

O/C



(Reg. A/D)

HZL/DSC/ENV/ES/2019/1

Date 17.09.2019

To,

**The Member Secretary
Rajasthan State Pollution Control Board
4, Institutional Area
Jhalana Doongri
Jaipur-302004**

File No. CPN/M-53

Sub: Environmental Statement for the year 2018-19 for Zinc Smelter, Dariba, Rajsamand.

Ref: Consent to Operate No: 2016-2017/CPM/4773 dated 02.02.2017

Sir,

With reference to above subject please find enclosed herewith the Environmental Statement for the financial year 2018-19 for Zinc Smelter, Dariba, Rajsamand.

Thanking You,

For Hindustan Zinc Limited

Yours Faithfully

(Manoj Kumar Soni)
Unit Head- Dariba Smelter Complex

Cc:

1. The Regional Officer
Rajasthan State Pollution Control Board
18, Azad Nagar, Near Pannadhay Circle
Mining office Road
Bhilwara-311001
2. The Director,
Ministry of Environment and Forests,
5th Floor, Kendriya Bhawan
Sector H – Aliganj,
Lucknow – 226024

3. O/C

Hindustan Zinc Limited

Dariba Smelter Complex, P.O. Dariba, Teh. Railmagra, Distt. Rajsamand (Rajasthan) - 313 211
T +91-2952 265 873 - 76 F +91-2952 265 660 www.hzindia.com

Registered Office : Yashad Bhawan, Udaipur (Rajasthan) - 313 004
CIN : L27204RJ1966PLC001208

**Hindustan Zinc Limited
Dariba Smelter Complex**



**ENVIRONMENTAL STATEMENT FOR ZINC
SMELTER
(FINANCIAL YEAR ENDING MARCH 31ST 2019)**

PREPARED & SUBMITTED BY

**Zinc Smelter
Dariba Smelter Complex
Hindustan Zinc Limited
P.O. - Dariba, District – Rajasmand
Rajasthan - 313211**

Form V
Environment Statement
For the Financial Year ending the 31st March 2019

Part A

- (i) Name and address of the owner/occupier of the industry operation or process : Sunil Duggal
 CEO
 M/s. Hindustan Zinc Limited
 Dariba Smelter Complex
 Hindustan Zinc Limited,
 P.O.- Dariba, Tehsil- Relmagra
 Dist. - Rajsamand
 Rajasthan – 313 21
- (ii) Industry category : Red/ Large
 Primary – (STC Code) : AAACH7354KST006
 Secondary- (SIC Code) : Not Applicable
- (iii) Production Capacity :
- Zinc Smelter***
- SHG Zinc Cathode/Ingot (Special High Grade) : 250,000 TPA
- CGG (Continuous Galvizing Grade) Zinc : 40,000 TPA
- By-Products (in TPA)***
- Cadmium metal / Sponge (equivalent metal) : 800 TPA
- Calomel : 44 TPA
- Copper as Copper cement/sulphate/concentrate (equivalent metal) : 500 TPA
- Lead Silver Compound/Low Grade Lead Concentrate : 40000 TPA
- Sulphuric Acid : 612000 TPA
- Year of Establishment : 2010
- (iv) Date of Last Environmental Statement Submitted : 20.09.2018

PART -B

WATER AND RAW MATERIAL CONSUMPTION

(1) Water consumption (m3 /d)*

Boiler/Cooling	:	2490
Domestic	:	163
Industrial Process	:	2978

* Daily water consumption for Zinc Plant (2, 50,000 TPA) including STP water

Name of Product		Process water consumption per unit of product output(cum/MT)	
		During the previous financial year	During the current financial year
		(1)	(2)
SHG Zinc Cathode/Ingot	With STP water	5.38	5.45
	Fresh Water (without STP water)	2.00	1.23

(2) Raw material consumption

Name of raw material	Name of products	Consumption of raw material per unit of output MT	
		During the previous financial year	During the current financial year
Zinc concentrate	SHG Zinc Cathode/ Ingot	1.72	1.98
Calcine		1.74	1.75
Aluminum Metal		0.0012	0.0014
Zinc dross and Zinc bearing waste		0.024	0.020

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 in discharges (mass/volume)	Percentage of variation from prescribed standards
a) Water	Not Applicable as Zero Discharge is maintained.		
pH			
TDS			
DO			
Suspended Solids			
Oil and Grease			
Chromium as hexavalent			
Manganese			
Nickel			
Copper			
Zinc			
Cadmium			
Lead			
Mercury			
Cyanide			
b) Air			
	Zinc Plant		
Particulate matter	12.87 Kg/day	40.69 mg/Nm ³	-18.62
SO ₂ R-1	967.96 Kg/day	442.29 mg/Nm ³	-53.44
Acid Mist	86.95 Kg/day	39.79 mg/Nm ³	-20.43
SO ₂ R-2	991.86 Kg/day	438.87 mg/Nm ³	-53.80
Acid Mist	87.20 Kg/day	38.65 mg/Nm ³	-22.69

PART-D

HAZARDOUS WASTES

As specified under Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008

Hazardous Waste	Total Quantity Generation (Kg.)	
	During the previous financial year	During the current financial Year
(a) From process		
- Jarosite	176046810	171665264
- Purification Cake	5417590	5372888
- Anode Mud	1094098	986464
- Cooler Cake	1809830	1501825
- Cobalt Cake	----	----
- Used /spent Oil	23940	27180
- Spent Catalyst (V2O5)	32300	26200
- Chemical Sludge (Salts)	3002520	2880700
- Discarded Containers/barrels/liners used for hazardous waste/Chemicals	490 Nos	943 Nos
- Flue Gas Cleaning Residue	--	--
- Spent ion exchange resin containing Toxic metal	--	--
- Oil soaked filter	--	--
- Waste/residues containing oil	6140	17120
- Process Residue	5838500	4651200
(b) From pollution control facilities		
- Non-ferrous sludge from ETP and scrubbers (ETP Cake)	12578116	14906269

PART-E

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

Details of Hazardous Wastes & Its Disposal Method

Sr. No.	Name of waste	Quantity (MT)	Chemical Characteristics (%)	Mode of Treatment / Disposal
1	Jarosite	171665.3	Zn: 2.5 -5 Pb: 5-7 Fe: 25-31	Stabilization with lime & cement as Jarofix using patented Jarofix Technology (M/s Canadian Electrolytic Zinc), followed by disposal in Jarofix yard.
2	Non-ferrous sludge from ETP and scrubbers (ETP Cake)	14906.3	Zn: 1- 8 Cu: 0.01 – 0.02 Pb: 0.2 – 0.5	Disposal in captive SLF after stabilization.
3	Cooler Cake	1501.8	Zn: 0.5-1.5 Balance Gypsum	Disposal in captive SLF after stabilization.
4	Purification Cake	5372.9	Zn: 20 - 35 Cd: 8-10 Cu: 3-12	Sale to authorized recyclers registered with CPCB/ MoEF and surplus disposal to captive SLF.
5	Anode Mud	986.5	Mn: 30-45 Zn: 0.3 - 1 Pb: 5-8	Reuse/sale to authorized recyclers registered with CPCB/ MoEF and surplus disposal to captive SLF.
6	Used Oil/Spent Oil	27.2	--	Reuse/sale to authorized recyclers registered with CPCB/ MoEF.
7	Chemical Sludge (Salts)	2880.7	Sodium Salts (Na ₂ SO ₄ .10H ₂ O etc)	Disposal in SLF
8	Spent Catalyst (V ₂ O ₅)	26.2	V ₂ O ₅	Sale to authorized recyclers/Disposal in SLF
9	Discarded Containers/barrels/liners used for hazardous waste/Chemicals	943 Nos.	--	Disposal in SLF
10	Cobalt Cake	--	--	Sale to authorized recyclers registered with CPCB/ MoEF&CC and surplus

				disposal to captive SLF.
11	Flue Gas Cleaning Residue	--	--	Incineration/ Disposal in SLF
12	Spent ion exchange resin containing Toxic metal	--	--	Disposal in SLF
13	Oil soaked filter	--	--	Incineration
14	Waste/residues containing oil	17.1	--	Incineration
15	Process Residue	4651.2	--	Reuse/sale to authorized recyclers registered with CPCB/ MoEF.

PART-F

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

Our aim is to preserve the long- term health of the natural environment affected by our operations. We set and achieve targets that promote efficient use of resources and include the reduction and prevention pollution.

Air Environment

Control of SO₂ Emissions in Acid Plant

During operation of the smelter complex, the main emission source is SO₂ from stack attached to Sulphuric Acid Plant. SO₂ emission is restricted to 1.5 kg/tone of acid and acid mist is controlled below 50 mg/Nm³ which conform to the stipulated regulatory norms. Adequate stack height (100-m.) has been provided. DCDA process is used for better SO₂ conversion and absorption efficiency. Candle Filter system and De-mister pad are installed in the Acid Plant to control Acid Mist.

Control of Particulate Matter Emission

Bag filters have been provided in calcine handling and Zinc dust plant. The PM emissions are controlled below 50 mg/Nm³.

Water sprinkling at transfer points and storage is deployed. The concentrate has inbuilt moisture content of around 7-8% which keep this powdery material in wet conditions avoiding any significant emissions. Conveyors are covered, with water sprinkling at junction of transfer points.

Water Environment

We have a long term approach to water management that aims to improve our performance, recognize the significance of water and contribute to sustainable water management. We understand its importance and adopt best practices for making the judicious use of water and conserve it.

Effluent generated from the Dariba Smelter complex is treated in Effluent Treatment Plant (ETP) of capacity 9000 m³/day along with 8850 m³/day capacity of RO plant

The effluents generated from gas cleaning plant, sulphuric acid plant, anode and cathode washing, DM plant, cooling towers and power plant are treated to neutralize the acidity and to precipitate and remove metallic elements.

Treated water is reused/ recycled in processes. Multiple Effect Evaporator (MEE) and Solar Evaporation Ponds have been provided to treat RO reject water to ensure Zero Effluent Discharge from the plant premises.

Sewage collected from the plant is collected in septic tanks followed by soak pits. Sewage collected from residential colony is treated in Sewage Treatment Plant (STP) established in the colony itself.

Storm water ponds of adequate capacity have been constructed inside the plant premises for storing the drain water for further treatment in the ETP. It is used in the monsoon in conserving the rain water for further use in the plant.

Waste Management

We focus on a '4R' waste strategy - Reduce, Recycle, Reuse and Reclaim and 'Eco-friendly' disposal of process residues. The solid wastes generated from the Zinc smelter, are given in 'Part F' of the environmental statement.

A well designed Secured Landfill (SLF) with double composite liner system and Jarofix Yard with single composite liner system has been constructed in the plant premises for the proper disposal of the waste for preventing the deterioration of the land and water environment.

Noise

In the Smelter, noise is generated from waste heat recovery boiler, fans, compressors and blowers. All equipments in the Smelter have been designed /operated to have a noise level in line with the regulatory requirements. Necessary acoustic enclosures have been provided to limit noise levels within the norms.

PART-G

Additional measures/investment proposal for environment protection including abatement of pollution /prevention of pollution.

Green belt Development

Implementation of afforestation program is of paramount importance for Dariba Smelter Complex. In the financial years 2009-2019, 156263 nos. of saplings have been planted successfully. Drip irrigation facility has been provided to all the plant saplings.

The various plant species grown at Dariba Smelter Complex include; Neem (*Azadirachta indica*), Amaltas (*Cassia fistula*), Shisum (*Dalbergia Shishoo*), Ficus Religiosa, Terminalia Arjuna, Karanj (*Pongamia pinnata*) and Gulmoher (*Delonix regia*), Sheesham, Pipal, Arjun, Bakan Neem etc. While selecting the plant species for green belt, following points have been taken into consideration:

- Dust capturing efficiency;
- Plant's growth;
- Canopy cover; and
- Origin of plant
- Arid Climatic conditions

PART-H

Any other particular for improving the quality of the environment.

Environmental Monitoring

Regular monitoring of important and crucial environmental parameters is of immense importance to assess the status of environment during plants operation. With the knowledge of baseline conditions, the monitoring program can serve as an indicator for any deterioration in environmental conditions due to operation of the plants and suitable preventive steps could be taken in time to safeguard the environment. Monitoring is as important as that of control of pollution since the efficiency of control measures can only be determined by monitoring. A full-fledged environmental laboratory has been set up for regular monitoring of environmental parameters, inside and outside the plant.

The environmental attributes being monitored are as given below:

- Air Pollution and Meteorological Aspects
- Water and Waste water Quality
- Noise Levels
- Soil Quality

As per CPCB guidelines we have also installed online emission monitoring and effluent quality monitoring system. Real time data is being transmitted to CPCB and RPCB server.