

**Form-V**  
**(See Rule 14)**  
**Environmental statement for the financial year ending 31<sup>st</sup> March 2013.**  
**(West Bokaro Colliery)**

**PART-A**

- i) Name and address of the owner/ Occupier of the industry operation or process : **Mr. Sanjay Rojoria,**  
**General Manager,**  
**West Boakro Division,**  
**TATA Steel Limited, P.O.: Ghatotand**  
**Dist. Ramgarh, Jharkhand- 825314**
- ii) Industry category Primary- (STC-code) : SITC -321.4, 321.5A, 321.6A  
Secondary- (SIC code) : ISIC -2100
- iii) Production capacity- units : 7.0 Million Tonns / Year ROM coal.
- iv) Year of establishment : 1948
- v) Date of last environmental statement submitted : Letter no. EMC/IMS/4016/567/12, dated 15<sup>th</sup> Sept, 2012. For the year 2011-12.

**PART-B**

**Water and Raw material Consumption**

- i) Water Consumption ( m<sup>3</sup>/d)
- Process : 0044.72 m<sup>3</sup>/d  
Cooling : 1641.52 m<sup>3</sup>/d  
Domestic : 9175.00 m<sup>3</sup>/d (For entire West Bokaro Division)

Name of the Product	Process Water Consumption per unit of product output	
	During the previous Financial year (2011-12)	During the current Financial year (2012-13)
ROM Coal	0.0738 m <sup>3</sup> /t (Process + Cooling)	0.1066 m <sup>3</sup> /t (Process + Cooling)

- ii) Raw material consumption

*Name of raw materials	Name of products	Consumption of raw material per unit of output	
		During the previous Financial year (2011-12)	During the current Financial year (2012-13)
Explosive (Slurry Emulsion) (Both Coal + Overburden)	ROM Coal	0.00015 tonnes / tonnes	0.00017 tonnes / tonnes

\*Industry may use codes in disclosing details of raw material would violate contractual obligation otherwise all industries have to name the raw materials used.

### PART-C

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

Pollutants	Quantity of pollutants discharged (mass /day)	Concentration of pollutants discharges (mass / volume)	Percentage of variation from prescribed standards with reason
a) Water	Zero water discharge is maintained. Mine water is being used in industrial and domestic purpose after treatment. Only during rainy season mine water is pumped out to water body after proper settlement. Effluent analysis report is attached as <b>annexure-II</b> .		
b) Air	Air quality is monitored and found within prescribed limit ( <b>annexure-I</b> ).		

### PART-D

(As specified under Hazardous Wastes  
[Management, Handling and Transboundary Movement Rules, 2008])

Hazardous Waste	Total Quantity (kg.)	
	During the previous financial year (2011-12)	During the current financial year (2012-13)
(a) From Process		
1. Used lead acid Battery –	- 500 no.s	- 245 no's
2. Used lubricating Oil	- 321570 lts / annum	- 311372 lts / annum
3. Oil soaked cotton (jute)	- 9920 kg / annum	- 7440 kg / annum
4. Discarded Chemical Container	- 18 no's	- 27 no's
5. Non ferrous scrap	- 1700 kg / annum	- 1878 kg/ annum
(b) From Pollution control facilities	Nil	Nil

### PART- E Solid Wastes

Solid Wastes	Total Quantity (kg.)	
	During the previous financial year(2011-12)	During the current financial year (2012-13)
(a) From Process		
Overburden	260.21 Lakh m <sup>3</sup>	250.74 Lakh m <sup>3</sup>
(b) From pollution control facilities	Nil	Nil
(C) (1) Quantity recycled or reutilized within the unit	Near about 174.99 Lakh m <sup>3</sup> of OB generated during last year has been used in backfilling of mined out area (below ground). Rest 75.75 Lakh m <sup>3</sup> was dumped on backfilling area (Above ground). Abandoned dumps are being afforested by tree plantation. Clay burnt bricks has been replaced by boulder (OB recycling) for the construction of toe wall.	
Overburden		
(2) Sold		
(3) Disposed	Nil	Nil

### **PART-F**

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

<b>Category of Waste</b>	<b>Characteristics</b>	<b>Quantity</b>	<b>Disposal Practice</b>
<b>Solid Waste</b> Over Burden	Non coal material (Solid)	250.74 Lakh m <sup>3</sup>	Dumped in above and below ground. .
<b>Haz. Waste</b> 1. Used lead acid Battery –	Lead acid Battery (Solid)	- 245 no's	Disposed off to authorized recycler.  Disposed off to various agencies.
2. Used lubricating Oil	Used Oil (Liquid)	- 311372 lts/ yr	
3. Oil soaked cotton (jute)	Used Cotton (Solid)	- 7440 kg	
4. Non ferrous scrap	Non- Fe, Scrap (Solid)	- 1878 kg/ annum	

### **PART-G**

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

West Boakro Division of TATA Steel Ltd. is an ISO 9001, 14001 and OHS 18001 unit, entire coal mining is done by eco-friendly way by using wet-drilling as a standard practice. Adequate dust suppression arrangement is made in haul roads. Sewage Treatment Plant (STP) is installed newly constructed colonies. All abandoned mine dumps are being reclaimed with soil cover and plantation by native species in phased manner.

The combined impact due to implementation of pollution prevention and control measures cost per tonne of ROM coal, of entire west Bokaro division (Washery, PH, Mines, Eng. services, Logistic, etc.) is Rs. 26.51 (Rupees twenty six and fifty one paisa only).

### **PART-H**

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

Greenery over abandoned overburden dump yard, in pit dump area and green belt development is a continuous process. Use of surfactant with water to increase moisture retention time of haul road, which consequently reduces water consumption.

### **PART-I**

**Any other particular for improving the quality of the environment**

West Boakro Division of TATA Steel Ltd. is committed to improve safety and environment by strictly practicing Environmental Management System of company. Various programs are arranged such as green month, World Environmental day, Van Mohotsav for public awareness. One pilot project of Mulberry plantation in OB dump is started for generation of self employment and environmental protection through economic benefit, the results of the project after successful completion will be extended further in larger scale. Entire mining operation at West Bokaro is targeting for reduction in fresh water & diesel consumption during operation.

**Mr. Sanjay Rojoria, General Manager,  
West Boakro Division, TATA Steel Limited,  
P.O.: Ghatotand, Dist. Ramgarh, Jharkhand- 825314**

## Air Quality Report: At Work Place

Name of Industry: **West Bokaro Colliery**No. of sampling points: **(03)**Date of Sampling: **01.04.2013 to 16.04.2013**  
**01.05.2013 to 16.05.2013**  
**03.06.2013 to 18.06.2013**Sampling position: **Mines**

## 1. CMC,

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	RPM	SPM
CMC	09.00 AM to 05.00 PM on 01.04.2013	3.0	47	163	487
	05.00 PM on 01.04.2013 to 09.00 AM on 02.04.2013	2.4	37	152	448
	09.00 AM to 05.00 PM on 15.04.2013	3.0	50	159	467
	05.00 PM on 15.04.2013 to 09.00 AM on 16.04.2013	2.4	39	145	438
	09.00 AM to 05.00 PM on 01.05.2013	3.2	46	167	484
	05.00 PM on 01.05.2013 to 09.00 AM on 02.05.2013	2.8	34	149	429
	09.00 AM to 05.00 PM on 15.05.2013	2.6	42	151	457
	05.00 PM on 15.05.2013 to 09.00 AM on 16.05.2013	2.2	35	132	372
	09.00 AM to 05.00 PM on 03.06.2013	3.1	49	156	479
	05.00 PM on 03.06.2013 to 09.00 AM on 04.06.2013	2.9	40	146	434
	09.00 AM to 05.00 PM on 17.06.2013	2.8	42	140	401
	05.00 PM on 17.06.2013 to 09.00 AM on 18.06.2013	2.5	37	133	375
<b>Maximum</b>		<b>3.2</b>	<b>50</b>	<b>167</b>	<b>487</b>
<b>Average</b>		<b>2.7</b>	<b>41</b>	<b>149</b>	<b>439</b>
<b>Limit</b>		<b>120 µg/ m<sup>3</sup></b>	<b>120 µg/ m<sup>3</sup></b>	<b>300 µg/ m<sup>3</sup></b>	<b>700 µg/ m<sup>3</sup></b>

## Air Quality Report: At Work Place

Name of Industry: **West Bokaro Colliery**

No. of sampling points: **(03)**

Date of Sampling: **02.04.2013 to 17.04.2013**  
**02.05.2013 to 17.05.2013**  
**04.06.2013 to 19.06.2013**

Sampling position: **Mines**

### 2. FRS

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	RPM	SPM
<b>FRS</b>	09.00 AM to 05.00 PM on 02.04.2013	2.7	46	156	469
	05.00 PM on 02.04.2013 to 09.00 AM on 03.04.2013	2.4	45	139	459
	09.00 AM to 05.00 PM on 16.04.2013	2.6	52	154	460
	05.00 PM on 16.04.2013 to 09.00 AM on 17.04.2013	2.4	44	152	470
	09.00 AM to 05.00 PM on 02.05.2013	3.1	44	160	470
	05.00 PM on 02.05.2013 to 09.00 AM on 03.05.2013	2.8	40	149	436
	09.00 AM to 05.00 PM on 16.05.2013	3.0	42	158	471
	05.00 PM on 16.05.2013 to 09.00 AM on 17.05.2013	2.6	36	150	425
	09.00 AM to 05.00 PM on 04.06.2013	2.9	47	152	475
	05.00 PM on 04.06.2013 to 09.00 AM on 05.06.2013	2.8	45	130	411
	09.00 AM to 05.00 PM on 18.06.2013	3.0	45	152	450
	05.00 PM on 18.06.2013 to 09.00 AM on 19.06.2013	2.6	39	127	373
<b>Maximum</b>		<b>3.1</b>	<b>52</b>	<b>160</b>	<b>475</b>
<b>Average</b>		<b>2.7</b>	<b>44</b>	<b>148</b>	<b>447</b>
<b>Limit</b>		<b>120 µg/ m<sup>3</sup></b>	<b>120 µg/ m<sup>3</sup></b>	<b>300 µg/ m<sup>3</sup></b>	<b>700 µg/ m<sup>3</sup></b>

### Air Quality Report: At Work Place

Name of Industry: **West Bokaro Colliery**

No. of sampling points: **(03)**

Date of Sampling: **03.04.2013 to 18.04.2013**  
**03.05.2013 to 18.05.2013**  
**05.06.2013 to 20.06.2013**

Sampling position: **Mines**

**3.FMS**

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	RPM	SPM
<b>FMS</b>	09.00 AM to 05.00 PM on 03.04.2013	2.5	49	140	444
	05.00 PM on 03.04.2013 to 09.00 AM on 04.04.2013	2.6	41	135	406
	09.00 AM to 05.00 PM on 17.04.2013	2.4	44	135	437
	05.00 PM on 17.04.2013 to 09.00 AM on 18.04.2013	2.2	51	142	390
	09.00 AM to 05.00 PM on 03.05.2013	2.8	41	145	426
	05.00 PM on 03.05.2013 to 09.00 AM on 04.05.2013	2.5	37	133	377
	09.00 AM to 05.00 PM on 17.05.2013	2.8	37	140	465
	05.00 PM on 17.05.2013 to 09.00 AM on 18.05.2013	2.1	34	128	425
	09.00 AM to 05.00 PM on 05.06.2013	2.9	42	139	396
	05.00 PM on 05.06.2013 to 09.00 AM on 06.06.2013	2.6	38	120	343
	09.00 AM to 05.00 PM on 19.06.2013	2.3	41	135	370
	05.00 PM on 19.06.2013 to 09.00 AM on 20.06.2013	2.0	36	122	352
<b>Maximum</b>		<b>2.9</b>	<b>51</b>	<b>145</b>	<b>465</b>
<b>Average</b>		<b>2.4</b>	<b>41</b>	<b>134</b>	<b>402</b>
<b>Limit</b>		<b>120</b> µg/ m <sup>3</sup>	<b>120</b> µg/ m <sup>3</sup>	<b>300</b> µg/ m <sup>3</sup>	<b>700</b> µg/ m <sup>3</sup>

## Ambient Air Quality Report

Name of Industry: **West Bokaro Colliery**

No. of sampling points: **(03)**

Date of Sampling: **18.04.2013 to 19.04.2013**  
**15.05.2013 to 16.05.2013**  
**01.06.2013 to 02.06.2013**

Sampling position: **Mines**

### 1. Banjee

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Banjee</b>	09.00 AM to 05.00 PM on 18.04.2013	3.4	39	76	42
	05.00 PM on 18.04.2013 to 09.00 AM on 19.04.2013	2.0	26	58	35
	8.30 AM to 04.30 PM on 15.05.2013	4.0	42	78	45
	4.30 PM on 15.05.2013 to 08.30 AM on 16.05.2013	2.0	33	51	40
	8.30 AM to 04.30 PM on 01.06.2013	1.9	26	48	40
	4.30 PM on 01.06.2013 to 08.30 AM on 02.06.2013	2.0	29	51	35
<b>Maximum</b>		<b>4.0</b>	<b>42</b>	<b>78</b>	<b>42</b>
<b>Average</b>		<b>2.5</b>	<b>32</b>	<b>60</b>	<b>39</b>
<b>Limit</b>		<b>80</b> µg/ m <sup>3</sup>	<b>80</b> µg/ m <sup>3</sup>	<b>100</b> µg/ m <sup>3</sup>	<b>60</b> µg/ m <sup>3</sup>

## Ambient Air Quality Report

Name of Industry: **West Bokaro Colliery**

No. of sampling points: **(03)**

Date of Sampling: **19.04.2013 to 20.04.2013**  
**16.05.2013 to 17.05.2013**  
**04.06.2013 to 05.06.2013**

Sampling position: **Mines**

### 2. Pundi

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Pundi</b>	09.00 AM to 05.00 PM on 19.04.2013	2.7	29	66	40
	05.00 PM on 19.04.2013 to 09.00 AM on 20.04.2013	2.0	23	50	33
	09.30 AM to 05.30 PM on 16.05.2013	2.0	42	60	44
	05.30 PM on 16.05.2013 to 09.30 AM on 17.05.2013	2.0	35	55	41
	09.30 AM to 05.30 PM on 04.06.2013	1.2	22	46	37
	05.30 PM on 04.06.2013 to 09.30 AM on 05.06.2013	1.9	27	41	32
<b>Maximum</b>		<b>2.7</b>	<b>42</b>	<b>66</b>	<b>44</b>
<b>Average</b>		<b>2.0</b>	<b>30</b>	<b>53</b>	<b>38</b>
<b>Limit</b>		<b>80 µg/ m<sup>3</sup></b>	<b>80 µg/ m<sup>3</sup></b>	<b>100 µg/ m<sup>3</sup></b>	<b>60 µg/ m<sup>3</sup></b>



## Ambient Air Quality Report

Name of Industry: **West Bokaro Colliery**

No. of sampling points: **(03)**

Date of Sampling: **20.04.2013 to 21.04.2013**  
**17.05.2013 to 18.05.2013**  
**05.06.2013 to 06.06.2013**

Sampling position: **Mines**

Weather Condition:

### 3. Mukunda bera

Location	Time	SO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Mukuda bera</b>	09.00 AM to 05.00 PM on 20.04.2013	2.6	52	79	56
	05.00 PM on 20.04.2013 to 09.00 AM on 21.04.2013	2.4	47	71	50
	10.30 AM to 06.30 PM on 17.05.2016	3.1	45	88	57
	06.30 PM on 17.05.2016 to 10.30 AM on 18.05.2016	1.9	32	56	46
	08.30 AM to 04.30 PM on 05.06.2013	2.1	36	57	42
	04.30 PM on 05.06.2013 to 08.30 AM on 06.06.2013	2.1	27	46	38
<b>Maximum</b>		<b>3.1</b>	<b>52</b>	<b>88</b>	<b>57</b>
<b>Average</b>		<b>2.3</b>	<b>40</b>	<b>66</b>	<b>48</b>
<b>Limit</b>		<b>80 µg/ m<sup>3</sup></b>	<b>80 µg/ m<sup>3</sup></b>	<b>100 µg/ m<sup>3</sup></b>	<b>60 µg/ m<sup>3</sup></b>

## EFFLUENT QUALITY

SAMPLING DATE: 03, 04 &amp; 05.06.2013

LOCATIONS		LEVELS			
		pH	TSS	COD	Oil & Grease
Mines area	SE	7.3	22	22	1.0
	ACD	7.2	20	23	1.0
	E	7.0	23	23	1.0
LIMIT		5.5-9.0	100 mg/L	250 mg/L	10 mg/L

AMBIENT NOISE MONITORING

LOCATIONS		NOISE LEVELS dB(A)			
		DURING DAY TIME		DURING NIGHT TIME	
		LIMIT	ACTUAL	LIMIT	ACTUAL
Mines area	SE	75	55-57	70	54-55
	ACD	75	56-58	70	55-57
	E	75	51-52	70	49-51

Head (Env. & Forests) RMP  
West Bokaro  
Tata Steel