

# **ENVIRONMENTAL STATEMENT 2012-13**



## **JODA EAST IRON MINE TATA STEEL LIMITED**

**SEPTEMBER, 2013**

## FORM – V

(See rule-14)

Environmental Statement for the financial year ending the 31<sup>st</sup> March 2013

## P A R T – A

- i. Name and address of the owner/ occupier of the industry, operation or process
- Joda East Iron Mine,  
Tata Steel Limited  
Joda –758 034  
Dist. Keonjhar  
Orissa

Agent Mr R R Sathpathy  
Chief (Joda)

Nominated Owner Mr H M Nerurkar  
Managing Director  
Tata Steel Limited  
Jamshedpur-831 001

- ii. Date of last Environmental Statement submitted. 27<sup>th</sup> September, 2012  
Vide our letter no. MD/ENV/1045/120/12

## P A R T – B

**WATER AND RAW MATERIALS CONSUMPTION**

1.

Water Consumption m <sup>3</sup> /day	(Average requirement)
Process	3871
Cooling	199
Domestic	Nil. The colony is situated outside of the mining lease area. Hence, the consumption under domestic head is shown under Joda west mine.

Name of products	Water Consumption for unit of products	
	During the previous financial year (2011-12)	During the current financial year (2012-13)
Washed Iron Ore	0.27 m <sup>3</sup> /tonne	0.22 m <sup>3</sup> /tonne

(Based on industrial water consumption in wet process)

2. Raw material consumption

Name of raw materials	Name of products	Consumption of raw materials per unit of products	
		During the previous financial year	During the current financial year

This is an opencast mine producing iron ore. As such, no raw material from outside is required. The mine produced 6538044 MT (ROM) of iron ore during 2012-13. Production during 2011-2012 was 5606502 MT (ROM).

## PART – C

**POLLUTION GENERATED**

**Water: Not applicable as there is no outside discharge of any industrial effluent**

**Air:**

Average air quality of FY' 13

Pollutants	Qty. of pollutants discharged (Kg/day)	Concentration of pollutants ( $\mu\text{g} / \text{m}^3$ )	Standards ( $\mu\text{g} / \text{m}^3$ )
<b>South of Primary Crusher</b>			
1. PM <sub>10</sub>	-	50.97	60
2. PM <sub>2.5</sub>		31.81	40
3. SO <sub>2</sub>	-	9.27	50
4. NO <sub>x</sub>	-	9.48	40
<b>Mining area</b>			
1. PM <sub>10</sub>	-	48.90	60
2. PM <sub>2.5</sub>		29.92	40
3. SO <sub>2</sub>	-	9.02	50
4. NO <sub>x</sub>	-	9.33	40
<b>Electrical Sub- Station</b>			
1. PM <sub>10</sub>	-	42.62	60
2. PM <sub>2.5</sub>		23.24	40
3. SO <sub>2</sub>	-	8.62	50
4. NO <sub>x</sub>	-	8.85	40
<b>Near Triveni housing</b>			
1. PM <sub>10</sub>	-	39.43	60
2. PM <sub>2.5</sub>		20.20	40
3. SO <sub>2</sub>	-	8.38	50
4. NO <sub>x</sub>	-	8.61	40

This is an opencast mine and does not have single point source of air pollutants. There is a DG set in the mine, but it runs only in case of power failure and hence very less operation. So, the quantity of air pollutants discharged in Kg/day cannot be ascertained. The above data shows the average ambient air quality during 2012-13.

**P A R T – D  
HAZARDOUS WASTES**

Hazardous Waste	Total Quantity in Kilograms	
	During the previous financial year	During the current financial year
a) from process	15000 litres	52150 litres
- used oil in liquid form		
- Oily wastes in solid form	5.20 MT	5.80 MT
- Used Battery in solid form	88 Nos.	120 Nos.
b) from pollution control facilities	Nil	Nil

**P A R T – 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.

Solid Waste	Total Quantity in tonnes	
	During the previous financial year	During the current financial year
a) from process	1848790 MT	1720000 MT
- Mining OB/rejects		
- Ore washing slimes	655784 MT	465982.28 MT
b) from pollution control facilities	Nil	Nil
c) Quantity recycled or reutilised	-	-

**P A R T - F**

The characteristics (in terms of concentrations and quantum) of hazardous as well as solid waste and disposal practice adopted for both this categories of wastes.

- Solid waste generated as overburden, sub-grade mineral and slime are inert. The average chemical composition are

	Overburden/Sub-grade	Slime
Fe	51.65	54.06
SiO <sub>2</sub>	16.03	7.75
Al <sub>2</sub> O <sub>3</sub>	4.51	7.58
Phos	0.102	0.105

- Overburden and sub-grade are stacked systematically and scientifically in separate dumps on geologically barren areas. After the dump attains its capacity, it is then vegetated to stabilise the slope.
- Slime from ore washing plant is separately stored in a slime dam.

#### **Hazardous Waste:**

<b>Sl.No</b>	<b>Description of Hazardous Wastes (nature)</b>	<b>Mode of disposal</b>
1	Used oil in liquid form	Used oil is collected in barrels and sold to authorised recyclers.
2	Oily wastes in solid form	Collected and kept in an impervious pit. It is then regularly handed over to M/s West Bengal Waste Management Ltd. for incineration as advised by OSPCB.

### **P A R T – G**

The impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production:

- Efforts were made to reduce the consumption of lubricant oil used in Heavy Mining Equipments, by timely maintenance, arresting leakages and eliminating spillages.
- Similarly, attempts were also made to reduce the consumption of electricity in operations. In colony also, some electrical light points have been replaced with solar lights to consume electricity. Maintenance of installed solar lights is also regularly done.
- As an innovative approach, used mineral water bottles are used for blasting purpose, which improves the quality of fragmentation improves explosive energy factor, fragmentation & reduces cost; solution for disposal of plastic bottles: indirect benefits are improved KL/tonne and KWH/ton at crushing plants.
- Water spraying on mine haul road by water tankers has reduced the dust levels in the ambient air. The cost of operation and maintenance of water sprinklers during 2012-13 was about ₹ 24.70 lakhs.
- Dust suppression and dust extraction systems employed in the beneficiation plant have improved the work zone environment in the plant. During 2012-13, the mine has spent an amount of ₹ 12.00 lakhs for the same purpose.
- Slime water is stored in zero-discharge slime dams and the decanted water is pumped back for reuse in the beneficiation process. About 85% of water recycled in the beneficiation process, thus minimising fresh water consumption. To maintain slime dam, the company has incurred an expenditure of ₹ 44.00 lakhs. Further, a total of ₹ 2 lakhs has been spent during the year for recirculation and reuse of water. Moreover, an amount of ₹ 06.00 lakhs was spent in reduction of specific water consumption during 2012-13.

- An amount of ₹ 7.20 lakhs was spent towards monitoring of various environmental parameters.
- For landscaping and horticultural development in the lease area at Joda, an amount of ₹ 16.52 lakhs was spent during 2012-13. Moreover, for the maintenance of fruit garden which is inside the mine lease, an amount of ₹ 3.00 lakhs was spent.
- During 2012-13, a total of 11,000 saplings covering 4 ha were planted along with 1, 00,000 sapling of vetiver covering 4 ha within the mine lease area. The company spent ₹ 39.72 lakhs for vetiver plantation.
- To generate awareness among the employees and their families about environment, World Environment Day & MEMC week was celebrated at Joda. During 2012-13 an amount of ₹ 2.60 lakh was spent on this account.
- Wet drilling arrangement has been provided in each drill machine, which helps in minimizing the dust generation during the drilling activity. During 2012-13, the mine has spent an amount of ₹ 10.00 lakhs for the same purpose.
- An electronic display board was installed at the main gate for viewing the environmental monitoring data by the public. The company has spent ₹ 01.20 lakhs for it maintenance during 2012-13.
- An amount of ₹ 07.49 lakhs was spent towards construction/maintenance of rain water harvesting structures.
- An amount of ₹ 32.96 lakhs was spent towards study of ground vibration by engaging the expertise of CIMFR, Dhanbad.
- An amount of ₹ 24.50 lakhs was spent towards installation and maintenance of fixed water sprinklers at haul road.
- For effective dust suppression at haul roads, an amount of ₹ 36.00 lakhs was spent towards dust ban chemical during 2012-13.
- An amount of ₹ 35.00 lakhs was spent towards flocculent/chemical used in thickener/sludge dam so as to minimise the requirement of fresh water.
- Several initiatives were taken during 2012-13 for reduction of sludge loss which accounted for an amount of ₹ 60.00 lakhs.
- An amount of ₹ 75.00 lakhs was spent towards Construction/Maintenance of toe walls, garland drains and settling pit during 2012-13.
- To reduce diesel consumption in HEMMs, an amount of ₹ 25.00 lakhs was spent towards the use of fuel additives.
- An amount of ₹ 06.00 lakhs was spent towards use of solar light pipes in repair shed, DG shed and primary shed of wet plant.
- To reduce vibrations, an amount of ₹ 18.00 lakhs was spent towards AVM project at Banspani.
- An amount of ₹ 2.00 lakhs was spent for energy audit by PCRA during 2012-13.
- Several measures were taken to reduce noise by using PU, TIRO panels etc which accounted for ₹ 15.00 lakhs during 2012-13.

The above environmental measures have resulted in improvement of air and water quality, reduction in noise level, development of greenery and aesthetics in the mine as well as in residential areas. A total amount of ₹ 505.89 lakhs was spent on environmental related jobs during this year.

In addition to the above, 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, civic amenities development, medi-care and health education, rural sports, skill development and promotion of rural cultural activities.

### **P A R T – H**

Additional investment proposal for environmental protection including abatement of pollution.

- During next financial year, it is planned to spend ₹ 15.00 lakhs for monitoring of various environmental parameters.
- During monsoon 2013, we are having the proposal to plant 5,000 saplings and 4,000 saplings for gap filling covering 2.0 ha of area within the lease area, with a budgetary provision of ₹ 15.20 lakhs.
- Moreover, an amount of ₹ 15.00 lakhs is kept for the extension of vetiver system as well as implementation of Miyawaki experiment for rapid afforestation during the next financial year.
- An amount of ₹ 3.60 lakhs will be spent to get supply of mineral water bottles to be used for blasting purpose during 2013-14.
- There is a proposal to extend the installed fixed water sprinklers on the haul road with an expenditure of ₹ 21.60 lakhs.
- An amount ₹ 12.00 lakhs is proposed for further strengthening the environmental laboratory by procuring more monitoring equipments.

### **P A R T – I**

Any other particulars in respect of environmental protection and abatement of pollution.

- The Company is having a full-fledged Environmental Management Department with personnel from relevant fields to take care of all environmental aspects relating to the mines of TATA STEEL. This department has in-house capabilities for monitoring various environmental parameters and suggesting to the management for necessary abatement measures.
- Dust suppression and Dust extraction system are installed in the plant to improve the air quality.

- Fixed water sprinklers are installed covering a total of 1600 m length of haul road. Moreover, dust ban chemical is in regular use for effective dust suppression.
- Thickeners are provided in the washing plant, from where water is recovered to the extent of 85%, thus minimising fresh water consumption.
- Hydro-cyclone has been installed in the wet circuit to maximise the ore recovery and to reduce loss of iron value in tailings.
- Two Sewage treatment plants have been installed in the residential colony with capacity of 50 KLD and 10 KLD to take care of the domestic sewage.
- Specific water consumption for wet processing of ore has been reduced from gradually by taking several water conservation measures.
- Vehicle emission test are conducted at every six months.
- Initiatives have been taken to grow medicinal plants and vegetables inside the mine.
- Vetiver plantation has been successfully carried out to stabilize the dump slopes and prevent soil erosion.
- The mine has completed construction of rain water harvesting structures with the help of K.R.G. India Ltd. The same water harvesting structure is now operational and helps in recharging the ground water.
- Ground vibration studies are being conducted regularly with the help of CMRI, Dhanbad to minimise blasting effect.
- Several initiatives are taken to generate awareness among employees, children and local people towards environment and how to preserve it.
- The mine is certified to ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007. All the three systems have been integrated and implemented since 1st August, 2008. Moreover, the mine has also been recently certified to SA 8000:2008.



**Head (Planning), OMQ**