

SCIENTIFIC RESEARCH LABORATORY

An ISO 9001:2015 (QMS) & OHSAS 45001:2018 Certified Organization
Recognized by Jharkhand State Pollution Control Board
Analytical & Environmental Engineering Laboratory
C- 144, Aman Green City, Pundag, Ranchi- 834 004, Jharkhand
Tele No.: 0651- 2950060, Mobile: 94701 30700, E-mail: nirajksingh2003@yahoo.co.in

Report No. : SRL/RCMPL/AUGUST/20

Date: 26.08.2020

TEST REPORT

- Name and Address of the Unit : M/s Radha Casting & Metalik (Pvt) Limited.
(M. S. Ingot Unit), At.: Paiki, P.O.: Marar,
District: Ramgarh, Jharkhand.
- Location of Monitoring : Near Main Gate (Beside Office Building)
- Date of Monitoring : 10.08.2020 to 11.08.2020
- Ambient Temperature : 30°C
- Average Relative Humidity : 38 %
- Meteorological Condition : Cloudy
- Results of Ambient Air Quality :

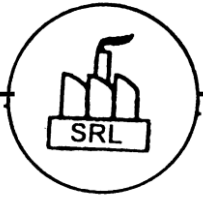
Sl. No.	PARAMETERS	UNIT	RESULTS
1.	Sulphur dioxide (SO ₂)	µg/m ³	14.50
2.	Nitrogen Oxides (NOx)	µg/m ³	25.30
3.	PM ₁₀	µg/m ³	79.00
4.	PM _{2.5}	µg/m ³	47.00
5.	Ozone (O ₃)	µg/m ³	22.00
6.	Lead (Pb)	µg/m ³	<0.02
7.	Carbon monoxide (CO)	mg/m ³	0.81
8.	Ammonia (NH ₃)	µg/m ³	25.00
9.	Benzene (C ₆ H ₆)	µg/m ³	<1.00
10.	Benzo (a) Pyrene (BaP)	ng/m ³	<1.00
11.	Arsenic (As)	ng/m ³	<1.00
12.	Nickel (Ni)	ng/m ³	<4.00

Note: 01. Ambient Fine Dust Sampler [Make Ecotech Instruments, Greater Noida, Model-AAS 190] was used for PM_{2.5} collection.

02. Analysis of Lead (Pb), Arsenic (As), Nickel (Ni), and Benzo (a) Pyrene (BaP) was carried out on PM₁₀ fraction.

for Scientific Research Laboratory,

(Dr. Niraj Kumar Singh)
In-charge, Jharkhand office.



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(M. S. Ingot Unit), At.: Paiki, P.O.: Marar,
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- Location of Monitoring : Near South – East Boundary
- Date of Monitoring : 10.08.2020 to 11.08.2020
- Ambient Temperature : 30°C
- Average Relative Humidity : 38 %
- Meteorological Condition : Cloudy
- Results of Ambient Air Quality :

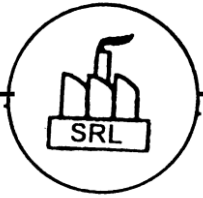
Sl. No.	PARAMETERS	UNIT	RESULTS
1.	Sulphur dioxide (SO ₂)	µg/m ³	15.60
2.	Nitrogen Oxides (NO _x)	µg/m ³	28.50
3.	PM ₁₀	µg/m ³	84.20
4.	PM _{2.5}	µg/m ³	49.00
5.	Ozone (O ₃)	µg/m ³	24.00
6.	Lead (Pb)	µg/m ³	<0.02
7.	Carbon monoxide (CO)	mg/m ³	0.86
8.	Ammonia (NH ₃)	µg/m ³	23.00
9.	Benzene (C ₆ H ₆)	µg/m ³	<1.00
10.	Benzo (a) Pyrene (BaP)	ng/m ³	<1.00
11.	Arsenic (As)	ng/m ³	<1.00
12.	Nickel (Ni)	ng/m ³	<4.00

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- Name and Address of the Unit : M/s Radha Casting & Metalik (Pvt) Limited.
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- Date of Monitoring : 10.08.2020 to 11.08.2020
- Ambient Temperature : 30°C
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- Results of Ambient Air Quality :

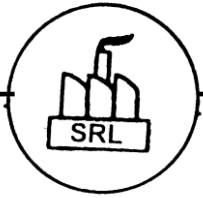
Sl. No.	PARAMETERS	UNIT	RESULTS
1.	Sulphur dioxide (SO ₂)	µg/m ³	16.80
2.	Nitrogen Oxides (NOx)	µg/m ³	32.50
3.	PM ₁₀	µg/m ³	88.00
4.	PM _{2.5}	µg/m ³	52.00
5.	Ozone (O ₃)	µg/m ³	26.00
6.	Lead (Pb)	µg/m ³	<0.02
7.	Carbon monoxide (CO)	mg/m ³	0.92
8.	Ammonia (NH ₃)	µg/m ³	26.00
9.	Benzene (C ₆ H ₆)	µg/m ³	<1.00
10.	Benzo (a) Pyrene (BaP)	ng/m ³	<1.00
11.	Arsenic (As)	ng/m ³	<1.00
12.	Nickel (Ni)	ng/m ³	<4.00

Note: 01. Ambient Fine Dust Sampler [Make Ecotech Instruments, Greater Noida, Model-AAS 190] was used for PM_{2.5} collection.

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- Average Relative Humidity : 38 %
- Meteorological Condition : Cloudy
- Results of Ambient Air Quality :

Sl. No.	PARAMETERS	UNIT	RESULTS
1.	Sulphur dioxide (SO ₂)	µg/m ³	15.20
2.	Nitrogen Oxides (NOx)	µg/m ³	27.40
3.	PM ₁₀	µg/m ³	76.50
4.	PM _{2.5}	µg/m ³	45.00
5.	Ozone (O ₃)	µg/m ³	24.00
6.	Lead (Pb)	µg/m ³	<0.02
7.	Carbon monoxide (CO)	mg/m ³	0.88
8.	Ammonia (NH ₃)	µg/m ³	24.00
9.	Benzene (C ₆ H ₆)	µg/m ³	<1.00
10.	Benzo (a) Pyrene (BaP)	ng/m ³	<1.00
11.	Arsenic (As)	ng/m ³	<1.00
12.	Nickel (Ni)	ng/m ³	<4.00

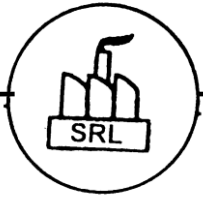
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**M/s RADHA CASTING & METALIK (P) LTD.
(M. S. INGOT UNIT)
At.: PAINKI, P.O.: MARAR, DISTRICT: RAMGARH
JHARKHAND**

AMBIENT NOISE MONITORING DATA

Report No. : SRL/RCMPL/N-01/20

Date of Reporting: 26.08.2020

Monitoring Location	Date of Monitoring	Hours		Sound Pressure Level, dB(A)
		Day Time (06.00-22.00 hr.)	Night Time (22.00-06.00 hr.)	
Near Main Gate (Beside Office Building)	10.08.2020 & 11.08.2020	Day Time (06.00-22.00 hr.)	09.00	55.6
			10.00	57.5
			11.00	59.3
			12.00	62.7
			13.00	61.5
			14.00	61.9
			15.00	62.0
		16.00	62.7	
		Night Time (22.00-06.00 hr.)	22.00	53.5
			23.00	52.4
			00.00	48.6
			01.00	47.8
			02.00	46.4
			03.00	47.5
			04.00	49.2
			05.00	50.4

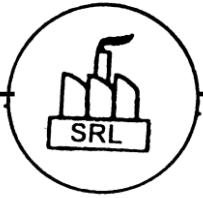
Norms: National Ambient Air Quality Standards (NAAQS) in respect of Noise as per CPCB, New Delhi,
Industrial Area : Day Time 75 dB(A) Leq and Night Time 70 dB(A) Leq
Commercial Area : Day Time 65 dB(A) Leq and Night Time 55 dB(A) Leq
Residential Area : Day Time 55 dB(A) Leq and Night Time 45 dB(A) Leq
Silence Zone : Day Time 50 dB(A) Leq and Night Time 40 dB(A) Leq

Norms: OSHA Norms in work place for 8 hr. exposure: 90 dB (A)

for Scientific Research Laboratory,

Niraj

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AMBIENT NOISE MONITORING DATA

Report No. : SRL/RCMPL/N-01/20

Date of Reporting: 26.08.2020

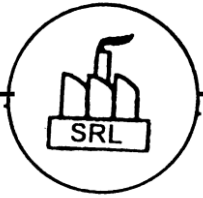
Monitoring Location	Date of Monitoring	Hours		Sound Pressure Level, dB(A)
		Day Time (06.00-22.00 hr.)	Night Time (22.00-06.00 hr.)	
Near South – East Boundary	10.08.2020 & 11.08.2020	Day Time (06.00-22.00 hr.)	09.10	60.1
			10.10	59.8
			11.10	60.0
			12.10	62.3
			13.10	63.6
			14.10	62.9
			15.10	63.7
			16.10	64.1
		Night Time (22.00-06.00 hr.)	22.10	58.4
			23.10	57.2
			00.10	56.5
			01.10	54.8
			02.10	56.3
			03.10	55.9
			04.10	56.7
			05.10	57.2

Norms: National Ambient Air Quality Standards (NAAQS) in respect of Noise as per CPCB, New Delhi,
Industrial Area : Day Time 75 dB(A) Leq and Night Time 70 dB(A) Leq
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Date of Reporting: 26.08.2020

Monitoring Location	Date of Monitoring	Hours		Sound Pressure Level, dB(A)
		Day Time (06.00-22.00 hr.)	Night Time (22.00-06.00 hr.)	
Near South – West Boundary (Beside Laboratory)	10.08.2020 & 11.08.2020	Day Time (06.00-22.00 hr.)	09.20	59.5
			10.20	61.2
			11.20	60.9
			12.20	62.3
			13.20	63.0
			14.20	63.6
			15.20	62.4
			16.20	61.8
		Night Time (22.00-06.00 hr.)	22.20	58.7
			23.20	59.5
			00.20	58.3
			01.20	57.8
			02.20	56.0
			03.20	55.2
			04.20	56.5
			05.20	56.9

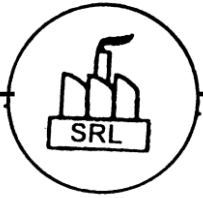
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Date of Reporting: 26.08.2020

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		Day Time (06.00-22.00 hr.)	Night Time (22.00-06.00 hr.)	
Near Staff Quarter	10.08.2020 & 11.08.2020	Day Time (06.00-22.00 hr.)	09.30	56.1
			10.30	55.6
			11.30	56.9
			12.30	58.3
			13.30	59.4
			14.30	58.2
			15.30	59.8
			16.30	60.2
		Night Time (22.00-06.00 hr.)	22.30	53.3
			23.30	52.7
			00.30	51.5
			01.30	52.0
			02.30	50.9
			03.30	51.6
			04.30	52.3
			05.30	52.8

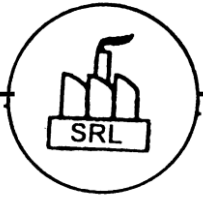
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Silence Zone : Day Time 50 dB(A) Leq and Night Time 40 dB(A) Leq

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Report No. : SRL/RCMPL/WZ-FD/20

Date: 26.08.2020

WORK ZONE FUGITIVE DUST EMISSION

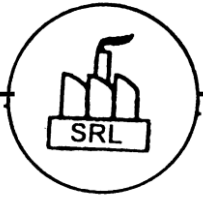
1. Name and Address of the Unit : M/s Radha Casting & Metalik (Pvt.) Limited.
(M. S. Ingot Unit)
At.- Paiki, P.O.: Marar, District: Ramgarh
Jharkhand.
2. Date of Monitoring : 11.08.2020
3. Ambient Temperature : 30°C
4. Average Relative Humidity : 56 %
5. Meteorological Condition : Cloudy
6. Results of Fugitive Dust Emission :

Sl. No.	Sample No.	Monitoring Location	Results in $\mu\text{g}/\text{Nm}^3$
			Respirable Suspended Particulate Matter (PM ₁₀)
1.	WZ - 1	Near Raw Material Handling Yard	1748
2.	WZ - 2	Near Induction Furnace	1892
3.	WZ - 3	Near Finished Product Exit Point	1796
4.	WZ - 4	Near Crusher Plant (About 10m from Crushing Unit)	1870
Norms for Fugitive Emission: MoEF & CC Notification, 18 th March, 2016			2000 at 10 metre

The results when compared with norms show that the work zone air quality were well within the stipulated limits.

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Tele No.: 0651- 2950060, Mobile: 94701 30700, E-mail: nirajksingh2003@yahoo.co.in

STACK MONITORING REPORT

Name of the Industry : M/s Radha Casting & Metalik (Pvt) Limited.
(M. S. Ingot Unit)
At.: Paiki, P.O.: Marar, District: Ramgarh,
Jharkhand.

Date of sampling : 10.08.2020

Weather condition : Cloudy

Stack number if any : Induction Furnace Stack (Electric)

Height of stack from ground level (in metre) : 21.26

Inner dimension of stack (in metre) : 0.40

Height of port hole (in metre) : 7.62

Atmospheric temperature (in °C) : 30

Stack gas temperature (in °C) : 110

Stack gas velocity (in m/s) : 6.61

Volumetric flow rate (in Nm³/hr) : 2327

Dust concentration (in mg/Nm³) : 82

Emission rate (in kg/hr) : 0.190

Name of fuel & quantity used per shift : Electricity

Production capacity : 15,000 T/Annum

Stack attached to : Fume Extraction System with Wet Scrubber

GASES

Sulphurdioxide (in mg/Nm³) as SO₂ : 12

Nitrogenoxides (in mg/Nm³) as NO₂ : 26

Carbon Monoxide (in %) as CO : <0.2%

Carbon dioxide (% v/v by Orsat method) : 5.0

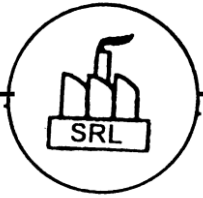
Note: Sampling was carried out at CO₂ 12%

Remarks: Dust concentration was found 82 mg/Nm³ against prescribed limit of 150 mg/Nm³.

for Scientific Research Laboratory,

Niraj

(DR. NIRAJ KUMAR SINGH)
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TEST REPORT

Sample No.: EW- 1
Report No.: SRL/RCMPL/EW-1/20

Reporting Date: 26.08.2020

SAMPLE DRAWN BY SCIENTIFIC RESEARCH LABORATORY

Customer Name & Address : Radha Casting & Metalik (P) Limited.
At.: Paiki, P.O.: Marar, District: Ramgarh
Jharkhand.
Type of the Sample : Cooling Tower Blow- Down Water
Location : Final Outlet
Sampling Method : APHA 20th Edition, 1060B & SRL/QSP/09
Date of Sampling : 11.08.2020
Sample Received On : 11.08.2020
Environmental Condition : Cloudy, Temp. 29^oC

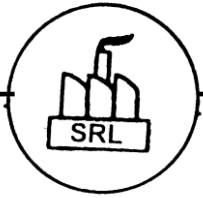
RESULTS

Sl. No.	Parameters	Unit	Permissible Limit	Results
1.	Temperature	°C	-	27.50
2.	pH	-	5.5 – 9.0	7.80
3.	Total Dissolved Solids	mg/l	-	392
4.	Total Suspended Solids	mg/l	100	40
5.	Chemical Oxygen Demand	mg/l	250	64
6.	Biological Oxygen Demand 3 Days at 27°C	mg/l	30	6.0
7.	Oil and Grease	mg/l	10	<5

for Scientific Research Laboratory,

Niraj

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RESULTS OF GROUND WATER ANALYSIS

CLIENT : M/S Radha Casting & Metalik (Pvt) Limited (M. S. Ingot Unit)
AT.: Painki, P.O.: Marar, District: Ramgarh, Jharkhand

DATE OF SAMPLING : 11.08.2020

DATE OF REPORTING: 26.08.2020

Sl. No.	Characteristics	Requirement (desirable limits)	Permissible Limits* in the absence of Alternate Source	Results
				Bore Well Water
1.	Colour, Hazen units, Max.	5	-	< 5
2.	Odour	Unobjectionable	-	Unobjectionable
3.	Taste	Agreeable	-	Agreeable
4.	Turbidity, NTU, Max.	5	10	<0.5
5.	pH Value	6.5 to 8.5	No relaxation	7.30
6.	Total Hardness (as CaCO ₃), mg/l, Max.	300	600	216
7.	Iron (as Fe), mg/l, Max.	0.3	0.30	0.20
8.	Chloride (as Cl), mg/l, Max.	250	1000	34
9.	Residual Free Chlorine, mg/l, Min.	0.2	-	< 0.1
10.	Fluoride (as F) mg/L, Max.	1.0	1.5	0.52
11.	Dissolved Solids mg/l, Max.	500	2000	310
12.	Calcium (as Ca), mg/l, Max.	75	200	54
13.	Magnesium (as Mg), mg/L, Max.	30	100	18
14.	Copper (Cu), mg/l, Max.	0.05	1.5	< 0.01
15.	Manganese (as Mn), mg/l, Max.	0.1	0.3	0.02
16.	Sulphate (as SO ₄), mg/l, Max.	200	400	14
17.	Nitrate (as NO ₃), mg/l, Max.	45	100	7.2
18.	Phenolic Compounds (as C ₆ H ₅ OH),	0.001	0.002	< 0.001
19.	Mercury (as Hg), mg/l, Max.	0.001	No relaxation	< 0.0005
20.	Cadmium (as Cd), mg/l, Max.	0.01	No relaxation	< 0.005
21.	Selenium (as Se), mg/l, Max.	0.01	No relaxation	< 0.005
22.	Arsenic (as As), mg/l, Max.	0.05	No relaxation	< 0.03
23.	Cyanide (as CN), mg/l, Max.	0.05	No relaxation	< 0.01
24.	Lead (as Pb), mg/l, Max.	0.05	No relaxation	< 0.05
25.	Chromium (as Cr ⁶⁺), mg/l, Max.	0.05	No relaxation	< 0.01
26.	Alkalinity (as CaCO ₃) mg/l, Max.	200	600	210
27.	Aluminium (as Al) mg/l, Max.	0.03	0.2	< 0.01
28.	Boron, mg/l, Max.	1.0	5	< 0.1
29.	Total Coliforms Count,MPN/100ml	**	-	Nil

IS: 10500 (2012): Norms for drinking water

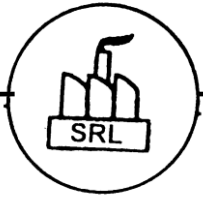
* IS: 10500 : 1991 Drinking water – Specification and amendment no. 01, January 1993.

- **
- Throughout any year, 95% of samples should not contain Coliform organisms in 100 ml.
 - No samples should contain E. Coli in 100 ml.
 - No samples should contain more than 10 Coliform organisms per 100 ml.
 - Coliform organisms should not be detected in 100 ml of any two consecutive samples.

for Scientific Research Laboratory,

Niraj

(Dr. Niraj Kumar Singh)
In-charge, Jharkhand Office



SCIENTIFIC RESEARCH LABORATORY

An ISO 9001:2015 (QMS) & OHSAS 45001:2018 Certified Organization

Recognized by Jharkhand State Pollution Control Board

Analytical & Environmental Engineering Laboratory

C- 144, Aman Green City, Pundag, Ranchi- 834 004, Jharkhand

Tele No.: 0651- 2950060, Mobile: 94701 30700, E-mail: nirajksingh2003@yahoo.co.in

RESULTS OF SURFACE WATER ANALYSIS

Client : M/s Radha Casting & Metalik (P) Ltd.
At: Paiki, P.O.: Marar, District: Ramgarh, Jharkhand.

Sample Received on : 11.08.2020

Date of Reporting: 26.08.2020

Sl. No.	Parameters	Reservoir Water (Within Plant Campus)
1.	Colour, Hazen units, Max.	< 5
2.	pH Value	7.62
3.	Electrical Conductivity, μ mhos/cm	718
4.	Dissolved Oxygen (as O ₂), mg/l	4.8
5.	BOD, 5 days at 20° C, mg/l	2.6
6.	Total Hardness (as CaCO ₃), mg/l, Max.	130
7.	Iron (as Fe), mg/l, Max.	0.20
8.	Chloride (as Cl), mg/l, Max.	42.00
9.	Fluoride (as F) mg/L, Max.	0.46
10.	Dissolved Solids mg/l, Max.	448
11.	Total Suspended Solids mg/l, Max.	62
12.	Calcium (as Ca), mg/l, Max.	54.60
13.	Magnesium (as Mg), mg/L, Max.	22.00
14.	Copper (Cu), mg/l, Max.	<0.01
15.	Manganese (as Mn), mg/l, Max.	0.03
16.	Sulphate (as SO ₄), mg/l, Max.	96.00
17.	Nitrate (as NO ₃), mg/l, Max.	24.00
18.	Alkalinity (as CaCO ₃) mg/l, Max.	220
19.	Oil & Grease, mg/l, Max.	<0.10
20.	Total Coliform Count, MPN/100ml	350

Water Quality Criteria as per Central Pollution Control Board is as follows:

Parameters	Class A	Class B	Class C	Class D	Class E
1. pH	6.5–8.5	6.5–8.5	6.0-9.0	6.5–8.5	6.5–8.5
2. Dissolved oxygen (as O ₂), mg/l, min	6	5	4	4	-
3. BOD, 5 days at 20° C, max	2	3	3	-	-
4. Total coliform organism, MPN/100 ml, max	50	500	5000	-	-
5. Free ammonia (as N), mg/l, max	-	-	-	1.2	-
6. Electrical conductivity, μ mhos/cm, max	-	-	-	-	2250
7. Sodium absorption ratio, max.	-	-	-	-	26
8. Boron (as B), mg/l, max.	-	-	-	-	2

Class A: Drinking water source without conventional treatment but after disinfection

Class B: Outdoor bathing (organized)

Class C: Drinking water source after conventional treatment and after disinfection

Class D: Propagation of Wild life and Fisheries

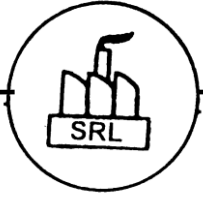
Class E: Irrigation, Industrial Cooling, and Controlled Waste Disposal

Below E: Not meeting A, B, C, D & E Criteria

for Scientific Research Laboratory,

Niraj

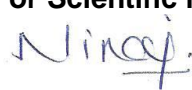
(Dr. Niraj Kumar Singh)
In-charge, Jharkhand Office.



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Analytical & Environmental Engineering Laboratory
C- 144, Aman Green City, Pundag, Ranchi- 834 004, Jharkhand
Tele No.: 0651- 2950060, Mobile: 94701 30700, E-mail: nirajksingh2003@yahoo.co.in

INVOICE

Bill to			Invoice No.	Dated
Radha Casting & Metalik (P) Ltd. At.: Paiki, P.O.: Marar, Ramgarh - 829 117 Jharkhand.			B/RCM/FEB/20/74	05.02.2020
GSTIN No.: 20AADCR3294B1ZW				
Description of Service	SAC	Unit Rate (Rs.)	No. of Sample/ Location	Amount (Rs.)
Ambient Air Quality Monitoring	998346	5,000.00	04	20,000.00
Noise Level Monitoring		1,200.00	04	4,800.00
Fugitive Dust Monitoring		3,000.00	04	12,000.00
Stack Emission Monitoring		3,600.00	01	3,600.00
Surface Water Analysis		3,000.00	01	3,000.00
Ground Water Analysis		3,000.00	01	3,000.00
Blow Down Water Analysis		3,000.00	01	3,000.00
Lechate Analysis		4,000.00	01	4,000.00
Transportation Charges @ Rs. 1,000.00 per day for one day:				1,000.00
Total Taxable Amount				54,400.00
CGSTIN @ 9%				4,896.00
SGSTIN @ 9%				4,896.00
Amount Payable :				64,192.00
Amount Chargeable (In words) Rupees sixty four thousand one hundred ninety two only.			For Scientific Research Laboratory,  (Dr. Niraj Kumar Singh) In-charge, Jharkhand Office	
PAN No.	AOMPS6825F			
GSTIN No.	20AOMPS6825F1ZV			
Bank Name & Branch	Canara Bank, Doranda, Ranchi – 834 002, Jharkhand			
Account No.	1642201001428			
RTGS/ IFS Code	CNRB0001642			