



Ref No: MGM/ENV/420

Date: 30/09/2024

To  
**The Member Secretary,  
Odisha State Pollution Control Board,  
Paribesh Bhawan, A/118, Nilakantha Nagar,  
Bhubaneswar, Odisha – 751012**

**Subject:** Submission of Annual Environmental Statement in FORM-V for the year ending 31<sup>st</sup> March 2024 in respect of Bamebari Iron and Manganese Mine of M/S Tata Steel Ltd.

**Reference:** Rule-14 under Environment (Protection) Rules,1986(Amendment vide G.S.R.386(E) dated 22.04.1993)

Dear Sir,

We are hereby submitting the Annual Environmental Statement in "FORM-V" prescribed under the above referenced statute, for the year ending 31<sup>st</sup> March 2024 in respect of Bamebari Iron and Manganese Mine of Tata Steel Ltd., At/Po-Bichhakundi, Joda, Dist.-Keonjhar, Odisha.

This is for your kind information and perusal please. Receipt of the same may please be acknowledged.

**Thanking you,  
Yours faithfully  
F: Tata Steel Limited**

Head (Planning)  
Bamebari Iron & Manganese Mine  
Manganese Group of Mines

Encl: Annual Environmental Statement (FORM-V) for the Financial Year ending 31<sup>st</sup> March 2024

**Copy to:**

- 1) The Regional Officer, State Pollution Control Board, At: Baniapata, College Road, Keonjhar - 758001, Odisha.
- 2) Zonal Office Kolkata, Central Pollution Control Board, South end Conclave, Block 502, 5<sup>th</sup> and 6<sup>th</sup> Floors, 1582 Rajdanga Main Road, Kolkata, West Bengal 700107.
- 3) MoEF&CC Eastern Regional Office, A/3, Chandrasekharapur, Bhubaneswar-751023

**TATA STEEL LIMITED**

Ferro Alloys & Minerals Division, Manganese Group of Mines, At/Po Bichhakundi, Via Joda  
District: Keonjhar, Odisha-758034 Tel.: 91 22 6665 7371 , email – mnminesadmin@tatasteel.com  
Registered Office : Bombay House, 24 Homi Mody Street Fort Mumbai 400 001 India  
Corporate Identification Number : L27100MH1907PLC000260 Website : [www.tatasteel.com](http://www.tatasteel.com)



**ANNUAL ENVIRONMENT STATEMENT  
FOR FY-2023-24**

**[FORM-V]**

*For the year ending 31<sup>st</sup> March 2024*

**[Rule-14 under The Environmental (Protection) Rules, 1986]  
(Amendment vide G.S.R.386(E) dtd 22.04.1993)**

**Submitted By:  
Bamebari Iron & Manganese Mine  
M/s. Tata teel Limited  
At/Po: -Bichhakundi, Via -Joda  
District -Keonjhar, Odisha-758034**

**FORM V**

[See Rule 14 of Environment (Protection) Amendment Rules, 1993]

**ENVIRONMENTAL STATEMENT**

for the financial year ending the 31<sup>st</sup> March 2024

**PART -A**

<p><b>i. Name and Address of the Owner/ Occupier of the industry operation or process.</b></p> <p style="text-align: right;"><b>Nominated Owner</b></p> <p style="text-align: right;"><b>Agent</b></p> <p style="text-align: right;"><b>Address</b></p>	<p style="text-align: center;">Mr. T.V. Narendran Managing Director, Tata Steel Ltd.</p> <p style="text-align: center;">Mr. Shambhu Nath Jha, Chief Mines and Agent,</p> <p style="text-align: center;">Bamebari Iron &amp; Manganese Mine, Tata Steel Limited, P.O.: Bichhakundi, Via: Joda, District: Keonjhar, Orissa- 758034</p>
<p><b>ii. Industry Category</b></p>	<p style="text-align: center;">Opencast Mining</p>
<p><b>iii. Production Capacity- (Units)</b></p>	<p style="text-align: center;">Mn Ore – 83,200 (Tonnes per annum) (As per Env. Clearance)</p>
<p><b>iv. Year of Establishment</b></p>	<p style="text-align: center;">1938</p>
<p><b>v. Date of the last environmental Statement submitted</b></p>	<p style="text-align: center;">27-09-2023</p>

**PART -B**

**Water and Raw Material Consumption:** Mining is not a manufacturing process thus water is not a raw material essential for production; however, water is used for haul road dust suppression and other support services which are not directly linked with the quantum of production.

**(1) Water consumption m<sup>3</sup>/day**

Process	:	96 m <sup>3</sup> /day (Water sprinkling) (Total-35100 m <sup>3</sup> )
Cooling	:	Nil
Domestic	:	144 m <sup>3</sup> /day (Total-52650 m <sup>3</sup> )

Name of the Products	<u>Process water consumption per unit of product output.</u>	
	During the previous year (2022-23)	During the current financial year (2023-24)
	1	2
(1) Manganese Ore	Nil	Nil

**Remarks:** Manganese Ore is produced by mechanized mining method, which does not involve beneficiation and thus precludes the consumption of water. Unlike manufacturing processes, production from mining doesn't involve water as raw material or any of the operational activities.

(2) **Raw material consumption:** Unlike manufacturing processes, mining doesn't involve any such raw materials; However, uses various other resources for ancillary services essential to ensure mining such as Diesel, Electricity and Explosives, etc.

The table below reflects the production and dispatch figures for the last two financial year.

Name of the raw materials	Name of the product	Consumption of raw materials per unit	
		During the Previous Financial year (Year 2022-23)	During the current Financial year (Year 2023-24)
-Nil-	Manganese Ore	Production 83073.00 MT Dispatch 77445.65 MT	Production 82885.00MT Dispatch 83404.400 MT

**Remarks: -:** Mining is not a manufacturing process. The ore produced from Mine head is used as raw material to produce ferro manganese. Other essential resources used during the reporting period (2023-24) is as follows: **Diesel (543.683KL), Explosive (69450Kg), Electricity (534.714Mw-h)**

**PART -C**

Pollution discharged to environment /unit of output.  
(Parameter as specified in the consents issued)

Pollution	Quantity of pollutants discharged (maas/day)	Concentrations of Pollutants in discharge (mass/volume)	Percentage of variation prescribed standards with reasons
(a) Water	-Nil-	-Nil-	Not Applicable

-There are no direct/indirect source for discharge of effluents/pollutants to the environment. Environmental quality parameters are monitored from time to time to assess the water quality of the nearby streams/nallahs and monsoon runoff from the mining areas. The environmental quality parameters are monitored, and reports are submitted to SPCB as well as MoEF&CC along with six monthly compliances.

(b) (Air)	-Nil-	-Nil-	Not Applicable
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-There is no such point source of emission from the mine. Major source of air pollutants is fugitive dust generated mainly due to the movement of vehicles/HEMMs in the haul roads, drilling/blasting activities etc, which is fugitive in nature and thus has not been quantified (mass/day).

-The environmental quality parameters are monitored, and reports are submitted to SPCB as well as MoEF&CC along with six monthly compliance reports.

**PART -D**

**(Hazardous Wastes)**

[As specified under the Hazardous and other Waste (Management and Transboundary Movement) Rules, 2016, amended till date]

Hazardous Waste	Total Quantity	
	During the Previous Financial Year (2022-23)	During the Current Financial Year (2023-24)
Used Oil HW-5.1	790 L	605 L
Residue Containing oil-5.2/ Contaminated cotton rags (33.2)	8.5 kg	1 kg
Empty Barrells -33.1	05 Nos (150 Kgs)	02 Nos(60Kgs)
From Pollution Control Devices	Nil	Nil

**PART -E**

**(Solid Wastes)**

	Total Quantity	
	During the previous financial year (2022-23)	During the Current financial year (2023-24)
From Process (overburden material)	221084 m <sup>3</sup> (552710MT)	279188.58m <sup>3</sup> 558377.2MT
From pollution control facilities	Nil	Nil
Quantity recycled or re-utilized within the unit.	Nil	Nil
Sold	Nil	Nil
Disposal	221084 m <sup>3</sup> (552710 MT)	279188.58m <sup>3</sup> (558377.2 MT)

**PART -F**

**Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.**

**Characterization of Hazardous Waste: -**

- The significant source of hazardous waste is Used oil (HW-5.1) is mainly Hydrocarbons and consist of lubricants, coolants, transformer oil and hydraulic oil. Lead Acetate batteries are also used in HEMM fleet which are mainly of automotive fuel cells.
- Overburden being the only form of significant solid waste contains lateritic morrum, shale and quartzite, etc.
- Horticultural Waste: All the horticultural waste, food waste and biodegradable waste is getting composted at our facilities.

**Disposal Practice: -**

- SOLID WASTES -OB dumps are maintained as per the approved scheme of mine plan where proper terraces and peripheral drains are constructed supported with gabion wall/retention wall to arrest the silt/sediments during monsoon season. Once the slope of the dumps is stabilized then the dumps are reclaimed by plantation of native varieties of forestry saplings.
- USED OIL -The used oil generated at various sources is collected in leak proof barrels and then is kept on an impervious floor with oil catch pit. It is also ensured that the caps of the barrels remain intact and horizontal. The storage area is properly fenced, and caution board displayed. The used oil collected from sites are centrally auctioned to an SPCB authorized/registered recycler for recycling. At present, used oil generated from the departmental HEMM fleet (TSL's fleet of HEMM) are managed by the company through auctioning; however major chunk of generation is due to the contractual operations, managed by outsourced agencies as per applicable norms.
- Provision of impervious pit for collection of oily waste in the workshop premises in addition to the existing practice of collection at specified barrels.
- An Automatic waste composter has been procured for composting all the biodegradable waste within our facilities.

**PART -G**

**Impact of pollution abatement measures taken on conservation of natural resources and on the cost of production**

- Water spraying on haul Roads and Mine Pits is done regularly to suppress the dust.
- All the haul roads in the mining area are made up of morrum & compacted. Regular repair is being done by dozer & grader after spreading the layer of sweet morrum over it.
- Wet drilling is practices along with controlled blasting followed for minimal dust generation and prevent fly rocks.
- Total Plantation for FY-2023-24 for the dump and other available fonts was 8300 Nos of local forestry species such as Neem, Mahaneem, Shisham, Karanj, Sal, Mahagoni etc.
- The mine management proactively undertakes various environmental activities for the conservation/protection of environment. The cost incurred towards environmental measures are earmarked in a separate fund center. An abstract environmental expenditure during FY 2023-24 is summarized in the table as follows:

**Table. Environmental Expenditure for 2023-24**

<b>SN.</b>	<b>Environmental Conservation /Protection Measures</b>	<b>Expenditure (Lakhs- INR)</b>
1	Afforestation on Dump slopes as per PMCP	46.40
2	Pollution Control Measures	6.93
3	Env. Awareness/Mines Environment & Mineral Conservation Week Celebration	26.50
4	Viewpoint Creation/ Remediation Management	137.50

5	Environment Monitoring and Studies Undertaken	74.33
6	Regulatory Payments	11.00
<b>Total</b>		<b>302.67</b>

- In addition, Tata Steel Rural Development Society also undertakes the peripheral development activities with a large magnitude such as extending support in agriculture and other livelihood options, Water harvesting ponds etc.

**PART-H**

**Additional measures / investment proposal for environmental protection, abatement of pollution, prevention of pollution**

- Garland drains and toe wall around the OB dumping shall be provided to check and channelize surface run-off.
- Plantation of forestry species shall be planted over the inactive waste dump slopes to arrest the airborne dust.
- Vetiver Plantation has been done in inactive dump slope.
- Green belt has been developed along colony and mining.
- Soil Conditioning and treatment practices followed for land reclamation.
- In-House nursery for development of native varieties of forestry saplings.

**PART-I**

**Any other for Improving the quality of environment**

1. With compliance to conditions of Environment Clearance obtained from MoEF&CC, the following monitoring is being done at regular interval.
  - Ground Water Level at nearby bore wells.
  - Trace metal in dust fall.
  - Ground water quality at lower level.
  - Meteorological monitoring
  - Trace metals such as Fe, Cr+6, Cu, Se, As, Cd, Hg, Pb, Zn and Mn at specific locations for both surface water (downstream & upstream) and ground water at lower elevation is being periodically monitored by referring to the standards as per BIS : 10500.
2. Topsoil generated during excavation are utilized immediately for nursery development and dump slope plantation.
3. Measures taken to control Air Pollution:
  - Water sprinkling on the haul road.
  - Provision of dust masks to the workmen.
  - Adoption of wet drilling arrangement in the drill machines.
  - Black topped road in the residential colony.
  - Green belt along mining and colony
  - Native sapling and vetiver plantation in inactive dumps.
4. Measures taken to control Water Pollution: -
  - Construction of toe wall and garland drain along the dump slope to prevent surface runoff during monsoon.

- Construction of soak pits for discharge of sanitary sewage.
  - Provision of oil separation pit for effluents coming out of workshop.
  - Native sapling and vetiver plantation in inactive dumps.
  - STP for domestic effluent in Bamebari colony.
5. Measures taken to control Noise & Ground Vibration: -
- Thick plantation has been developed around the mines and office building to provide a canopy cover.
  - Implementation of advance blasting technique (NONEL) to reduce the blast induced ground vibration.
  - Workmen are provided with earmuff while working near heavy earth moving machineries.
6. Measures taken to control Land Degradation: -
- Afforestation around the non-active dump for stabilization.
  - Reclamation and rehabilitation of mined out area as per approved Scheme of Mining.
7. Surveillance of Occupational Health: Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The initial and periodical examination includes blood hematology, blood pressure, detailed cardiovascular assessment, neurological examination etc.
8. The mine is certified with ISO-14001:2015 (Environment Management System).

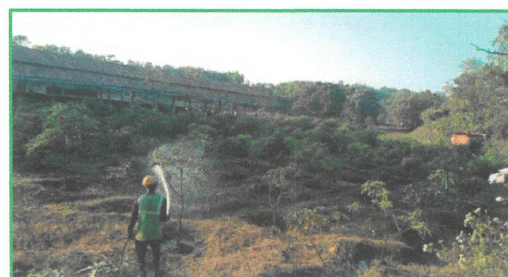
**Green Belt and Afforestation Measures: -**



**Coir Matting of Dump Slopes for stabilization.**



**Vetiver Plantation on Dump slope**



**Plantation at Mango Orchard**





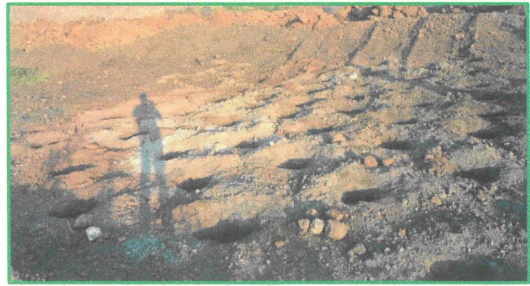
**Cashew Plantation**



**Dump Site Plantation**



**Dump Site Plantation**



**Pit Digging for plantation (with Manure)**