



ENVIRONMENT STATEMENT

FOR THE FINANCIAL YEAR 2018-19

Submitted to SPCB under Rule 14 of The Environment (Protection) Rules 1986

TATA STEEL LIMITED

FERRO ALLOYS PLANT, BAMNIPAL



Ref. No. FAP(B)/HEAD/465/2019

Date: 23.09.2019

The Member Secretary
Odisha Pollution Control Board
A/118, Nilakantha Nagar
Bhubaneswar

Sub: Submission of Environmental Statement for the period of 2018-19 for Ferro Alloys Plant, Bamnival of Tata Steel Limited.

Sir,

With reference to above subject whereby, we would like to submit one set of Annual Environmental Statement in form-V dully filled in for the year 2018-2019 in respect of M/s Ferro Alloys Plant, Bamnival by Tata steel for your kind consideration.


We wish to maintain that necessary control measures have been installed and adopted to minimize the impact on environment.

We look forward to further your guidance which shall certainly help us in endeavoring further improvements in our Environmental Management Practices.

This is for your kind information and perusal with a request for your kind acknowledgement.

Thanking you,

Yours faithfully,
For : TATA STEEL LTD.


HEAD, (F A PRODUCTION)
FERRO ALLOYS PLANT, BAMNIPAL

Encl : as above.

Copy to -Regional Officer, OPCB, At-Baniapatt, College Road, Keonjhar - with enclosure.


23/9/19

INTRODUCTION

The Ferro Alloy Plant, Bamnival unit was originally set up by M/s ORISSA MINING CORPORATION LTD. (OMC) (A GOVT. OF ORISSA UNDERTAKING) in 1986, under technical collaboration with Consortium Voest Alpine AG (Linz, Austria) and Outokumpu OY, ESPOO Finland. The Plant adopts the OUTOKUMPU process of manufacturing sintered chrome ore pellet and production of Ferro Chrome by Electro Thermic Reduction in Submerged Arc-Furnace.

The Plant was taken-over by "TATA STEEL" under an agreement with GOVT. OF ORISSA on 27th SEPT'91. The earlier marketing agreement with M/s KLOCKNER AG, WEST GERMANY ceased to exist w.e.f. the date of takeover by TATA STEEL.

The plant produces superior Ferro alloy product with 60-65% chromium, 6-8% carbon and other elements like Silicon, Iron and other trace elements. Product of Ferro alloy plant, Bamnival is qualitatively appreciated at international market for manufacture of special grade stainless steel. Around 75% of this prime grade HCFeCr goes to export market. The major consumer being Korea, Japan, China and USA. High Carbon Ferro chrome also goes to the domestic market for several steel processing unit.

Ferro Alloy Plant, Bamnival is one of the leading Ferro alloy producers of the country with a capacity of 65000 MT per year. The plant produces premium grade High Carbon Ferro Chrome (HCFeCr) which is supplied mostly to international customers across Japan, Korea, China and US market as well as to domestic customers.

ABOUT THE PLANT

Plant Location and Accessibility

The site of the Ferro Alloy Plant is located at Bamnival, Tehsil- Harichandanpur, District-Keonjhar, State-Odisha and the plant site is located besides the Daitari – Paradeep Expressway near Bamnival, Keonjhar District of Odisha at about 20km towards west of Duburi and 18km before Daitari Mines. The nearest East Cost Railway station Tomka is at a distance of 0.6 km from plant. The nearest airport is at Bhubaneswar at a distance of about 130 km. Nearest port is Paradeep at a distance of 145 km. The nearest township is Jajpur Road which is 40Km.

FORM -V

FORM - V

Environmental Statement for the financial year ending on 31.03.2019

PART - A

1. Name and address of the owner/ occupier of the Industry, operation or process : Ferro Alloy Plant, Bamnival
Tata Steel Ltd,
At/PO- Bamnival, Keonjhar-758082
- Factory Manager : Mr. U P RATH
Head, Ferro Alloys Production,
- Nominated Occupier : Mr. T.V Narendran,
Managing Director,
Tata Steel Ltd., Jamshedpur.
2. Industry Category : Large
3. Production Capacity of Ferro Alloys. : 65,000 MT/Year
4. Year of establishment : 1986
5. Date of submission of previous Environmental Statement : 26th September, 2018

PART - B

Water and Raw Material Consumption

- Water Consumption - Water is used inside the Plant for the following purposes
- a) Industrial Cooling
 - b) Process and
 - c) Domestic Purpose

Water consumption under all the three heads for the assessment year are as follows:-

1. Industrial Cooling : 598799.2 M³
2. Process : 161397.8 M³
3. Domestic : 237337.72 M³

Process water consumption per unit of product output:-

Name of the Product(s)	Rate of water consumption in M ³ /Ton	
	During FY 17-18	During FY 18-19
High Carbon FeCr	17.89	15.34

B. Raw material Consumption :-

The raw material consumptions for the production of FeCr are as follows:-

Raw Materials Used	Avg quantity used to produce 1 MT of FeCr for the Previous Year(2017-18)	Avg Quantity used to produce 1 MT of FeCr for the current year (2018-19)
Chrome Ore (Kg)	2105*	2167*
Coke (Kg)	526*	533*
Electrode Paste (Kg)	8*	9*
Power (KWH)	3618*	3653*

*Annual average

PART - C

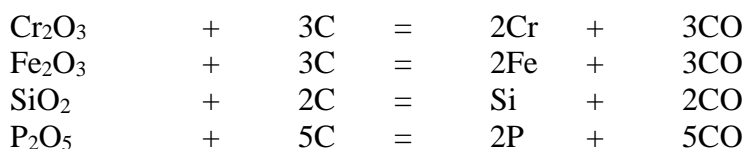
Pollution discharged to environment / unit of output

(Parameter as specified in the Consents issued)

Basically the plant produces air pollution and the causes can be attributed to the process which has been briefed as follows:-

Brief description of the process producing FeCr:

During the smelting process, oxides of Chromium, Iron, Silicon, Sulphur and Phosphorous are reduced and the reactions involved in the above process are as follows:-



The Sulphur goes into the Slag and also escapes to the atmosphere through the stack as SO₂.

Sources of Pollution:

The sources of pollution can be in the form of:

1. Water Pollution
2. Air Pollution

1. Water Pollution:-

The water used for cooling several parts of the Furnaces, making slurry in GFPS, slag granulation, scrubbing in GCP is re-circulated to the system and is not discharged outside the Plant.

2. Air Pollution:

30 MVA Arc Furnace produces the following air pollutants which is released to atmosphere through GCP.SPM, SO₂, NO₂ & CO

1.1 Pollutants from Stack :

Sl No	Stack Details	Quantity of pollutants discharged (Mass/Day) (Ton/Day) 2018-2019	Quantity of pollutants discharged (Mass/Volume) (mg/Nm ³) 2018-2019	% variation from the norms with reason.
1	Stack attached to Arc Furnace	0.0030	19	81% (due to the effective operation of Gas Cleaning Plant)

Note: Last year the pollution load was estimated based on the stack emission report as tested by the agency and expressed in mg/NM³

PART – D

HAZARDOUS WASTES

(AS SPECIFIED UNDER THE HAZARDOUS WASTES)

HAZARDOUS WASTES	TOTAL QUANTITY	
	DURING THE PREVIOUS YEAR (2017-18)	DURING THE CURRENT YEAR(2018-19)
I) FROM PROCESS a. Used Oil b. Waste Containing Oil c. Waste batteries	a) 2800 Ltrs* b) Nil Ltrs c) Nil Nos*	e) 1000 Ltrs f) Nil Ltrs g) Nil Nos
II) FROM POLLUTION CONTROL FACILITY (GCP) a) Flue gas cleaning residue	d) 155.9 Mt (as sludge)	h) 161.3 Mt (as sludge)

* Including Back log

PART - E
SOLID WASTES

SOURCES	TOTAL QUANTITY	
	DURING THE PREVIOUS YEAR(2017- 2018)	DURING THE CURRENT YEAR(2018- 2019)
a. From Process		
i) Slag	57232.56 MT	54406 MT
ii) Cotton wastes	Nil (The use has been stopped completely)	Nil (The use has been stopped completely)
iii) Waste Batteries	Nil Nos*	Nil Nos* (Including telephone exchange batteries)
b. From Pollution Control Facility.	155.9 MT (As sludge)	161.3 MT (As sludge)
c. i. Quantity recycled or Reused within the unit	Nil	Nil
ii. Quantity sold	Nil	Nil
iii. Quantity disposed	Slag dumped in our company leased area and sludge stored in impervious lined pit.	a. 717.25* MT of Sludge

* including backlog

PART - F

Characteristics of FeCr Slag	Characteristics of GCP Sludge
Cr ₂ O ₃ = 7% to 10%	Cr ₂ O ₃ = 25% to 28%
SiO ₂ = 28% to 32%	SiO ₂ = 17% to 18%
MgO = 25% to 28%	C = 7% to 8%
Al ₂ O ₃ = 25% to 28%	Al ₂ O ₃ = 10% to 12%
Fe ₂ O ₃ = 3% to 4%	CaO = 2% to 4%
CaO = 1% to 4%	MgO = 16% to 18%
	FeO = 11 to 12%

The composition of other hazardous wastes like Waste Oil & Waste Batteries is Hydrocarbons, lead and used acids.

DISPOSAL PRACTICE:

SLAG:-

Slags generated from furnace are dumped in our leased area.

SLUDGE:-

The sludge after being conveyed to the imperviously lined sludge drying beds from the thickener is allowed to dry sufficiently and the dry sludge is then transported to the earmarked sludge dumping site inside the plant premises & sent to the authorized recycler M/s RAMKY, Jajpur

USED OIL:

The waste oil generated at various sources is collected in leak proof barrels and then are 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. During transfer of waste oil to barrels, a trough is placed underneath in order to prevent land contamination due to oil spillage. Then at a fixed interval, these barrels are returned to stores for final disposal 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.

USED BATTERIES:

Waste Batteries are generated in Electrical section and Garage. These batteries with diluted acid and caps intact are kept under a shed having impervious floor. Then at a fixed interval, these batteries are returned to Stores for final disposal. All storage areas are having sheds have been suitably barricaded and caution board displayed. 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 THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION:

M/s Ferro Chrome Plant has spearheaded the pursuit for Environmental Protection by implementing an effective environmental management system. To this effect, the Plant has undertaken the following measures:-

- i. Installation of portable auto sprinkler at cost 13.2 lakhs.
- ii. Annual maintenance of both the GCPs including power consumption and sludge transportation to M/s RAMKY is 2.7 crores (approx.).
- iii. Plantation in and around the Plant for which the annual expenditure of Rs. 2.64 lakhs was incurred.
- iv. Rs. 4.10 lakhs every year for water sprinkling on haul roads.
- v. Environmental Monitoring & Measurement every month by third party at annual cost of Rs. 10.2 lakhs.
- vi. Feasibility study for ETP setup at a cost of 2.6 lakhs.

- vii. Miscellaneous contracts of Rs. 53.8 lakhs for garden maintenance, housekeeping, segregation and collection of house hold wastes from colony housing, scrap collection & disposal, mosquito control, development of helipad area etc.
- viii. Development of nursery of Rs. 3.8 lakhs.
- ix. Against work of STP for colony housing of Rs. 14.6lakhs.
- x. Slag dump toe wall strengthening & protection of eroded river bed of Rs. 16.07 Lakhs
- xi. Bio medical waste are disposed of at common bio medical waste treatment & dispose facility operated by M/s SANI Clean Pvt limited of an amount Rs 2.1 Lakh
- xii. Plastic bags disposed of for recycling purpose to M/s Ambuja Cement of an amount Rs 20,567.

So the total annual expenditure incurred towards environmental protection
 =13.2+ 2.7 crores + 2.64 lakhs + 4.10 lakhs + 10.2 lakhs + 2.6 lakhs + 53.8 lakhs +3.8 lakhs
 +14.6 lakhs +16.07 Lakhs + 2.1 lakhs + 0.2 lakh = 1.26 Crores (Approx.)

Annual production of the plant during the year = 49460 MT

So the impact of the pollution abatement measures on the cost of production shall be = Rs
 1.26 Crores/49460 MT = Rs. 254.75/ MT \approx Rs.255/MT

Thus the plant is incurring an additional expenditure of Rs 255 / MT of finished product towards pollution control measures.

PART – H

Environmental Management System in concurrence with the requirements of ISO-14001 standards has been implemented very effectively thro' the following efforts:-

- a. Effective solid wastes management
- b. 100% recycling of waste water
- c. Scheduled water sprinkling of haul roads
- d. Waste dump plantation
- e. Discharging the canteen waste water to Soak Pits thro' settling tank
- f. Imparting EMS training to all the employees.
- g. Proper handling and management of Hazardous Wastes
- h. Optimisation of consumption of natural resources like water & minerals
- i. Disposal of HW waste GCP sludge through authorized(Common hazardous Waste treatment, storage & disposal facility, Sukinda).
- j. Plastic bags disposed of for recycling purpose to M/s Ambuja Cement.
- k. Bio medical waste are disposed of at common bio medical waste treatment & dispose facility operated by M/s SANI Clean Pvt limited.

PART – I

- 1. Community awareness development programs on environmental protection are also undertaken through celebration of World Environment Day and showing films on Environmental Protections in captive channel. Involvement of school children, spouse, family members and Road show (Drama) to develop awareness on world Environment day.

2. Also took integrated mosquito control programme to eradicate malaria cases in the colony.
3. TSRDS has done several mobile treatment programs in different villages regarding diseases and their remedial measures with full checkup.
4. The Plant has been certified to the coveted ISO-14001:2004 (EMS) Certification by IRQS, Kolkata.

Head, FA Production

Ferro Alloy Plant, Bamnival

Tata Steel Limited