



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

MD/ENV/600/120/17
Date: 26.09.2017

Sub: Environment Statement of Khondbond Iron Mine, Tata Steel Ltd. for 2016-17

Dear Sir,

As required under "Environmental (Protection) Amendment Rules, 1992", we are submitting here with the Environmental Statement for our Khondbond Iron Mine for your kind perusal.

Thanking you,
Yours faithfully,

F: Tata Steel Limited

f Head (Planning), OMQ

Encl: As above.

**Copy to: Regional Officer, State Pollution Control Board, At: Baniapat, College Road,
Dist: Keonjhar - 758001, Orissa.**

TATA STEEL LIMITED

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**ENVIRONMENT STATEMENT
2016-17**

**KHONDBOND IRON & MANGANESE MINE
TATA STEEL LIMITED**

FORM - V
(See Rule -14)

ENVIRONMENT STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31st MARCH, 2015
KHONDBOND IRON & MANGANESE MINE, TATA STEEL LIMITED

PART-A

- 1 Name and address of the owner/ occupier of the industry, operation or process : Khondbond Iron & manganese Mine, Tata Steel Limited, Joda, Dist.-Keonjhar , Odisha-758034
- Agent : Mr Shirish Shekhar
- Nominated Owner : Mr T V Narendran, Managing Director, Tata Steel India & SEA, Jamshedpur-831001
- 2 Industry Category : Major
- 3 Production Capacity : 4.64 MTPA Iron Ore & 0.1 MTPA Manganese Ore
- 4 Year of Establishment : 1960
- 5 Date of last Environmental Statement submitted. : 29th September, 2016

PART-B

Water and Raw Material Consumption

(i) Water Consumption:

<u>Consumption Head:</u>	2015-16 (in cum/day) (Annual average)	2016-17 (in cum/day) (Annual average)
Process	NA	
Spraying in mine pit , services	76.08	73.62
Domestic	50.36	62.73
Name of the product	Process water consumption per product output (m3/MT)	
	During the Previous financial Year (2015-16)	During the current financial Year (2016-17)
Iron Ore	NA	NA
Manganese Ore	NA	NA

This is a mechanised mine producing iron ore. The iron ore processing is dry crushing and screening only. Dust suppression at C&S plant is carried out through a scientific way using dry fog system, thus reducing the requirement of water to very minimum level.

There is no colony inside the lease area and water requirement is only for drinking, sanitation and canteen use during the day.

(ii) Raw Material Consumption

The following items have been consumed/ utilized:

Name of Raw materials	Consumption of Raw Material	
	During previous financial year (2015-16)	During current financial year (2016-17)
High Speed Diesel	1257508 Litres	1796062 Litres
Lubricants	40320 Litres	34020 Litres
Grease	4186 Kg	5366 Kg
Explosives	15000 Kg	15000 Kg
Detonators	40000 Nos.	40000 Nos.
Fuses	50000 Meters	50000 Meters
Electric Power:		
Consumed	1565491 KWH	1102363 KWH
Generated	0 KWH	0 KWH
Gas	13334 Cum	3361 Cum
Tyres	20 Nos	172 Nos.
Drill rods	64 Nos	32 Nos.

PART-C

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

Water Pollution: The iron ore excavation is carried out on hill slopes and above the ground water table. There is no generation of any process water and no industrial effluent is discharged outside.

Air Pollution: Average Air Quality of FY' 17:

Pollutants	Concentration of pollutants ($\mu\text{g}/\text{m}^3$)	Standards ($\mu\text{g}/\text{m}^3$)
Manganese Quarry		
1. PM ₁₀	51.19	60
2. PM _{2.5}	25.71	40
3. SO ₂	4.67	50
4. NO _x	11.72	40
Garden near Old Q-Ore body		
1. PM ₁₀	53.67	60
2. PM _{2.5}	27.23	40
3. SO ₂	4.91	50
4. NO _x	12.09	40
Labour Colony rest shed		
1. PM ₁₀	56.63	60
2. PM _{2.5}	28.94	40
3. SO ₂	5.35	50
4. NO _x	12.75	40
Near IM Section		
1. PM ₁₀	44.94	60
2. PM _{2.5}	23.17	40
3. SO ₂	4.41	50
4. NO _x	10.81	40

This is an opencast mine and does not have single point source of air pollutants. Hence, the quantity of air pollutants discharged in Kg/day cannot be ascertained. The above data shows the average ambient air quality during 2013-14.

PART-D
HAZARDOUS WASTES

As specified under the Hazardous Waste (Management, Handling and Transboundary) Rules, 2008 and amendment thereof

Hazardous Wastes	Total Quantity	
	During the Previous Financial Year (2015-16)	During the Current Financial Year (2016-17)
I) From Process: <ul style="list-style-type: none"> ▪ Used Oil ▪ Waste containing Oil ▪ Waste Battery 	10500 Litre Nil 31 Nos.	13400 Litre 0.5 MT 0 Nos.
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 	} Included in the Item I	} Included in the Item I

PART-E
SOLID WASTES

Solid waste from this mine is generally of two categories i.e. Overburden/rejects removed during mining operations and slime generated in the process of iron ore washing.

Sources	TOTAL QUALITY	
	During the Previous Year (2015-16)	During the Current Year (2016-17)
a) From Process: <ul style="list-style-type: none"> ▪ From Mining as Overburden ▪ Rejects ▪ From OB plant as Tailing 	1682830 MT 826350 MT Not Applicable	3168552 MT 654855 MT Not Applicable
b) From Pollution Control Facility	Not Applicable	Not Applicable
c) i. Quantity recycled or reused within the unit	NA	482450 MT
ii. Quantity sold <ul style="list-style-type: none"> ▪ General Office Waste 	Nil	Nil
iii. Quantity disposed <ul style="list-style-type: none"> ▪ Mining overburden ▪ Rejects ▪ Canteen and colony waste 	1269983 MT Nil Organic wastes are disposed off in dumps	2686102 MT Nil Organic wastes are disposed off in dumps

PART-F

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 composition of hazardous wastes like used oil & waste containing oil are Gear oil: SP460, 320, 220 & 90; Hydraulic oil: 68, 10, 46, and 100; Mobil oil: 20W40, 30, 40; Transformer oil and Grease: Senogem EP2, KG 10. Solid waste generated as overburden, sub-grade mineral are consists of morum, shell and quartzite

DISPOSAL PRACTICE:-

a) SOLID WASTES:

The overburden is systematically and scientifically dumped on a geologically barren area and properly supported with hard material and the same is being reclaimed by plantation after being declared inactive.

The organic wastes from the canteen and other places are stored in individual different waste buckets and arrangement, which are later on disposed at defined place to enrich the nutrient content. This has been found to hasten the plant growth and the seeds contained in the vegetable waste have contributed to the green cover in the dumps.

b) HAZARDOUS WASTE:

Used Oil:

The waste oil generated at various sources is collected in leak proof barrels and then are kept under a covered roof and on concrete platforms (Capacity – 200 l) in the barrels very carefully and sealed properly to avoid any spillage or leakage. The storage area is properly fenced and caution board displayed.

During transfer of waste oil to barrels, a tray is placed underneath in order to prevent land contamination due to oil spillage. Then at a fixed interval, these barrels are disposed through auction to the authorized recycler after due intimation to State Pollution Control Board. After dispatch of same, intimation of auction along with copy of manifest is also being sent to State Pollution Control Board

Waste containing Oil:

Oil soaked jutes, filter and filter materials are produced during the schedule maintenance and repair of the vehicles from the workshop is stored in the HDPE lined waste bins. The HDPE enclosure prevents contamination of land and water bodies. Oil soaked sand/soil are stored in a pit made before the oil and grease separation system. Water is added to make the waste free from oil. The oil containing water is led to oil and grease separation system and the sand/soil is disposed off like filters and filter material mentioned above.

Oily waste in solid form are being collected and kept in an impervious pit. It is then regularly handed over to authorised parties for incineration as advised by OSPCB.

c) WASTE BATTERIES :

The used lead acid batteries with diluted acid and caps intact are kept under a shed having impervious floor. Then at a fixed interval, these batteries are disposed through auction to the authorized recycler after due intimation to State Pollution Control Board. After dispatch of same, intimation of auction along with copy of manifest is also being sent to State Pollution Control Board.

PART-G

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

- Specific electrical energy consumption has been reduced by absorption of new technologies and various circuit modifications. As a result, around 1 MWH annual saving is achieved.
- With improvement in reliability of grid power supply, diesel consumption has also been reduced significantly.
- Similarly leakages in HEMMs have been arrested to nullify wastage of oils and new energy efficient equipment has been added to fleet which resulted in improvement in specific diesel consumption.
- RENTAR fuel catalysts have been introduced in HEMMs which has reduced specific diesel consumption by 5-10% over the year 2016-17. This also reduces emissions like CO, NO_x, SO_x etc.
- Introduced EX 1200 Shovel along with HD 785 Dumper & enhanced TPH, which resulted in reduced specific HSD consumption (HSD per ton of material handling) by almost 30%.
- To reduce the fugitive dust generation at mine phase area an amount of ₹ 33.95 lakhs was spent for Mist Cannon to be use for dust suppression at mine phase
- Efforts were made to reduce the consumption of lubricant oil used in Heavy Mining Equipment, by arresting leakages in time and by eliminating spillages.
- An amount of ₹ 10 lakhs was spent towards monitoring of various environmental parameters.
- An amount of ₹ 4 lakhs was spent towards the maintenance of electronic boards at KIMM during 2016-17.
- To generate awareness among the employees and their families about environment, World Environment Day, Earth Day & Biodiversity Day was celebrated at Khondbond. During 2016-17 an amount of ₹ 1.25 lakh was spent on this account.
- Annual Flower and Vegetable show was conducted in the month of January 2017 to make the public appreciate the importance of greening efforts.
- Water spraying on mine haul ways by water tankers has reduced the dust levels in the ambient air. The cost of operation and maintenance of water sprinklers during 2016-17 was ₹ 36 lakhs
- Operating cost for Dry Fog Dust suppression at dumper hopper and at strategic points in the crushing & screening plant during 2016-17 was ₹ 3.00 lakhs.
- An amount of ₹ 4 lakhs was incurred towards conducting Ground vibration studies by CMRI, Dhanbad.
- An amount of ₹ 8.96 lakhs was incurred towards coir matting of fines stock in the year 2016-17.
- An amount of ₹ 7.63 lakh was incurred towards Horticultural development for plantation during 2016-17
- An amount of ₹ 5 lakh was incurred for plantation & distribution of fruit bearing trees on the eve of Vanamahotsava Celebrations in surrounding villages

The above abatement measures have resulted in improvement of air and water quality, reduction in noise levels, and improvement greenery within the lease. In addition, Tata Steel Rural Development Society (TSRDS) is engaged in peripheral developmental activities in villages around the mine. The projects of the Society include irrigation and agricultural extension projects, plantation programmes, creation of SAVE FOREST groups, SELF HELP GROUPS, civic amenities development, medical care and health education, rural sports and skill development, rural cultural promotion, etc.

PART-H

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

- Installation of three numbers of CAAQMS , two numbers in KIMM mine lease area & one number in buffer zone
- Installation of automated weather monitoring station at KIMM
- Installation of piezometers in KIMM (5 Nos.)
- During monsoon 2017, 13000 saplings will be planted in available sites inside the lease area

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- The Company is having a full-fledged Environmental Management Department with personnel from different backgrounds to take care of all environmental aspects relating to mines of Tata Steel. This department has in house capabilities for monitoring various environmental parameters and suggesting to the management necessary abatement measures.
- The mine is developing its environmental monitoring and laboratory capability to monitor ambient air quality as required under new National Ambient Air Quality Standard.
- Dump rehabilitation and plantation at vacant areas have been planned to be carried.
- The mine has adopted Integrated Management System (ISO 9001, ISO 14001 & OHSAS 18001) and has been certified since 1st August 2008.


f Head (Planning), OMQ