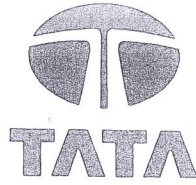


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Shubhanand Mukesh  
Head Environment Management

EMD/C-23/277 /18  
September 26<sup>th</sup>, 2018

**The Member Secretary**

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

**Subject: Environmental Statement 2017-2018 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 2017-2018 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, Jamshedpur  
- 831 013



**TATA STEEL LIMITED**

Environment Management Jamshedpur 831 001 India  
Tel 91 657 2424125 6644859 e-mail shubhanand.mukesh@tatasteel.com  
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001  
Tel 91 22 66658282 Fax 91 22 66657724  
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

**ENVIRONMENTAL STATEMENT  
FOR THE YEAR 2017-2018**

**Main Steel Works  
TATA STEEL LIMITED**

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

# Environment Statement – 2017-18

[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>	10.0 Million Tons Crude Steel Production during 2017-18 (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 14, 2016 vide letter no. EMD/C-23/141/17

# Environment Statement – 2017-18

## Part B

### WATER & RAW MATERIAL CONSUMPTION

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

Water Consumption	During the previous Financial Year (2016-17)	During the current Financial year (2017-18)
<b>Industrial Consumption</b> (inside Works as Makeup water)	1,05,221	1,00,464
<b>Domestic Consumption</b> (Inside Works as drinking water)	11,446	11,486

Name of the product	Process water consumption/unit of product output (m <sup>3</sup> /tcs)	
<b>Crude Steel</b>	During the previous Financial Year (2016-17)	During the current Financial year (2017-18)
<b>Specific Water Consumption</b>	3.83	3.68

#### 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 2016-17)	During the current Financial year (2017-18)
Iron Ore	Crude Steel	1666.6	1734.4
Coking Coal		625.9	418
Lime Stone		293.5	313.1
Non-Coking Coal		198.7	207.3
Dolomite & Pyroxenite		85.1	103.1
Purchase Pellet		6.3	10.6
Purchase Coke		-	-
Middling Coal		1.5	0.5
Quartzite and Other materials		4.9	6.69
Zinc & Zinc Alloys		1.2	4.1
Ferro Manganese - High Carbon Lumps		1.4	1.3
Ferro Manganese - Medium Carbon		1.5	1.3

## Environment Statement – 2017-18

### 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)		
<b>(a) Water</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2017-18</b>
TSS	1.153	1.210	24.1	27.37	-
COD	1.380	1.171	31.6	35.52	-
Ammonia as N	0.266	0.226	8.5	3.88	-
BOD	0.493	0.491	12.6	14.24	-
Oil & grease	0.050	0.036	1.0	0.78	-
Phenols	0.004	0.004	0.11	0.09	-
Cyanide as CN <sup>-</sup>	0.003	0.002	0.1	0.05	-
<b>(b) Air</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2017-18</b>
	<b>(Tons/day)</b>		<b>(mg/Nm<sup>3</sup>)</b>		
PM	12.0	11.04	26.9	24.1	-
SO <sub>2</sub>	19.6	20.44	139.5	108.7	-
NOx	25.0	21.43	113.1	127.1	-

## Environment Statement – 2017-18

### (c) Effluent Quality (2017-18)

Parameter	UoM	Norms	Susungaria Drain			HSM Drain		
			Max	Min	Avg	Max	Min	Avg
Ammonical Nitrogen (as N)	mg/L	50	18.27	4.49	9.50	13.33	1.73	6.01
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2	0.15	0.09	0.12	0.14	0.05	0.09
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1	0.28	0.11	0.19	0.22	0.08	0.14
Oil & Grease	mg/L	10	2.22	0.73	1.46	1.97	0.63	1.22
Total Suspended solids	mg/L	100	80.83	25.83	52.68	63.75	14.08	33.26
Chemical Oxygen Demand, COD	mg/L	250	58.57	29.02	45.37	54.98	26.49	42.27
Biological Oxygen Demand, BOD	mg/L	30	20.95	14.22	17.70	19.22	12.57	16.34
pH	-	6.0-8.5	8.28	7.60	8.03	8.27	7.52	8.01
Parameter	UoM	Norms	Jugsalai Drain			BOT Plant Treated		
			Max	Min	Avg	Max	Min	Avg
Ammonical Nitrogen (as N)	mg/L	50	3.47	0.48	1.34	32.41	8.69	19.16
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2	0.10	0.02	0.05	0.13	0.05	0.09
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1	0.10	0.03	0.06	0.27	0.05	0.14
Oil & Grease	mg/L	10	0.78	0.20	0.43	1.85	0.58	1.16
Total Suspended solids	mg/L	100	42.83	9.42	19.94	84.25	55.42	73.20
Chemical Oxygen Demand, COD	mg/L	250	37.91	25.62	31.27	175.95	101.09	142.78
Biological Oxygen Demand, BOD	mg/L	30	12.78	9.65	11.07	24.12	18.99	21.59
pH	-	6.0-8.5	8.18	7.25	7.67	8.28	7.19	7.79
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			2.06	0.32	0.91
Free Cyanide (as CN <sup>-</sup> )	mg/L	0.2				0.07	0.01	0.04
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	1				0.08	0.03	0.01
Oil & Grease	mg/L	10				0.77	0.20	0.39
Total Suspended solids	mg/L	100				22.75	7.92	12.04
Chemical Oxygen Demand, COD	mg/L	250				25.99	14.70	20.45
Biological Oxygen Demand, BOD	mg/L	30				13.40	9.23	11.18
pH	-	6.0-8.5				8.31	7.50	8.16

## Environment Statement - 2017-18

### (d) Ambient Air Quality (2017-18)

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	197	122	147	222	116	141	183	117	142	149	115	132
Particulate Matter, PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	102	66	76	105	60	75	101	63	76	72	62	67
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	44	31	37	37	23	31	38	22	30	42	22	31
Nitrogen Dioxide, (NO <sub>x</sub> )	µg/m <sup>3</sup>	80	55	41	48	51	31	41	52	31	40	53	31	41
Carbon Monoxide(CO)	µg/m <sup>3</sup>	2000	1.1	0.40	0.77	1	1	1	1	0	1	1	1	1
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	400	52	19	42	76	14	42	52	21	40	59	19	43
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	100	44	17	32	41	22	32	39	18	29	42	16	32
Lead (Pb)	µg/m <sup>3</sup>	1.0	0.93	0.20	0.61	0.98	0.06	0.52	0.92	0.22	0.56	0.95	0.05	0.60
Arsenic (As)	ng/m <sup>3</sup>	6.0	0.07	0.04	0.05	0.23	0.02	0.07	0.07	0.04	0.05	0.24	0.04	0.07
Nickel (Ni)	ng/m <sup>3</sup>	20.0	0.89	0.15	0.46	0.91	0.19	0.49	0.89	0.18	0.47	0.94	0.19	0.44
Benzene (C <sub>6</sub> H <sub>6</sub> )	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
Benzo alpha Pyrene (BaP)	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 (2016-17)	During the current Financial year (2017-18)
<b>(a) From Process</b>		
Waste Oil	1,076	2133
Tar Sludge	6,259	6838
Zinc dust Ash	239	247
Iron Oxide	18,561	4367
Iron Hydroxide Sludge	349	362
Chrome Sludge	0.40	1.6
Waste Grease	208	182
<b>(b) From Pollution Control Facilities</b>		
GCP Sludge	1,46,946	150112
BOT Sludge	272	774

**Part E**

**Solid Waste**

**Total Quantity Generated**

Name of the Waste	Total Quantity Generated (tonnes)	
	During the previous Financial Year (2016-17)	During the current Financial year (2017-18)
<b>(a) From Process</b>		
BF Slag	37,78,004	3895992
LD Slag	18,21,959	1524908
Mill Scale & Mill Sludge	92,900	98761
Lime Fines	204,339	197292
BF Sludge	82,583	150112
Dolo & Kiln Dust	18,536	18014
Bottom Ash	1,253	229.1
<b>(b) From Pollution Control Equipment</b>		
Process Dust	1,40,592	122367
LD Sludge	4,07,100	359703
Fly Ash	5,012	2291



## Environment Statement – 2017-18

### (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 (2016-17)	During the current Financial year (2017-18)
LD Slag	2,23,588	806156
Mill Scale	89,512	94405
Lime Fines	1,90,428	197323
Dolo & Kiln Dust	18,369	17050
Flue Dust	1,40,492	120099
LD Sludge	3,42,054	395176
Mill Sludge	979	2344

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

Name of the Waste	Total Quantity Sold (tonnes)	
	During the previous Financial Year (2016-17)	During the current Financial year (2017-18)
BF Slag	36,61,655	3880652
Lime Fines	14,839	14191
BF Sludge	60,914	88248

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

Name of the Waste	Total Quantity Disposed (tonnes)	
	During the previous Financial Year (2016-17)	During the current Financial year (2017-18)
BF Slag	-	-
Fly Ash + Bottom Ash	6,264	35626
LD Slag	4,73,300	458000

## Environment Statement – 2017-18

### 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>5</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

## Environment Statement – 2017-18

### Part G

Sl. No.	Pollution abatement Measures taken in 2017-18	Impact on conservation of natural resources & others
1	Effluent recycling facility	Reduction of specific water consumption to be continued
2	Green Belt Development	<p>We have planted approx. 16310 nos. saplings during April 2017 to March 2018 inside the works and Jugsalai Muck Dump area. Every year plantation done in available space. The following plant species are being planted:</p> <p><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></p>

#### Details of Plantation (nos.) done during April 2017 – March 2018

Month	Plantation in Town and JMD	Plantation in Works	Species
Apr-17	110	262	<i>Karanj, Mahogany, Tabbia, Gulmohar</i>
May-17	37	205	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Jun-17	1,149	1,177	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>
Jul-17	1,388	749	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Karbi.</i>
Aug-17	1,776	554	<i>Kanchan, Calendra, Ashoka, Karbi, Hemelia, Ticoma, Aricapalm, Palm</i>
Sep-17	485	410	<i>Kanchan, Ashoka, Karbi, Hemelia, Bixa, Ticoma, Cicilipinia.</i>
Oct-17	4651	432	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Kanchan, Ashoka, Karbi, Hemelia, Bixa, Ticoma, Cicilipinia.</i>
Nov-17	383	376	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>

## Environment Statement – 2017-18

Dec-17	147	442	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Jan-18	199	338	<i>Karanj, Mahogany, Tabbia, Karbi.</i>
Feb-18	200	260	<i>Sema robagloca, Sita Asoka, Mahogany, Kanner, Ashoka</i>
March-18	180	400	<i>Mahogany, Tababia, Ticoma, Bottel palm, Cicilipinia, Harsingar, calendra, Karbi</i>
<b>Total</b>	<b>10,705</b>	<b>5,605</b>	<b>Grand Total= 16,310/-</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 are 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 F, G, H & I Blast Furnaces.
To study the possibility of slag and	None of our mines are abandoned so far.

## Environment Statement – 2017-18

<p>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.</p>	<p>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 limited quantity of ash is being disposed in slurry form in captive ash pond.</p>
<p>Processing of the waste containing flux &amp; ferrous wastes through waste recycling plant.</p>	<p>We have a metal recovery and slag processing plant for the same and such material is used in iron and steel making processes.</p>
<p>Implement rain water harvesting</p>	<p>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&amp;D and ITS Building) within Works.</p>
<p>Coke Dry Quenching at Coke Oven Battery 10 &amp; 11</p>	<p>Coke Dry quenching (CDQ) facility is under commissioning in the new Coke Oven Battery # 10 and 11. The project likely to be completed by year 2018-19.</p>