INDIAN METALS & FERRO ALLOYS LIMITED

- Received copy -

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Ref. No: IMFA/SMC/19/1610
Date : 27-09-2019

To,
The Chairman,
State Pollution Control Board,Odisha,
Paribesh Bhawan, A/118,
Nilakantha Nagar,Unit-VIII,
Bhubaneswar -751012.

Sub: Annual Environmental Statement in the stipulated format i.e Form (v) under EP Act 1986, in respect of Sukinda Mines(Chromite) of M/s IMFA Ltd.for the financial year 2018-19.

Dear sir,

Enclosed please find herewith the Annual Environmental Statement in Form(v) for the financial year 2018-2019 in respect of Sukinda Mines (Chromite) of M/s IMFA Ltd.

This is for your kind information please.

Thanking You.

Yours faithfully,
for Indian Metals & Ferro Alloys Ltd.

(M.K.Samal)
Mines Manager
Sukinda Mines (Chromite)

Encl : As above.

Cc: Regional Office, State Pollution Control Board- Odisha, Dhabalagiri, In front of OMC guesthouse, Po-Ferrochrome Project,Dist – Jajpur-755020.

Cc: The Joint Director(S) Environment, Ministry of Environment and Forest Eastern Region Office, A/3, Chandrasekharpur, Bhubaneswar- 751023.

GOVT OF INDIA
MoEF & CC, Eastern R.O.
Bhubaneswar-751023
30 SEP 2019
RECEIVED

S.P.C. BOARD
BHUBANESWAR-12
30 SEP 2019

30/09/19

[Form V]
(See rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31st MARCH-2018, IN RESPECT OF SUKIDNA MINES (CHROMITE) PROJECT OF M/S. INDIAN METALS & FERRO ALLOYS LTD.

PART – A

(i)	Name & address of the Owner/ Occupier of the industry, operation or process.	:	Mr. C R RAY M/s Indian Metals & Ferro Alloys Ltd. Rasulgarh, Bomikhal, Bhubaneswar Pin-751010
(ii)	Industry category Primary (STC Code) Secondary (SIC Code)	:	Primary
(iii)	Production Capacity	:	3.51 Lakh Tonnes Per Annum (ROM) Per Annum.
(iv)	Year of establishment	:	1999
(v)	Date of the last environmental statement submitted	:	**27-09-2018**

PART – B

WATER & RAW MATERIAL CONSUMPTION

(1) Water consumption Cu. M/ Day : 2018-19

Process	Nil
Sprinkling	158 KL/Day (Avg)
Domestic	133.930 KL/Day (Avg)
Others*	1048.607 KL/Day (Avg)

Note:* 1048.607 KL/Day for the F.Y 2018-19 is the average mines opencast dewatering & mines runoff water including Mahagiri Mines (Chromite) of same lease.

(2) **Raw material consumption**: Not Applicable.

PART - C

POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT

A. Water

	Concentration of pollutants in discharge
pH	7.72
TSS (mg/l)	16
Oil &Grease (mg/l)	<3.0
Hexavalent Chromium (mg/l)	<0.06

B.Air

Sl. No.	Pollutants	Core Zone (Avg.µg/m3)	Buffer Zone (Avg.µg/m3)
i	Particulate Matter (PM_{10})	67.41	58.56
ii	Particulate Matter ($PM_{2.5}$)	30.05	25.27
iii	Sulphur Dioxide (SO_2)	18.96	13.95
iv	Oxides of Nitrogen (NO_x)	16.22	15.59
v	Carbon Monoxide (CO)	0.932	0.70

PART - D

HAZARDOUS WASTES
(As specified under Hazardous Wastes (Management & Handling) Rules, 1989)

Hazardous wastes and its characteristics:-

The generation of the hazardous waste only in the workshop activity during maintenance of HEMM and other mining Equipments & ETP operation during filter press operation. The generation of the hazardous waste is being stored in the designated hazardous waste yards and disposed off to SPCB authorized recycler/disposer. In this regard we have agreement with Ramky Enviro Ltd. The quantity of generation is being given in below.

Hazardous Wastes		Total Quantity During Financial Year	
		(2017-18)	(2018-19)
a. From process	Used Oil	2988 Ltrs	2436 Ltrs
	Waste Containing Oil	-	-
	Oil Filter	-	-
	Discarded containers/Barrels	24 Nos.	12 Nos.
b. From Pollution Control facilities (ETP Sludge)		156.40 MT	55.41 MT

PART – E

SOLID WASTES

Solid wastes and its characteristics:-

In the mining operation the generation of the solid waste is only in the term of overburden which is stored in the earmarked place as per approved mining plan by IBM with proper environmental protections measures i.e. retaining wall, garland drainage, coir matting and plantation. During reporting period 5.10 Lakh Cu.m of solid waste generalised and stored in the dump yard.

Solid Wastes	Total Quantity (Cu. m) During Financial Year	
	(2017-2018)	(2018-2019)
a. From process (overburden)	597295.437	510271.754
b. From Pollution Control facilities	N/A	N/A
c. Quantity recycled or re-utilised	N/A	N/A

PART – F

Total overburden generated during the year (2018-19):-510271.754CuM. The Characteristic of the overburden materials are as follows:

Sl. No.	Parameters	Results (%)
01	Cr_2O_3	8.5
02	FeO	37.0
03	CaO	1.1
04	MgO	2.0
05	SiO_2	31.5
06	Al_2O_3	5.2
07	Undetected	14.7

PART – G

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

The main pollution control measures taken at Sukinda Mines (Chromite) Project of M/s Indian Metals & Ferro Alloys Limited are as follows:

1. Measures for control of Air Pollution:

Various air pollution control measures are taken as follows.

- **Drilling Operation:-**

  The Drilling Machine has been provided with the wet drilling facilities and it is being ensured that only wet drilling is done.

- **Blasting:-**

  The dust generation due to blasting is minimised by proper blast hole design, correct charge per delay and water spraying at faces before charging & after blasting.

- **Loading & Transportation:-**

  Regular water sprinkling is being done on haul road, waste dump yard and stack yard to minimise the fugitive dust emission. In addition to that 2.2 RKM automatic fixed sprinkler also installed in the mines permanent haul roads to suppress the dust. So in this process the roads inside the leasehold remain wet and seizes the scope for dust generation from the haul road due to vehicle movement. Concrete haul road has been developed in mines to prevent the potholes and generation of dust. In addition to that a water Mist Cannon installed with a capacity of 40 meter throwing (Radius) near mines main gate to minimize the air born dust from the main gate area due to weighbridge activities. And also a mobile water mist cannon is being used for dust suppression at mines mineral stock yards, etc. Further, Overloading of vehicles is avoided to reduce spillage from the mineral transportation activities. AC Cabin has been provided in all HEMM to prevent exposure to dust by the operators.

  To cross the check the ambient air quality levels in the core and buffer zone, Air quality monitoring is being carried out periodically through an approved external agency & results are found within permissible limit.

2. **Run off Management:**

OB Dump - Northern Side: The surface run-off generated from northern side of OB dump is being coursed through toe drains & it is further channelized through 630 mm PVC pipeline to the impervious settling pond near ETP-2 at the toe of the OB dump. Further, the collected water at settling pond near ETP-2 is being pumped to intermediate settling pond through pipeline and which is further pumped to upgraded ETP-4 for treatment and confirming the prescribed SPCB norms i.e. Cr+6, TSS & pH.

OB Dump - Southern Side : The surface run-off generated from southern side of OB dump is being coursed through drains to intermediate settling pond. Further, the collected water from intermediate settling pond is being pumped to upgraded ETP-4 for treatment and confirming the prescribed SPCB norms i.e. for Cr+6, TSS & pH.

Subgrade Dump/Central plot ore stock yard: The surface runoff generated from subgrade dump & Central plot ore stock yard are being coursed through toe drains to intermediate settling pond located at bottom of the subgrade dump for primary settlement. The collected water after settlement, is being pumped to common ETP-4 for further treatment and confirming the prescribed SPCB norms i.e. for Cr+6, TSS & pH.

Opencast quarry: During Monsoon, no mining operation is being carried out at the bottom of the quarry. However, the surface run-off generated during monsoon is being stored in the bottom of the quarry and stored water at quarry is being pumped to upgraded ETP-4 for treatment and the treated water is being discharged to outside lease area after confirming the prescribed SPCB norms i.e. for Cr+6, TSS & pH.

Band II ore stack yard and other infrastructure areas: The runoff water generated from other OB dump, subgrade dump, Central plot ore stock yard and quarry area generated from band II ore stack yard and infrastructures area are being channelized to common settling pond near magazine for settlement and after settlement the collected water is being pumped to common ETP-4 for treatment and confirming the prescribed SPCB norms i.e. for Cr+6, TSS & pH.

Common Effluent Treatment Plant: Common Effluent Treatment Plant has been established within the Sukinda Mines (Chromite) lease area, water generated from mines seepage and runoff of Sukinda Mines (Chromite) & Mahagiri Mines (Chromite) are being treated at the common Effluent Treatment Plant. The plant capacity is 360 CuM/Hr. Treated water is being used for mines dust suppression and plantation and other miscellaneous activities.

Water Quality Monitoring: To monitor the quality of the inlet and outlet water of the common Effluent Treatment Plant, real-time monitoring system established with telemetry system at common Effluent Treatment Plant for analysis of Hexavalent Chromium, pH & TSS. The telemetry system is being connected with SPCB RTDAS server and real time data's being sent to SPCB server on regular basis.

De-siltation of the settling ponds and drainage: All the existing drainage patterns and settling ponds are being de-silted before start of monsoon i.e. in the month of April/May under pre-monsoon activities and the same structures are being de-silted during November/December as per requirement.

Dump toe Retaining walls: Retaining walls are been provided in the toe of OB dump and sub grade dump with a 2090 Running Meter.

3. Sound and Vibration Pollution :

a. Preventive maintenance of machineries is being carried out properly in order to control noise level below 85 db in the work environment .

b. Blasting vibration study has been carried out through ISM, Dhanbad . As per their recommendations, the controlled blasting technique has been adopted to minimise noise & vibration.

c. Workers engaged in drilling & HEMM operations are provided with ear plugs/ muffs as per requirement.

d. Noise level (ambient as well as work environment) is being monitored periodically through an approved external agency & is ensured within permissible limit.

e. Acoustic Cabin has been provided in all HEMM to prevent exposure to noise by the operators.

f. Noise mapping is being carried out quarterly.

4. Measures for control Soil Erosion and Soil Contamination:

As far as soil erosion is concerned, care has been taken to ensure the afforestation at the OB dump slopes and terraces for stabilisation. About 74476 nos of saplings are already been planted at dump slope, safety zone and other area within lease during the period from 1999- 2000 to 2018-19.

Coir matting of 13866 sq. mtr. area has been done along the slope of First , second and Third stage O/B dump respectively to avoid the gully formation and generation of suspended solids from the fresh dump slope during rainy season. To control soil erosion of the dump slopes inward slope at terraces has been made in each stages of dump. 2090 mtrs. retaining wall has been constructed at toe of the waste dump.

5. Green Belt Development-Plantation Programme :

Afforestation for creating ecological balance constitutes an integral and essential part of environment management of any mining project. This programme of bringing ecological balance has been designed and implemented both inside and out side lease area under a long-term programme. Considering the prevailing situations a programme of afforestation is under way. A statistical figure of which is given below.

The Statement showing the details in year wise plantation & survival rate from the beginning of the mines (i.e. September' 1999 to 2018-2019).

Year of Plantation	Area Planted in Ha.	No. of Trees Planted	No. of Trees Survived	Survival Percentage	Name of the Species
1999-00	0.642	2774	2337	84.25	Sisoo,Chakunda,Cashew & Bamboo
2000-01	1.21	4354	3791	87.07	Sisoo,Chakunda,Krushnachuda, Eucalyptus & Akashia
2001-02	1.251	4719	4200	89.00	Sisoo,Chakunda,Cashew,Neem, Teak, Asan & Jamun
2002-03	1.176	5561	4939	88.81	Teak,Alstonia,Debadaru,Amla,Bahada,Dalimba,Cashew,Neem,Maha-Neem,Karanja,Mango,Krushnachuda,Chakunda, Arjuna & Babul
2003-04	1.24	5300	4707	89.00	Debadaru,Amla,Neem,Krushnachuda Saguan,Babul,Gamhari,Sisu& Chakunda.
2004-05	1.265	5030	4275	84.99	Neem,Bela,Chakunda,Krushnachuda, Akasia, Gamhari & Saguan.
2005-06	1.47	3842	3304	86.00	Chakunda,Krushnachuda,Akasia, Gamhari & Saguan
2006-07	0.88	4006	3484	86.97	Neem,Amla,Bahada & Chakunda
2007-08	0.91	2169	1962	97.00	Neem,Karanja,Gamhari,Chakunda, Mango, Jack fruit & Sirish
2008-09	0.96	2439	2344	96.10	Neem, Mango, Mirigichara, Gamhari,Jamu & Bamboo.
2009-10	2.18	6070	5970	98.35	Gambhari, Neem, Chakunda, Mirigichara, Akasia, Cashew, Teak, Kadamba, Sisoo, Karanja, Salua. Muruga, Bahada, Arjun, Amala,Babool, Jamu, Krishnachuda, Bela,Mango
2010-11	2.5	2682	2628	98.00	Gambhari, Neem, Chakunda, Mirigichara,Karanja, Salua. Muruga, Bahada, Arjun,
2011-12	3.14	7240	6301	87.00	Gambhari, Neem, Chakunda, Mirigichara,Karanja, Salua. Muruga, Bahada, Arjun,

2012-13	0.83	4935	4387	89.00	Gambhari, Neem, Chakunda, Mirigichara, Akasia, Cashew, Teak, Kadamba, Sisoo, Karanja, Salua. Muruga, Bahada, Arjun, Amala,Babool, Jamu, Krishnachuda, Bela,Mango
2013-14	1.15	3530	3196	90.00	Gambhari, Neem, Chakunda, Mirigichara, Teak, Sisoo, Karanja, Sala. Bahada, Arjun, Amala,Babool, Krishnachuda,Mango-
2014-15	0.046	190	174	92.00	Chakunda, Neem, Jamun, Karanja, Sirisha, Sisoo
2015-16	0.61	3045	2817	93.00	Harida,Bahada,Jackfruit,Sisoo,Teak, Ritha,Neem,Jamu,Amla,Karanja,Polash.
2016-17	0.73	2175	2035	94.00	Aunla,Krushnachuda, Chhatini, Bahada, Neem, Karanja, jamun, Sirisha,, Piasal,, Mirigchara . Radhachuda,Sunari Harida,Arjuna,Bela,Guava
2017-18	0.55	1650	1562	95.00	Neem,Karanja,Sirisha,Piasala,Krushnachuda,Radhachuda,Arjunaa,Sunari,Sisoo,Chhatini &Bahada.
2018-19	0.92	2756	2615	95.00	Neem,Dhaura,Karanja,Sirisha,Piasala,Radhachuda,Arjunaa,Sunari,Sisoo,Chhatini &Bahada.
TOTAL	23.66	74467	67028	91.78	

PART - H

ADDITIONAL MEASURES/INVESTMENT PROPOSED FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION AND PREVENTION OF POLLUTION

A. Future plantation programme year wise.

Years	Protective Measures in Dump Yard				
	Plantation		Coir Matting	Retaining Wall	Settling Pond
	Area in Ha.	Nos.	Sq. Mtr.	Mtr.	Cu.M
2019-20	0.6	1500	2000	116	NA

B. Community plantation/training:

Besides these, steps are also been taken for encouraging community plantation in the near by villages. During the year 2018-19, 92 nos. of plants have been planted along with the school & villages to restore ecology of the surrounding environment as well as to improve the forestry and aesthetic value in and around the Mining lease area. Steps are also taken for providing training on afforestation, programme on health and hygienic aspects to the people in the nearby villages.

World Environment day, Vanmahostav ,Swachha Bharat, Swachh Pakhya Mission,Swachha hin Seva,Wildlife Conservation Day, ME & MC Week are being celebrated every year involving the local school children to create awareness among them.

Sukinda Mines (Chromite), have developed a nursery within the leasehold area (capacity 0.045 hectares), to produce 10,000 nos of sapling per year. The saplings, which are developed in the Nursery, are utilized for plantation in the leasehold area and also caters to the requirement of the nearby villagers.

These programs will be continued in future and will help in developing new patch of green cover and restoring this damaged ones.

Additional Steps Taken to Maintain the Quality of Environment.

1. The company has prepared the Environmental Management Plan by identifying all the environmental aspects and its mitigation has been done by preparing the operational control procedure, which will help in maintaining good environment and safeguard for the future environmental hazards occur due to present mining operation. Corporate Environmental Policy has been framed and is well maintained. Environmental Management System (ISO 14001:2015) has been implemented & is well maintained for improvement of environmental status of the mines.

2. A separate environmental management cell with suitable qualified personnel has been set-up under the control of a Senior Executive, who is reporting directly to the Head of the Organization

4. Rain water harvesting structure are provided at our colony premises, our administrative office building and Chandimata School, Sukinda, Kaliapani.

5. HSE (Health, Safety & Environment) department has been set up at site to take proactive measures for reducing the environmental hazards occur due to present mining operation.

6. 13866 Sqr.mtr geocoir textile (Coirmat) have been laid out at OB dump along with local grass seeds to minimize the soil erosion and to ensure the dump stability.

7. Settling ponds are converted to impervious by use of Geo membrane sheets.

8. Impervious sludge pit has been constructed to store the ETP sludge.

9. Solid waste yard has been constructed to store municipal waste.

10. CPI based oil and water separator has been installed at workshop service centre to separate the oil and grease from the waste water generated from the workshop water servicing center..

11. OWC (Organic Waste Compost) plant has been introduced within premises to convert organic waste to vermicompost. The generated vermicomposts are been utilized for plantation and guarded maintenance.

12. SA (8000) has been implemented in mines.

Date :- 27-09-2019

Signature

MINES MANAGER

Mines Manager
Sukinda Mines(Chromite)
M/s.Imfa Ltd.
Kaliapani Jajpur