



**The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan
A/118, Nilakantha Nagar, Unit - VIII
Bhubaneswar - 751012**

MD/ ENV/ 1224 /120 / 2024

Date: 27th September 2024

Sub: Environmental Statement of Joda East Iron Mine, M/s Tata Steel Limited for 2023-24.

Dear Sir

Kindly find attach herewith the Environmental Statement in the prescribed format (Form V) as per "Environmental (Protection) Amendment Rules 1992" of our Joda East Iron Mine for your kind perusal.

Thanking you,

Yours faithfully
f: Tata Steel Limited

Area Manager (Environment), OMQ

Encl: As above

**Copy to: The Regional Officer, State Pollution Control Board, At:
Baniapata, College Road, Keonjhar - 758001, Odisha**

TATA STEEL LIMITED

Mines Division Noamundi 833 217 India
Tel 91 9234301340 Fax 91 6596 290737

Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724

Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

ENVIRONMENT STATEMENT 2023-24



JODA EAST IRON MINE

TATA STEEL LIMITED

September 2024

FORM - V
(See Rule -14)

ENVIRONMENT STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31ST MARCH 2023

IODA EAST IRON MINE, TATA STEEL LIMITED

PART-A

1	Name and address of the owner/ occupier of the industry, operation or process	:	Mr Rajesh Kumar Chief (Joda), Joda East Iron Mine Tata Steel Limited, Joda Dist.- Keonjhar, Odisha – 758034
		:	Mr Braj Binod Kumar, Mines Manager (Joda East) Joda East Iron Mine Tata Steel Limited, Joda Dist.- Keonjhar, Odisha – 758034
	Nominated Owner	:	Mr. Atul Bhatnagar, General Manager, OMQ division, Administrative Building, Noamundi Iron Mine, Tata Steel Limited PO.: Noamundi, Dist.-West Singhbhum Jharkhand – 833217
		:	Mr T V Narendran, Managing Director & CEO, Tata Steel Limited, PO: Jamshedpur, Dist.: East Singhbhum, Jharkhand-831001
2	Industry Category	:	Opencast Iron mine with beneficiation plant & Dispatch facility (Major)
3	Production Capacity*	:	Mine: 12 MTPA Iron Ore Beneficiation & Dispatch: 12 MTPA Iron Ore
4	Year of Establishment	:	1956
5	Date of last Environmental Statement submitted.	:	28 th September 2023, vide letter no. MD/ENV/826/120/2023 for the year 2022-23.

*As per Environmental Clearance

PART-B

Water and Raw Material Consumption

(i) Water Consumption:

<u>Consumption Head:</u>	2022-23 (in cu.m/day) (Annual Average)	2023-24 (in cu.m/day) (Annual Average)
Process	4145.29	3095.72
Spraying in mine pit, services	550.27	498.36
Domestic	458.94	416.19
Name of the product	Process water consumption per product output (m³/MT)	
Iron Ore	0.14	0.10

*The colony of Joda east Iron Mine is situated outside the mining lease area. The domestic water consumption is shown by other adjacent Manganese Mine of separate unit.

ii) Raw Material Consumption

The following items have been consumed/ utilized:

Name of Raw Materials	Name of Product	Consumption of Raw Material		
		During previous financial year (2022-23)	During current financial year (2023-24)	
High Speed Diesel	Iron ore of steel grade	6704349 Litre	622871 Litre	
Lubricants		258720 Litre	210584 Litre	
Grease		15085 Kg	23827 Kg	
Explosive		Slurry explosives	Small dia (up to 32 mm) – Nil	Small dia (up to 32 mm) – Nil
		Detonators	Large dia (above 32 mm) – 3347571 Kg	Large dia (above 32 mm) – 3310688 Kg
		Detonating Fuse	Ordinary – 0 Electrical – 750 nos.	Ordinary – 0 Electrical – 847 nos.
Gas		7850 Mts	4500 Mts	
Tyres		14601 Cu.m	127089 Cu.m	
Drill rods		78 nos.	138 nos.	
Electric Power in KWH		613 nos.	575 nos.	
Electricity Consumed		Iron ore of steel grade	39339938	37872582
Electricity Generated		120462	120462	

PART-C

POLLUTION DISCHARGED TO ENVIROMENT/ UNIT OF OUTPUT
(Parameters as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass / day)	Concentration of Pollutants discharges (mass / day)	Percentage of variation from prescribed standards with reasons
a) Water	<p>The Joda east Iron Mine with the processing plant is a zero effluent discharge unit; all the effluents generated from the processing of Iron ore is collected from slime pond and recycled & reused by 100% in various activities including dust suppression and iron processing.</p> <p>Six sewage treatment plant (STP) of (One – 630 KLD, One – 270 KLD, Two – 150 KLD, Two – 50 KLD, Two – 10KLD) are installed and operated smoothly. The treated water is recycled & reused for plantation and gardening purpose.</p> <p>Two Effluent treatment plant (ETP) of 10 KLD are installed & operational in Hospital & Canteen area and treated water is used in horticulture activities.</p> <p>The water quality results of ETP & STP are attached herewith in Annexure-1. Apart from above some additional ETP & STP are also under construction.</p>		
b) Air	<p>The Joda east Iron Mine is an opencast iron mine with processing plant & dispatch unit. The air quality in the form of fugitive, dust fall, ambient, respirable is been measured and monitored regularly.</p>		

Pollutants	Quantity of Pollutants discharged (mass / day)	Concentration of Pollutants discharges (mass / day)	Percentage of variation from prescribed standards with reasons
	<p>All the dust generating points such as loading -unloading devices are equipped with dust arresting system such as dry fog, fixed & mobile water sprinklers, mist spray, dust extractors -bag filters, water scrubbers etc.</p> <p>There are two stationary point such as stack of dust extractor from crushing unit & DG set used for emergency powers. Both are designed as per standards and regular monitoring has been done.</p> <p>Three continuous ambient air quality monitoring stations are installed in core & buffer area and operated with PM₁₀, PM_{2.5}, SO_x, NO_x, (NO₂ & NO) & CO parameters have continuously been monitored with online data connectivity at Odisha State Pollution Control Board server.</p> <p>A thick & dense vegetation is also placed in all surrounding the mines area which significantly reduced the pollution load.</p> <p>The results of air quality monitoring are attached as Annexure 2.</p>		

PART-D
HAZARDOUS WASTES

As specified under the Hazardous & Other Waste (Management & Trans boundary Movement) Rules, 2016 and amendment thereof

Hazardous Wastes	Total Quantity	
	During previous financial year (2022-23)	During current financial year (2023-24)
(a) From Process <ul style="list-style-type: none"> • Used Oil • Waste containing Oil (Jute etc) • Lead Bering residues (Batteries etc) • Rejected & used hosepipes 	137.76 MT Nil 11.80 MT 13.02 MT	106.64 MT Nil 11.00 MT 17.86 MT
ii) From Pollution Control Facility <ul style="list-style-type: none"> • Waste oil from oil & grease separation pit • Sludge from oil and grease separation pit 	Nil (Included in process) All the Hazardous waste generated are disposed as per law.	

PART-E
SOLID WASTES

Solid wastes from Joda east Iron Mine have been categories in two parts i.e. Overburden/rejects removed during mining operations and slime/tailings generated from beneficiation / processing of Iron Ore. All the materials overburden and tailings are stocked in designated place inside the mine. However, other solid waste (such as scrap material, used conveyor belts, tyres, scrap machines etc) is also being generated from mining and processing / beneficiation activity.

Sources	Total Quantity	
	During previous financial year (2022-23)	During current financial year (2023-24)
a) From Process		
• From mining as Overburden	1103340 Tonne	5150509 Tonne
• From processing plant as Tailing	608009.894 Tonne	634168.193 Tonne
b) From Pollution Control Facility		
c) i. Quantity recycled or reutilized within the unit		
ii. Quantity sold		
iii. Quantity disposed	1103340 Tonne	5150509 Tonne
• Mining overburden		

PART-F

PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF COMPOSITION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES

The Joda East Iron Mine and processing / beneficiation generate hazardous waste mainly in the form of used oil due to HEMM operation & maintenance. The collected used oil used oil disposed to authorized agency via sale for recycling and reuse. During maintenance of HEMM, the oil-soaked materials (jute etc.) is been kept and disposed in impervious pit. The hazardous waste such as used batteries is sold to authorized agency.

The other solid waste in the form of overburden and sub-grade mineral are stocked in designated place.

PART-G

IMPACT OF POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

- Joda East Iron Mine is continuously a star rated iron mine as per Sustainable Development Framework (SDF) by Indian Bureau of Mines, Ministry of Mines, Govt. of India and has won various prestigious prizes in Environment, Health & safety field and become a best sustainable mine of area.
- Various mineral conservation techniques are operated by mine including use of low grade ore, blending of waste / subgrade materials, etc as per steel plant quality requirements.
- For conservation of natural resources, high efficiency HEMM are used with adequate maintenance to reduce the fuel consumption. Zero effluent discharge is been maintained & all process water is recycled – reuse 100% back which reduces the fresh water consumption and withdrawal.
- For ground water augmentation, various rain water harvesting structures are made, which harvest ~ 3 million m³ per year. Various ground water augmentation structures are also been developed in surrounding villages also.

- Various Solar power based illumination such as mass tower light etc & other measures are made at mine such as solar light pipes, solar street lights, solar geezer etc.

PART-H

ADDITIONAL MEASURES/ INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION

- Joda East Iron Mine has installed & operated various ETP & STPs in colony & Plant area. The treated water is recycled & reused.
- Various projects related to water and environment conservation are in place. Drip irrigation project along with coir matting project and vetiver have been developed.
- Fixed and mobile water sprinkler facilities are extended for dust suppression in mines.
- For biodiversity conservation, various projects are implemented at Joda. An inhouse nursery of ~1 Lakh sapling developed in area and only local trees are planted.

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- Joda East Iron Mine of Tata Steel Ltd. is a captive mine and is certified for the Integrated Management System (ISO-9001:2015, ISO-14001:2015, ISO-45001:2018 & SA:8000) from last two decades. The unit has obtained various prestigious accolades from various agencies.
- The unit is having a full-fledged Environmental Management department with well qualified personnel from environmental background to take care of all aspects relating to mines and processing plant of unit.
- Various awareness programs throughout the year conducted in the area which included celebration of World Environment Day, World Water Day, Mine Environment & Mineral Conservation Week, World Bio-diversity Week, Joda Festival etc. In which environment conservation models, current & future proposals are made, environment messages through Nukkad natak, poems, slogans, swachhata drive has been done every year.
- The mine has established a plantation in mine out area, for conservation of biodiversity various initiatives are placed in area, Butterfly Park, Medicinal Park, Botanical Park etc. developed in area. The mines have performed various examples of mineral conservation, upgradation of low-grade mineral by various unique techniques, strengthening the social progress by various skill development and job orientation of programmes for stakeholders.
- All above efforts make the mine clean – green and sustainable. In the year 2023-24, Rs 13.33 Cr are spent on various environmental activities from Joda East Iron Mine.

Shubham

Manager (Environment)

**Manager (Environment)
Joda East Iron Mine**

WATER QUALITY DATA 2023-24
Joda East Iron Mine
(Annual Average)

Parameters	SEWAGE TREATMENT PLANT								EFFLUENT TREATMENT PLANT		Standard
	STP 630 KLD		STP 150 KLD		STP 50 KLD		STP 10 KLD		Joda Hospital ETP 10 KLD		
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	
pH	6.57	6.81	6.44	6.81	6.75	7.15	6.67	7.02	6.81	7.20	5.5–9.0
TSS (mg/l)	66.75	36.67	82.58	52.0	77.92	43.17	80.42	65.17	80.0	26.83	100
BOD 5 days (mg/l)	23.92	14.88	24.83	16.58	25.0	18.42	25.25	17.58	28.67	8.84	30
COD (mg/l)	73.42	45.0	70.42	45.67	73.83	51.58	73.67	50.17	88.17	24.48	250
Oil & Grease (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10
Iron (mg/l)	1.26	0.57	1.25	0.41	1.45	0.59	1.49	0.59	1.13	0.66	3.0
Fecal Coliform	70.17	42.42	83.67	41.33	79.75	35.25	77.67	32.17	138.67	59.08	-

Note: BDL – Below detection limit.

WATER QUALITY DATA 2023-24
Joda East Iron Mine
(Annual Average)

Parameters	SURFACE WATER		Standard
	Kundra nalla upstream - Nr. Joda Pump House	Kundra nalla downstream - Nr. Banaikela Village	
pH*	7.21	7.35	5.5–9.0
TSS (mg/l)	33.17	26.08	100
BOD 5 days (mg/l)	2.57	2.48	30
COD (mg/l)	7.20	6.69	250
Iron (mg/l)	0.41	0.38	0.5
Total Coliform	BDL	BDL	5000

Note: BDL – Below detection limit.

Shubham
 Manager (Environment)

AIR QUALITY DATA 2023-24
Annual Average Air quality of Joda East Iron Mine of FY'24

Pollutants	Concentration of pollutants ($\mu\text{g}/\text{m}^3$)	Standards ($\mu\text{g}/\text{m}^3$)
Manmora Slime Dam		
1. PM ₁₀	58.58	100
2. PM _{2.5}	22.43	60
3. SO ₂	10.90	80
4. NO _x	21.08	80
5. CO	BDL	4*
Near Rainwater Harvesting		
1. PM ₁₀	54.68	100
2. PM _{2.5}	20.33	60
3. SO ₂	9.87	80
4. NO _x	19.53	80
5. CO	BDL	4*
Near Magazine		
1. PM ₁₀	57.75	100
2. PM _{2.5}	21.48	60
3. SO ₂	10.53	80
4. NO _x	20.52	80
5. CO	BDL	4*
Near Equipment Maintenance		
1. PM ₁₀	59.61	100
2. PM _{2.5}	22.96	60
3. SO ₂	10.92	80
4. NO _x	20.91	80
5. CO	BDL	4*

BDL – Below detective limit

Shubham
 Manager (Environment)