

OCM/ENV/1357/2022

Date: 29.09.2022

To

The Member Secretary  
State Pollution Control Board, Odisha  
Paribesh Bhawan, Unit-VIII  
BHUBANESWAR – 751 012

Sub: Submission of Annual Environmental Statement in Form-V for the Year 2021-22 in respect of **Ostapal Chromite Mine M/s. FACOR Ltd.**

Dear Sir,

With reference to the captioned subject, we are herewith submitting the Environmental Statement in the prescribed format Form-V, duly filled in, for the year 2021-22 in respect of **Ostapal Chromite Mines M/s. Ferro Alloys Corporation Limited** for your kind perusal.

This is for your kind information & perusal please.

Thanking you,

Yours faithfully,  
for Ferro Alloys Corporation Ltd



**Mines Manager Ostapal Chromite Mines**

Enclosure: As above

Copy to: 1) Regional Officer, OSPCB, Kalinganagar – Jajpur  
2) MoEF & CC Eastern Regional Office by Email.

**FORM –V**

**ENVIRONMENTAL STATEMENT OF OSTAPAL CHROMITE MINES OF M/S.FACOR LTD.,  
ENVIRONMENT STATEMENT FOR THE FINANCIAL YEAR ENDING ON 31<sup>ST</sup> MARCH 2022**

**(PART –A)**

i)	Name & Address of the Owner/Occupier of the Industry operation or Process	M/s. FERRO ALLOYS CORPORATION LTD., D.P.Nagar, Randia Bhadrak
ii)	Industry Category Primary – (SIC Code) Secondary – (SIC Code)	CHROMITE MINING INDUSTRY
iii)	Production Capacity – Unit	2 Lakh TPA Chrome Ore from Mines 1.00 Lakh TPA Beneficiated Chrome Ore From COB Plant
iv)	Year of Establishment	13 <sup>th</sup> August, 1985
v)	Date of last Environmental Statement submitted	27.09.2021 (For the Financial Year 2020-21)

**(PART – B)**

**WATER & RAW MATERIAL CONSUMPTION**

(i) Water Consumption M<sup>3</sup>/day:

A	<b>WATER CONSUMPTION: FY 2021-22</b>		
	<b>Water Consumption M3/day</b>	<b>Total In a Year (Cub Mt)</b>	<b>Avg Cub mt/Day</b>
	a) Process (Beneficiation plant)	75670	208
	b) Cooling, dust suppression, afforestation etc	1852	5
	c) Domestic	26326	72
	<b>Total Consumption</b>	<b>103848</b>	<b>285</b>

B	<b>PROCESS WATER CONSUMPTION PER PRODUCT OUTPUT</b>		
	Name of the Products	During the Previous Financial Year 2020-21	During the Current Financial Year 2021-22
	a) Chrome ore Concentrate from COB Plant (Cub Mt /MT )	1.39	1.56
	b) Chrome ore from Mines (Cub Mt /MT )	0.441	0.52

ii) Raw Material Consumption:

FACOR is involved in extraction of Chrome Ore from Mine /quarry .Mining is not a Manufacturing Process thus there are no such raw materials involved in the process. However, there are number of Indirect raw materials/Consumables used to support the process of Mining & beneficiation of Ore. The details consumable raw materials as follows:

Sl No.	Indirect Raw Materials /consumables	During 2021-22
	Name of the Raw materail/Consumable	
1	Disel (Litres)	582773
2	Gas (Cu. M)	190
3	Lubricant Oil (Litres)	2494
4	Grease (Kg)	447
5	Electricity (Consumed) (Kwh)	804061
6	Electricity (Generated) (Kwh)	23395
7	Explosive (Kg) (Detonator, Safety fuse)	53800 kg (5570 nos.,14725mtrs)
8	Tyre Nos.	16

**(PART – C)**  
**POLLUTION DISCHARGED TO ENVIRONMENT/UNIT OF OUTPUT**  
**(PARAMETER AS SPECIFIED IN THE CONSENT ISSUED)**

a)	Water *	Annual Avg. in Kg/day	Annual Avg. in mg/l	Annual Avg. (%)
1	Suspended Solids	43.2	22.5	Below prescribed standard
2	Oil & Grease	8.8	4.6	-do-
3.	B.O.D	8.9	4.65	-do-
4.	C.O.D	34	17.7	-do-
5.	Hexavalent Chromium (Cr <sup>+6</sup> )	0.002	0.001	-do-
6.	Total Chromium (Cr)	0.6	0.3	-do-

b) AIR \*\* - Not applicable. since it is a Mining Industry.

NOTE \* All the analyzed parameters of Mines pumped out water are well within the prescribed limit except hexavalent Chromium, for which ETP has been commissioned. Analysis report of final discharge water (after treatment) is enclosed as ANNEXURE – I.

\*\* Air quality analysis report of core & Buffer Zone is enclosed as ANNEXURE – 2A & 2B

**(PART – D)**  
**HAZARDOUS WASTES**

AS SPECIFIED UNDER HAZARDOUS WASTES/MANAGEMENT & HANDLING RULES, 2008

Sl.No.	Hazardous Wastes	TOTAL QUANTITY (Kg.)	
		During the previous Financial Year 2020-21	During the Current Financial Year 2021-22
(a)	<u>FROM PROCESS:</u>		
I)	Filter & filter materials containing oil	30.0	19.70
II)	Used oil/waste oil from vehicles	345	264
(b)	From Pollution Control facilities (ETP Sludge)	24,600	19480

**(PART – E)**  
**SOLID WASTES**

Sl.No.	PARTICULARS	TOTAL QUANTITY	
		During the previous Financial Year 2020-21	During the Current Financial Year 2021-22
(a)	<u>FROM PROCESS:</u>		
I)	Overburden	2.865 Lac M <sup>3</sup>	4.75 Lac M <sup>3</sup>
II)	Tailings	0.150 Lac Tons	0.291 Lac Ton
(b)	From Pollution Control facilities (ETP SLUDGE)	24.600 Tons	19.48 Tons
(c)			
(i)	Qty. Recycled/or reutilized within the Unit	Nil	NIL
(ii)	Sold	Nil	NIL
(iii)	Disposed – Overburden	2.865 Lac M <sup>3</sup>	4.75 Lac M <sup>3</sup>
(iv)	Disposed - Tailings	0.150 Lac Tons	0.291 Lac Ton

### (PART – F)

Please specify the characteristics (in terms of composition and quantity) of Hazardous as well as Solid wastes and indicate disposal practice adopted for both these categories of wastes.

Sl.No.	Name of Hazardous/ Solid Wastes	Composition	Quantity	Disposal Practice
a) i)	<u>HAZARDOUS WASTES:</u> Filter & filter materials containing oil	-	19.70 Tons	Filter materials generated during repairing & maintenance of vehicles are being disposed of in an impervious lined pit.
ii)	Used Oil/Waste oil	-	0.264 Tons	Used oil/waste oil from vehicles & transformers have been collected in barrels and kept under a covered shed to sell to a Regd. Authorized Dealer.
iii)	ETP Sludge	Clay soil	19.48 Tons	ETP sludge is being disposed of in impervious lined pit for onward disposed to authorized agency by SPCB.
b) i)	<u>SOLID WASTES:</u> Overburden	Laterite & weathered ultra-basic rock	4.75 Lac M <sup>3</sup>	The solid wastes are generated as overburden is dumped in specified area of non-mineralized zones. After terracing and benching, massive afforestation is being carried out over these dumps.
ii)	Tailings	Sandy with Clay	0.291 Lac Tons	Tailings are being disposed of in Tailing Ponds after treatment with FeSO <sub>4</sub> solution.

### (PART – G)

#### IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

- Fully utilization of Low Grade ore by Beneficiation, use of mine drainage water in beneficiation, recovery of tailing water & recirculation in beneficiation plant. Mine water discharge to outside after treatment.

### (PART – H)

#### ADDITIONAL MEASURES/INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION

- (a) Expense of Rs. 65.90 lakh during the year 2021-22 for environmental protection including abatement of pollution & prevention of pollution.
- (b) Action taken to monitor the Environmental parameters. Monitoring is being carried out for environmental Parameters of Air Quality, Water Quality, Noise level Measurement on quarterly basis.

**(PART – I)****ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT**

Action taken for massive afforestation	Extensive plantation program has been done and shall be taken upon available spaces, on dumps, roads, and also surrounding areas
Measures taken to control of the fugitive emission at different places of Mines.	In order to suppress the air borne dust from the haulage roads and mine roads, there are arrangements for water spraying system through tankers and spraying of water is being done in regular intervals.
Action taken for disposal of the excavated material not required for industrial purpose	The overburden waste which are not required for industrial purpose are dumped within the leasehold area at the earmarked site and terraced by forming benches and reclaimed with different plant species.
Method adopted for controlling of dust pollution due to drilling	<ul style="list-style-type: none"> <li>• Wet drilling is being practiced with a jet of water which is continuously directed at the cutting edge to suppress dust generation.</li> <li>• The cutting tools are being regularly grinded to maintain its sharpness by cross checking against gauges.</li> <li>• Compressed air pressure is being adequately supplied to the cutting tools.</li> <li>• Drill cutting are being regularly cleaned</li> </ul>
Method adopted for controlling of dust pollution due to blasting	Water spraying before & after blasting is being practiced to reduce the possible dust generation.
Action taken to remove Cr <sup>+6</sup> from Quarry pumped out water and surface runoff water.	An upgraded ETP is being operating to reduce Cr <sup>+6</sup> from Quarry pumped out water and surface runoff water by dosing FeSO <sub>4</sub> solution. Also enhanced the ETP capacity from 400 KL/Hr to 600 KL/hr

## EFFLUENT WATER ANALYSIS REPORT AS PER IS-2490 &amp; MOEF GUIDELINE 19.05.93



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

● Infrastructure Engineering  
● Water Resource Management  
● Environmental & Social Study

● Surface & Sub-Surface Investigation  
● Quality Control & Project Management  
● Renewable Energy

● Agricultural Development  
● Information Technology  
● Public Health Engineering

● Mine Planning & Design  
● Mineral/Sub-Soil Exploration  
● Waste Management Services

Laboratory Services  
Environment Lab  
Food Lab  
Material Lab  
Soil Lab  
Mineral Lab  
&  
Microbiology Lab

Ref : Envlab/22/R-1529

Date : 28.04.2022

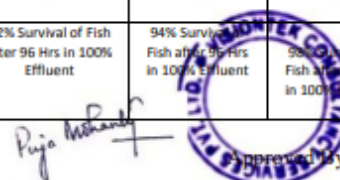
## 5. ETP Water Quality Analysis :

ETP1: ETP Mines Final Discharge Water								
Sl. No.	Parameters	Unit	Standards (In land Surface water)	Analysis Results				Annual Average
				21-Jun	21-Sep	21-Dec	22-Mar	
1	Colour	Hazen	Colourless	5	5	5	10	6.25
2	Odour	--	Odourless	pungent smell	pungent smell	pungent smell	pungent smell	pungent smell
3	pH at 25°C	--	5.5-9.0	7.89	7.81	8.1	7.98	7.945
4	Total Suspended Solids	mg/l	100	20	18	20	32	22.5
5	Copper as Cu	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05
6	Fluoride as F	mg/l	2	0.28	0.21	0.28	0.38	6.25
7	Total Residual Chlorine	mg/l	1	ND	ND	ND	ND	ND
8	Iron as Fe	mg/l	3	0.54	0.52	0.34	0.42	0.455
9	Manganese as Mn	mg/l	2	<0.05	<0.05	<0.05	<0.05	<0.05
10	Nitrate as NO <sub>3</sub>	mg/l	10	7.9	7.1	7.34	7.46	7.45
11	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/l	1	<0.001	<0.001	<0.001	<0.001	<0.001
12	Selenium as Se	mg/l	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
13	Cadmium as Cd	mg/l	2	<0.001	<0.001	<0.001	<0.001	<0.001
14	Cyanide as CN	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05
15	Lead as Pb	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
17	Nickel as Ni	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05
18	Arsenic as As	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05
19	Total Chromium as Cr	mg/l	2	0.36	0.31	0.28	0.28	0.3075
20	Zinc as Zn	mg/l	5	0.028	0.022	0.021	0.024	0.02375
21	Hexavalent Chromium as Cr <sup>6+</sup>	mg/l	0.1	<0.001	0.018	<0.001	<0.001	<0.001
22	Vanadium as V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001	<0.001
23	Temperature	Oc	Shall not exceed 5degree C above the receiving water temperature	36	34	24	33	31.75
24	Dissolved Oxygen	mg/l		6.9	6.2	7.1	6.1	6.575
25	Biochemical Oxygen Demand as BOD	mg/l	30	6	3.8	6.6	2.2	4.65
26	Chemical Oxygen Demand as COD	mg/l	250	20	14	20.8	16	17.7
27	Oil & Grease	mg/l	10	5.2	4.6	4.8	3.8	4.6
29	Ammonical Nitrogen as N	mg/l	50	1.6	1.2	1.4	2.4	1.65
30	Total Kjeldahl Nitrogen as N	mg/l	100	5.4	4.6	5.4	3.9	4.825
31	Sulphide as S	mg/l	2	<0.001	<0.001	<0.001	<0.001	<0.001
32	Free Ammonia as NH <sub>3</sub>	mg/l	10	4.6	4.1	5.4	4.4	4.625
33	Particulate Size of Suspended Solids	μ	Shall pass 850 micron IS Sieve	<850	<850	<850	<850	<850
34	Bio-assay Test	%	90% survival of fish after 96 hours in 100% effluent	98% Survival of Fish after 96 Hrs in 100% Effluent	92% Survival of Fish after 96 Hrs in 100% Effluent	94% Survival of Fish after 96 Hrs in 100% Effluent	98% Survival of Fish after 96 Hrs in 100% Effluent	98% Survival of Fish after 96 Hrs in 100% Effluent



Reviewed By

*M. Pande*



Approved By

*Puja Mahapatra*



**AMBIENT AIR QUALITY (CORE ZONE)**

# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

Certified for : ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017

Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

- Infrastructure Engineering
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- Public Health Engineering

- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Laboratory Services  
Environment Lab  
Food Lab  
Material Lab  
Soil Lab  
Mineral Lab  
&  
Microbiology Lab

Ref : Envlab/22/R-1510

Date : 28.04.2022

YEARLY COMPLIANCE REPORT FROM APRIL 2021 TO MARCH 2022  
M/s FERRO ALLOYS CORPORATION LIMITED , BHADRAK  
OSTAPAL CHROMITE MINES , KALIAPANI, JAJPUR

## 1. Ambient Air Quality ( Core Zone ) :

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ1: Near Dispensary									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	74.2	73.8	73	59.7	59.8	61.5	67.00
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	44.5	44.8	43.8	35.8	35.9	36.9	40.28
SO <sub>2</sub>	µg/m <sup>3</sup>	80	11.4	11.8	11.6	9.1	8.5	6.4	9.80
NO <sub>X</sub>	µg/m <sup>3</sup>	80	14.6	14.2	14.2	11.6	12	13.1	13.28
CO	mg/m <sup>3</sup>	4	1.18	1.24	1.3	0.86	0.79	0.32	0.95
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.1	5.2	5.2	5.2	5.3	BDL	5.20
NH <sub>3</sub>	µg/m <sup>3</sup>	400	20.6	20.8	22	15.7	16.5	BDL	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ1: Near Dispensary									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	62.5	66.7	62.2	64.5	61.1	62.2	63.20
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	37.5	40	37.3	38.7	36.7	37.3	37.92
SO <sub>2</sub>	µg/m <sup>3</sup>	80	12.6	11.5	11.5	10.7	11.5	11.4	11.53
NO <sub>X</sub>	µg/m <sup>3</sup>	80	13.3	13.4	13.5	13.1	13.6	13.5	13.40
CO	mg/m <sup>3</sup>	4	1.02	1.04	1.14	1.3	1.2	1.2	1.15
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.2	5.3	4.8	4.9	4.6	5.3	5.02
NH <sub>3</sub>	µg/m <sup>3</sup>	400	21.2	20.3	21.3	22.3	20	21	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Reviewed By



P. P. Panda

Puja Mohanty

Approved By







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Accredited by : NABET-A Grade, MOEF & CC/CPCB & SPCB-A Grade

**Laboratory Services**  
 Environment Lab  
 Food Lab  
 Material Lab  
 Soil Lab  
 Mineral Lab  
 &  
 Microbiology Lab

- Infrastructure Engineering
- Water Resource Management
- Environmental & Social Study

- Surface & Sub-Surface Investigation
- Quality Control & Project Management
- Renewable Energy

- Agricultural Development
- Information Technology
- Public Health Engineering

- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Ref : Envlab/22/R-1511

Date : 28.04.2022

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ2: Near Weighbridge									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	48.8	48.2	49.1	41.6	53	68	51.45
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	29.3	30.4	29.4	25	25.8	40.8	30.12
SO <sub>2</sub>	µg/m <sup>3</sup>	80	11.8	12.1	10.9	9.2	8.9	6	9.82
NO <sub>X</sub>	µg/m <sup>3</sup>	80	7.4	8.1	8.8	9.8	9.9	13.1	9.52
CO	mg/m <sup>3</sup>	4	1.12	1.16	1.1	0.93	0.88	0.27	0.91
O <sub>3</sub>	µg/m <sup>3</sup>	100	4.2	4.6	4.9	5	4.88	BDL	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	19.4	18.8	19.8	15.3	15.7	BDL	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ2: Near Weighbridge									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	39.3	37.3	37.3	48.1	38	48	41.33
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	23.6	22.4	23.2	28.9	22.8	29.3	25.03
SO <sub>2</sub>	µg/m <sup>3</sup>	80	9	9	9.6	8.4	9.2	9.7	9.15
NO <sub>X</sub>	µg/m <sup>3</sup>	80	8.2	7.1	6.9	7.5	7.8	7.3	7.47
CO	mg/m <sup>3</sup>	4	0.94	1.03	1.05	1.1	1	1.1	1.04
O <sub>3</sub>	µg/m <sup>3</sup>	100	4.4	4.7	4.5	5.1	4	5	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	16.2	16.5	17.1	16.9	16.3	16.8	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL



*M. Panda*

*Pooja Mohanty*





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 &  
 Microbiology Lab

Ref : Envlab/22/R-1512

Date : 28.04.2022

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ3: At Middle of the Opencast Quarry									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	61.2	60.9	62.4	51.9	53.5	66.6	59.42
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	36.7	36.9	37.5	31.1	32.1	39.9	35.70
SO <sub>2</sub>	µg/m <sup>3</sup>	80	10.6	11.2	10.8	9.3	8.9	6.7	9.58
NO <sub>X</sub>	µg/m <sup>3</sup>	80	11.8	10.9	14.3	12.6	11.3	13.6	12.42
CO	mg/m <sup>3</sup>	4	1.22	1.18	1.2	0.89	0.91	0.43	0.97
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.4	5.3	5.4	5.5	5.44	BDL	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	21.6	20.8	20.7	18.8	17.5	BDL	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ3: At Middle of the Opencast Quarry									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	58	58.5	58.8	56.7	55.2	56.4	57.27
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	34.8	35.1	35.3	34	33.1	33.9	34.37
SO <sub>2</sub>	µg/m <sup>3</sup>	80	11.5	11	11	10.9	12.1	10.5	11.17
NO <sub>X</sub>	µg/m <sup>3</sup>	80	13.4	13.5	14.5	12.8	12.5	12.4	13.18
CO	mg/m <sup>3</sup>	4	1.08	1.16	1.1	1	1.1	1.3	1.12
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.9	5.2	5.1	4.8	5.4	5.2	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	50.7	24.1	19.6	21.2	19.7	22.7	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL



*M. Anand*

*Puja Mohan*







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 Soil Lab  
 Mineral Lab  
 &  
 Microbiology Lab

Ref : Envlab/22/R-1513

Date : 28.04.2022

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ4: At Middle of the COB Plant									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	72.6	71.8	71.9	51.4	51.4	61.9	<b>63.5</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	43.6	42.8	43.1	30.8	30.8	37.2	<b>38.1</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	10.4	10.6	11.7	9.4	9.4	7.4	<b>9.8</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	13.6	13.2	14.9	15.4	15.4	13	<b>14.3</b>
CO	mg/m <sup>3</sup>	4	1.18	1.16	1.2	0.9	0.9	0.38	<b>0.95</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.5	5.2	5.7	5.6	5.55	BDL	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	21.8	22.1	23.3	21.3	21.3	BDL	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

AMBIENT AIR QUALITY (CORE ZONE)									
AAQ4: At Middle of the COB Plant									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	63.5	63	65.3	65.1	65.4	70.4	<b>65.5</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	38.1	37.8	39.2	39.1	39.2	42.2	<b>39.3</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	10.5	11.6	11.2	11.1	10.7	11.7	<b>11.1</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	13.1	15.3	15.1	14.2	15	14.1	<b>14.5</b>
CO	mg/m <sup>3</sup>	4	1.04	0.87	0.98	1.2	1.1	1	<b>1.03</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.3	6	6	6	5.5	5.3	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	24.6	24	23.8	22.5	22	23.6	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>



*Mande*

*Puja Mahandya*



**AIR QUALITY (BUFFER ZONE)**

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- Waste Management Services

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Mineral Lab  
&  
Microbiology Lab

Ref : Envlab/22/R-1514

Date : 28.04.2022

## 2. Ambient Air Quality ( Buffer Zone)

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ1: Near Village Ostia									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	69.8	66.4	65.2	58.2	57.9	49.1	61.1
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	41.9	40.8	41.2	38.2	38.8	28.6	38.3
SO <sub>2</sub>	µg/m <sup>3</sup>	80	8.2	8.3	8.8	8.1	8.6	6.1	8.0
NO <sub>X</sub>	µg/m <sup>3</sup>	80	15.2	14.8	15.4	13.8	14.1	9.6	13.8
CO	mg/m <sup>3</sup>	4	0.59	0.51	0.56	0.48	0.49	BDL	BDL
O <sub>3</sub>	µg/m <sup>3</sup>	100	6.1	6.4	6.6	6.2	6.6	BDL	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ1: Near Village Ostia									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	66.6	62.4	62.6	61.9	62.2	62.2	63.0
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	40.6	40.8	39.4	39.8	39.6	39.6	40.0
SO <sub>2</sub>	µg/m <sup>3</sup>	80	8.4	8.6	8.4	8.8	8.4	8.4	8.5
NO <sub>X</sub>	µg/m <sup>3</sup>	80	14.6	14.2	14.2	14.6	14.6	14.6	14.5
CO	mg/m <sup>3</sup>	4	0.54	0.54	0.54	0.54	0.54	0.54	BDL
O <sub>3</sub>	µg/m <sup>3</sup>	100	6.4	6.7	6.4	6.6	BDL	BDL	BDL
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL



M. Anand

Pooja Mohanthy







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- Waste Management Services

Ref : Envlab/22/R-1515

Date : 28.04.2022

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ2: Near Village Kaposi									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	54.4	53.2	54.6	52.2	43.4	42.8	<b>50.1</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32.6	33.4	35.2	33.8	25.1	25.4	<b>30.9</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	8.1	8.4	8.9	8.4	5.8	5.6	<b>7.5</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	12.1	12.6	13.2	12.8	10.4	9.8	<b>11.8</b>
CO	mg/m <sup>3</sup>	4	0.51	0.54	0.59	0.52	BDL	BDL	<b>BDL</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ2: Near Village Kaposi									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	53.6	54.6	53.6	53.6	53.6	54.2	<b>53.9</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	34.1	33.4	33.2	32.8	32.8	31.6	<b>33.0</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	8.9	8.8	8.6	8.8	8.9	8.9	<b>8.8</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	14.1	14.1	14.1	13.8	13.8	13.4	<b>13.9</b>
CO	mg/m <sup>3</sup>	4	0.58	0.64	0.58	0.62	0.61	0.61	<b>BDL</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

Reviewed By



*M. Pande*

Approved By



*Pooja Mahapatra*



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- Mineral/Sub-Soil Exploration
- Waste Management Services

Ref : Envlab/22/R-1516

Date : 28.04.2022

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ3: Near Kaliapani Township									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	80.6	78.2	77.6	56.4	46.9	60.2	<b>66.7</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	48.4	49.2	48.8	34.8	27.4	32.2	<b>40.1</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	11.4	10.8	10.6	8	6.9	8.1	<b>9.3</b>
NOX	µg/m <sup>3</sup>	80	17.6	17.2	16.8	12.4	12.1	13.1	<b>14.9</b>
CO	mg/m <sup>3</sup>	4	1.32	1.28	1.24	0.56	BDL	BDL	<b>1.10</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.9	6.1	6.1	5.2	6.4	5.8	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	22.8	20.9	21.2	21.2	BDL	20.9	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ3: Near Kaliapani Township									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	62.8	62.8	62.2	62.8	61.8	55.2	<b>61.3</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	43.6	41.9	41.6	41.6	40.9	33.1	<b>40.5</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	9.4	9.2	8.9	8.8	9.6	12.1	<b>9.7</b>
NOX	µg/m <sup>3</sup>	80	13.8	14.8	13.8	13.8	14.8	12.5	<b>13.9</b>
CO	mg/m <sup>3</sup>	4	1.16	1.26	1.24	1.16	1.31	1.1	<b>BDL</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	6.1	6.8	6.8	6.6	6.8	5.4	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	21.2	21.4	21.4	21.4	21.8	19.7	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

Reviewed By



*Mande*

Approved By



*Priya Mathan*





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- Renewable Energy

- Agricultural Development
- Information Technology
- Public Health Engineering

- Mine Planning & Design
- Mineral/Sub-Soil Exploration
- Waste Management Services

Ref : Envlab/22/R-1517

Date : 28.04.2022

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ4:Near Village Ostapal									
Parameters	Unit	CPCB AAQ Standard 2009	21-Apr	21-May	21-Jun	21-Jul	21-Aug	21-Sep	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	60.8	61.2	60.8	60.2	60.8	44.6	<b>63.1</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	36.5	37.4	38.6	33.8	35.9	26.9	<b>38.5</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	7.2	7.1	7.4	7.2	7.8	5.1	<b>15.2</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	11.9	12.4	12.6	11.8	13.4	9.6	<b>19.8</b>
CO	mg/m <sup>3</sup>	4	0.52	0.51	0.51	0.42	0.49	BDL	<b>BDL</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.4	5.8	5.6	5.2	5.4	BDL	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

AMBIENT AIR QUALITY ( BUFFER ZONE)									
AAQ4:Near Village Ostapal									
Parameters	Unit	CPCB AAQ Standard 2009	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	Average
PM <sub>10</sub>	µg/m <sup>3</sup>	100	55.2	58.8	56.2	55.8	55.8	49.6	<b>55.2</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	40.8	40.6	38.8	40.2	40.8	29.6	<b>38.5</b>
SO <sub>2</sub>	µg/m <sup>3</sup>	80	8.1	8.2	7.4	8.4	8.4	6.6	<b>7.9</b>
NO <sub>X</sub>	µg/m <sup>3</sup>	80	11.8	10.8	10.8	11.8	10.9	11.6	<b>11.3</b>
CO	mg/m <sup>3</sup>	4	0.54	0.46	0.42	0.44	0.54	BDL	<b>BDL</b>
O <sub>3</sub>	µg/m <sup>3</sup>	100	5.4	5.4	4.8	5.6	5.8	BDL	<b>BDL</b>
NH <sub>3</sub>	µg/m <sup>3</sup>	400	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Pb	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Ni	ng/m <sup>3</sup>	20	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
As	ng/m <sup>3</sup>	6	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
Bap	ng/m <sup>3</sup>	5	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>
C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	1	BDL	BDL	BDL	BDL	BDL	BDL	<b>BDL</b>

Reviewed By



*M. Prasad*

Approved By



*Pooja Mohanty*