102652
Lime Fines	197292	2,12,283
BF Sludge	150112	157415
Dolo & Kiln Dust	18014	18,315
Bottom Ash	229.1	322
<b>(b) From Pollution Control Equipment</b>		
Process Dust	122367	157125
LD Sludge	359703	351551

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Fly Ash	2291	1289
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### (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 (2017-18)	During the current Financial year (2018-19)
LD Slag	806156	17,53,088*
Mill Scale	94405	99,855
Lime Fines	197323	2,09,706
Dolo & Kiln Dust	17050	18,431
Flue Dust	120099	1,12,196
LD Sludge	395176	3,61,955
Mill Sludge	2344	2,968
*		
Metalics		24.46 %    4,28,867
RMBB		10.12 %    1,77,478
Other Internal		4.30 %    75,459
External(Brick Making,Clinker / cement,Hardstand, Roads – Aggreto)		61.11 %    10,71,284
Total		100 %    17,53,088

### (c)(2) Total Quantity Sold

Name of the Waste	Total Quantity Sold (tonnes)	
	During the previous Financial Year (2017-18)	During the current Financial year (2018-19)
BF Slag	3880652	4072885
Lime Fines	14191	12,075
BF Sludge	88248	93741

### (c)(3) Total Quantity Disposed

Name of the Waste	Total Quantity Disposed (tonnes)	
	During the previous Financial Year (2017-18)	During the current Financial year (2018-19)
BF Slag	-	-
Fly Ash + Bottom Ash	35626	1612
LD Slag	458000	547363

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### 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 <sub>2</sub> – 34.5; MnO – 0.25 P <sub>2</sub> O <sub>3</sub> – Nil; Al <sub>2</sub> O <sub>3</sub> – 1.2 S – 1.4; TiO <sub>2</sub> – 1.2; FeO – 0.33	<ul style="list-style-type: none"> <li>• Sold to cement plant</li> <li>• Used in construction</li> </ul>
B F Sludge	Fe(T) – 33.65; MnO – 0.14 CaO – 3.45; Al <sub>2</sub> O <sub>3</sub> – 3.64 SiO <sub>2</sub> – 6.40; S – 0.230; P <sub>2</sub> O <sub>5</sub> – 0.307 TiO <sub>2</sub> – 0.30; MgO – 1.40 Alkali – 0.5 to 0.7; C – 21-24	Sold to Outside Parties
L D Slag	Fe(T) – 18-25; MgO – 1-2 CaO – 45-55; MnO – 0.5-1.0 SiO <sub>2</sub> – 10-12; Al <sub>2</sub> O <sub>3</sub> – 0.8-1.0 P <sub>2</sub> O <sub>5</sub> – 3.5-4.0; S – 0.2 TiO <sub>2</sub> – 0.8-1; Alkali – 0.18	<ul style="list-style-type: none"> <li>• Stored at Galudih for Processing</li> <li>• Used in construction</li> <li>• Used in Sinter Plant</li> </ul>
L D Sludge	Fe(T) – 55 to 60; MgO - <1.0 CaO – 10-15; MnO - <0.5 SiO <sub>2</sub> – 1.5-2.0; Al <sub>2</sub> O <sub>3</sub> - <0.5 P <sub>2</sub> O <sub>5</sub> – 0.29; TiO <sub>2</sub> - <0.1	<ul style="list-style-type: none"> <li>• Land Filling</li> <li>• Used in Sinter Plant</li> </ul>
Mill Scale	Fe(T) – 72-75; MnO - <0.5 SiO <sub>2</sub> - <0.5; Al <sub>2</sub> O <sub>3</sub> - <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 <sub>2</sub> – 1.12; Al <sub>2</sub> O <sub>3</sub> – 0.50 P <sub>2</sub> O <sub>5</sub> – 0.089; TiO <sub>2</sub> – 0.03 Cr <sub>2</sub> O <sub>3</sub> – 0.03; Oil – 10-12	Used in Sinter Plant
Lime Fines	CaO – 66.5; Al <sub>2</sub> O <sub>3</sub> – 0.26 SiO <sub>2</sub> – 1.53; MgO – 5.68	<ul style="list-style-type: none"> <li>• Sold</li> <li>• Used in Sinter Plant</li> </ul>
Fly & Bottom Ash	Fe(T) – 2.1-3.5; MgO – 0.20-0.60 CaO – 0.85-1.2; Al <sub>2</sub> O <sub>3</sub> – 21.9-24.3 SiO <sub>2</sub> – 44.9-47.8; TiO <sub>2</sub> – 1.49 P <sub>2</sub> O <sub>5</sub> – 0.309-0.663 Alkali – 1.45-1.55; C – 12-20	Disposed in ash pond

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**Part G**

Sl. No.	Pollution abatement Measures taken in 2018-19	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. 12697 nos. saplings during April 2018 to March 2019 inside the works 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 etc.</i>

**Details of Plantation (nos.) done during April 2018 – March 2019**

Month	Plantation in Town and JMD	Plantation in Works	Species
Apr-18	13	510	<i>Karanj, Mahogany, Tabbia, Gulmohar</i>
May-18	363	508	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Jun-18	868	0	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>
Jul-18	1257	1526	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Karbi.</i>
Aug-18	1044	512	<i>Kanchan, Calendra, Ashoka, Karbi, Hemelia, Ticoma, Aricapalm, Palm</i>
Sep-18	1006	510	<i>Kanchan, Ashoka, Karbi, Hemelia, Bixa, Ticoma, Cicilipinia.</i>
Oct-18	822	425	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Kanchan, Ashoka, Karbi, Hemelia, Bixa, Ticoma, Cicilipinia.</i>

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Nov-18	310	426	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>
Dec-18	60	216	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Jan-19	297	320	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Feb-19	656	325	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>
Mar-19	323	400	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Karbi</i>
<b>Total</b>	<b>7,019</b>	<b>5678</b>	<b>Grand Total= 12697/-</b>

### 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**

<b>Clean technologies to be implemented</b>	<b>Current Status</b>
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	None of our mines are abandoned so far. However, all the coal-fired boilers in Steel Works have been converted to gas firing. Coal will be fired only in emergency in one Boiler from where

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wagons while they return back to the mines and its implementation.	limited quantity of ash is being disposed in slurry form in captive ash pond.
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.