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SHREE JHARKHAND CEMENT PLANT

(A UNIT OF SHREE CEMENT LTD.)

Vill : Hansda-Burudih, Dist : Seraikela Kharsawan, Jharkhand 833220



SCL/Jharkhand/ENV/EC/2020-21/14

Date: 16/11/2020

To,
The, Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (EZ), Bungalow No. A-2, Shyamali Colony,
Ranchi-834002

Sub: - Compliance of conditions of environmental clearance for the Cement grinding unit of capacity 4.0 Million TPA cement along with proposed Power plant 20 MW and captive railway siding near Village-Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand by M/s Shree Cement Limited.


Ref: - EC Letter No. J-11011/692/2008-IA-II (I) dated 21-02-2018.

Dear Sir,

In reference to the above subject matter and referred EC letter, we are submitting herewith half yearly compliance report of conditions of the above environmental clearance letter for the period of **April-2020 to September-2020**.

We are sending the soft copy of the half yearly compliance report to the following E-mail address: ro_ranchi-mef@gov.in for your ready reference and necessary submission please.

Thanking you,
Yours faithfully,
For M/s. Shree Jharkhand Cement Plant
(A unit of Shree Cement Ltd)


Ashok Kumar

(Asst. General Manager)

- Cc: 1. The Zonal Officer, Central Pollution Control Board, South end Conclave' Block-502, 5th and 6th Floor, 1582, Razidanga, Main Road, Kolkata-700107
2. The Member Secretary, Jharkhand State Pollution Control Board, T.A Division building (Ground floor), HEC Campus, P.O. Dhurwa, Ranchi – 834004, Jharkhand.
3. The Regional Officer, JSPCB, Regional office cum laboratory, M.15, New Housing Colony, Adityapur, Jamshedpur – 831013

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Compliance of Environmental Clearance conditions granted by MOEF&CC vide letter no. J-11011/692/2008-IA-II (I), dated 21/02/2018 for the expansion cum change in product mix clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana cement: 180000 TPA & Composite Cement to clinker grinding unit of capacity 4.0 million TPA cement along with proposed power plant 20 MW and captive railway siding near village Hansda, PO Burudih, Dist. Saraikela - Kharsawan, Jharkhand M/s Shree Cement Limited for the period of April-2020 to Septemebr-2020.

S. No.	Conditions	Compliance Status
A.	Specific Conditions	
1	The validity of the present EC will be up to 29 th August 2020.	Noted.
2	An amount equal to 5% of total cost proposed towards Enterprise Social Commitment (ESC) shall be utilized as capital expenditure in project mode. The project shall be completed in concurrence with the implementation of the expansion and estimated on the basis of Scheduled Rates.	<p>Company is engaged in carrying out extensive CSR activity as under:</p> <ul style="list-style-type: none"> ➤ Health & sanitation ➤ Education ➤ Women empowerment ➤ Infrastructure development ➤ Cultural and heritage promotion ➤ Ensuring environment sustainability <p>A dedicated team is engaged in carrying out all the social activities around near-by villages. (CSR expenses is attached as Annexure-1)</p>
3	Green belt shall be developed equal to 33% of the plant area with a native tree species in accordance with CPCB guidelines. The green belt shall inter alia cover the entire periphery of the plant.	<p>Plantation activities are done regularly. Out of total plant area of 110 acres, green belt has been developed in 37.2 acres (33.8%) area. (Snapshot of planted saplings are enclosed as Annexure – 2)</p>
4	The capital cost Rs 8.72 Crores and annual recurring cost Rs 1.93 Crores towards the environmental protection measures shall be earmarked separately. The funds so provided shall not be diverted for any other purpose.	<p>Total capital cost towards the Environmental protection measures is earmarked as below:</p> <ol style="list-style-type: none"> 1. Bag filter equipment: Rs.3.87 Cr. 2. Cement mill Bag house: Rs.5.54 Cr. 3. Civil structure for Bag house and bag filters: Rs.4.0 CR. 4. Fabrication and erection cost of Bag house and bag filters: Rs.1.77 Cr. 5. Electrical & Instrumentation expenditure (Motor, Cables & Automations) for bag house: Rs.1.91 Cr.





		<p>6. Covering of conveyer belts: Rs.0.55 Cr.</p> <p>7. STP: Rs.0.14 Cr.</p> <p>8. Environmental Monitoring Equipment: Rs.1.94 Cr.</p> <p>9. Rain water harvesting: Rs.0.14 Cr.</p> <p>10. Plantation: Rs.0.10 Cr.</p> <p>11. Storage shed and Silo construction: Rs.57.00 CR.</p> <p>12. Vacuum sweeping machine: Rs.0.70 Cr.</p> <p>13. Tractor and tanker: Rs.0.30 Cr.</p> <p>14. Road construction: Rs.11.32 Cr.</p> <p>Total, Rs.89.38 Cr. Approximately</p> <p>Annual recurring cost towards the environmental protection measures for the FY 2020-21 shall be submitted in the next half yearly EC compliance report.</p>
5	The company shall adopt the system of reporting of non-compliances/ infringements to the Board of Directors once in six months and at the time of any incidence.	Company has a well-established Corporate Environmental Policy. Environment, Social and Governance Committee (ESG) committee review all the environment compliances. All the issues of environment are being discussed in the committee and MOM of the same is enclosed herewith as Annexure-3 .
6	The emission for the bag house shall be maintained less than 20 mg/Nm ³ .	The Particulate Matter emission are maintained below the prescribed standards of 20 mg/Nm ³ . Stack emission monitoring report is enclosed as Annexure – 4 .
B.	GENERAL CONDITIONS:	
1.	The project proponent shall (Air Quality Monitoring):	
a.	Install 24X7 continuous emission monitoring system at power plant stack emission with respect to parameters prescribed in S.O. 3305 (E) dated 7 th December 2015 for thermal power plants as amended from time to time and connected to CPCB online;	<p>CPP will be installed in Second phase.</p> <p>Continuous emission monitoring system will be installed at power plant stack once CPP will be installed & transfer data to CPCB and SPCB server.</p>
b.	Monitor fugitive emissions in the plant premises;	Fugitive emission monitoring report is enclosed as Annexure – 4 .






c.	Carryout continuous Ambient Air Quality monitoring as per National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826 (E) dated 16 th November 2009 (as amended from time to time) within and outside the plant area at least at four locations covering upwind and downwind directions at an angle of 120° each; and	Four numbers of Continuous Ambient Air Quality monitoring systems have been installed for the measurement of PM2.5, PM10, SO2, NO2 & CO connectivity of same is made with JSPCB. Snapshot of the server page is enclosed as Annexure-5 .
d.	Submit monitoring report to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	Ambient air quality monitoring report is enclosed as Annexure – 6 .
2.	The project proponent shall (Water Quality Monitoring):	
a)	Install effluents monitoring system at all the discharge points to monitor treated effluents with respect to parameters prescribed in S.O. 3305 (E) dated 7 th December 2015 for thermal power plants as amended from time to time as amended from time to time; and	<p>Clinker grinding is a dry process and therefore, no effluent is generated from the process.</p> <p>Domestic waste water generated from office toilet and mess is being treated in STP and treated water is being used for plantation purpose.</p> <p>CPP will be installed in second phase.</p>
b)	Submit monitoring report to Regional Office of MoEF&CC, Zonal office of CPCB and Regional office of SPCB along with six-monthly monitoring report.	<p>Tread effluent – Nil (Cement grinding based on dry process)</p> <p>Analysis reports of STP treated water are attached as Annexure – 7.</p>
3.	The project proponent shall (Air Pollution Control):	
a)	Provide appropriate Air Pollution Control (APC) system for all the dust generating points including fugitive dust from all vulnerable sources;	<p>Bag filters are provided at all material transfer points. Belt conveyors are covered.</p> 
b)	Design suitable capacity of bag filters to handle gas/ air shall be 150% of the normal flow from process / from suction hoods to achieve particulate emission to less than 20 mg/Nm3;	Complying with.
c)	Provide leakage detection and mechanized bag	Complying with.






	cleaning facilities for better maintenance of bags;	
d)	Provide pollution control system in the cement plant as per the CREP Guideline of CPCB;	<p>Unit has installed emission control equipment at different location the control of particulate matter and are as per the CREP recommendations.</p> <p>Compliance to the recommendations mentioned in the CREP guidelines for the Cement plant is enclosed as Annexure-8.</p>
e)	Provide sufficient number of mobile or stationery vacuum cleaners to clean plant roads, shop floors, roofs regularly;	<p>Vacuum sweeping machines are being used continuously for maintaining housekeeping.</p> 
f)	Use leak proof trucks/dumpers for carrying raw materials & cement and shall cover them with tarpaulin. Use closed bulkers for carrying fly ash;	<p>Covered trucks are used for transportation of raw materials like clinker & gypsum and closed bulkers are deployed for the transportation of fly ash.</p> 
g)	Provide wind shelter fence and chemical spraying on the raw material stock piles;	<p>Silos for the storage of clinker, cement and fly ash are made available. Covered storage for gypsum and coal has been provided.</p>




		  <p>(Gypsum Yard)</p>
h)	Provide low NOx burners to control NOx emission;	Not applicable for clinker grinding unit. CPP will be installed in second phase.
i)	Have separate truck parking area and monitor vehicle emissions at regular interval.	<p>Separate truck parking area has been developed.</p>  <p>Only vehicles having PUC are allowed for transportation.</p>
4.	The project proponent shall (Water Pollution Control):	
a)	Adhere to 'zero liquid discharge';	<p>Clinker grinding is a dry process and therefore, no effluent is being generated from the process.</p> <p>Domestic waste water generated from office toilet and canteen is being treated in STP and treated water is used for horticulture purpose.</p> <p>Complying with Zero liquid discharge.</p>



b)	Provide Sewage Treatment Plant for domestic wastewater;	Domestic waste water from office and guest house is treated in STP and treated water is used for plantation purpose. 
c)	Provide garland drains and collection pits for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.	Silos constructed for the storage of clinker, cement and fly ash. Covered storage has been provided for the storage of gypsum.
5.	The project proponent shall (Water Conservation):	
a)	Practice rainwater harvesting to maximum possible extent;	Rainwater harvesting pond developed with in plant area with storage capacity 51405 m ³ .  Six numbers of artificial rain water recharge structures are constructed inside plant premises to recharge ground water. 
b)	Provide water meters at the inlet to all unit processes in the power plant;	Digital water meter installed at all raw water withdrawal sources.




		
c)	Make efforts to minimize water consumption in the complex by segregation of used water, practicing cascade use and by recycling treated water.	We are maintaining "Zero liquid discharge" as clinker grinding unit is based on dry process. Domestic waste water is being treated in STP and treated water used in green belt development.
6.	The PP shall (Energy conservation):	
a)	Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly;	Solar lights are provided in common area, street lights and parking area. In addition to above 1.999 MW Solar power system installed.
b)	Provide the project proponent for LED lights in their offices and residential areas;	LED lights have been provided in offices & other buildings inside the plant premises.
c)	Maximize utilization of fly ash, slag and sweetener in cement blend as per BIS standards; and	Fly ash and slag have been used as per BIS standard for manufacturing PPC and Slag cement.
7.	Efforts shall be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land.	Covered trucks are used for the transportation of raw materials and closed trucks and bulkers have been used for the transportation of fly ash. Only PUC vehicles are allowed for transportation of raw materials. Cleaning of roads and truck parking area is being done by vacuum cleaning machine.
8.	The PP shall prepare GHG emissions inventory for the plant and shall submit the program for reduction of the same including carbon sequestration including plantation.	GHG emissions inventory report for the plant is enclosed as Annexure-9 .



9.	Emergency preparedness plan based on the Hazard identification and Risk assessment (HIRA) and Disaster Management Plan shall be implemented.	Emergency preparedness plan based on the Hazard identification and Risk assessment (HIRA) and Disaster Management Plan has been prepared and implemented. Copy of the HIRA and OEP are enclosed as Annexure-10 .
10.	The PP shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.	This is a clinker grinding unit and the unit is not going for clinker manufacturing. Hence, Heat stress analysis report not required as per Factory & Boiler Act.
11.	The PP shall adhere to the corporate environmental policy and system of the reporting of any infringements/ non-compliance of EC conditions at least once in a year to the Board of Directors and the copy of the board resolution shall be submitted to the MoEF&CC as a part of six-monthly report.	Company has a well-established Corporate Environmental Policy. Environment, Social and Governance Committee (ESG) committee review all the environment compliances. All the issues of environment are being discussed in the committee and MOM of the same is enclosed herewith as Annexure-3 .
12.	All the recommendations made in the Charter on corporate Responsibility for Environment Protection (CREP) for the cement plants shall be implemented.	All CREP recommendations are being complied. Compliance to the recommendations mentioned in the CREP guidelines for the Cement plant is enclosed as Annexure-8 .
13.	A dedicated environmental cell with qualified personnel shall be established. The head of the environment cell shall report directly to the head of the organization.	A dedicated environmental cell with qualified personnel has been established and directly reporting to the Senior Executive.
14.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied.
15.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.	Complying with the stipulations made by SPCB.
16.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).	Agreed, we will obtain prior approval from MoEF&CC for further expansion or modification.



17.	The waste oil, grease and other hazardous shall be disposed of as per the Hazardous & Other waste (Management & Trans-boundary Movement) Rules, 2016.	Used Oil is being collected in drums and sold to CPCB authorized recyclers as per the Hazardous & Other waste (Management & Trans-boundary Movement) Rules, 2016.
18.	The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) during day time and 70 dB (A) during night time.	Complying with, ambient noise level report is enclosed as Annexure-11 .
19.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Annual occupational health surveillance program of the workers and staff is undertaken and corrective measures are taken. Records are maintained as per the Factory act. Record with sample reports are enclosed as Annexure-12 .
20.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report.	Implementation status of environment protection measure and safeguards recommended in EIA/EMP report in matrix format is enclosed as Annexure – 13 .
21.	Ventilation system shall be designed for adequate air changes as per ACGIH document for all tunnels, motor houses, cement bagging plants.	Being complied.
22.	Sufficient number of color coded waste collection bins shall be constructed at shop floors in each shop to systematically segregate and store waste materials generated at the shop floors (other than Process waste) in designated colored bins for value addition by promoting reuse of such wastes and for good housekeeping.	Being complied. 
23.	The project proponent shall (post-EC Monitoring):	
a.	Send a copy of environmental clearance letter to the heads of Local Bodies, Panchayat, Municipal bodies and relevant offices of the Government;	Copy of EC has been provided to following local bodies: 1. Gram Panchayat, Simla Block, Kharsawan on dated 12.03.2018 2. Gram Panchayat, Burudih Block, Kharsawan



		<p>on dated 14.03.2018</p> <p>3. Chief of Block Kharsawan, District: Seraikela-Kharsawan on 14.03.2018</p> <p>Attached as Annexure-14.</p>
b.	put on the clearance letter on the web site of the company for access to the public.	The copy of environment clearance letter is available on the web site of Shree Cement Ltd. www.shreecement.in
c.	Inform the public through advertisement within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment, Forests and Climate Change (MoEF&CC) at http://envfor.nic.in .	EC was received on 7 th March 2018 and advertised in Prabhat Khabar & Dainik Bhaskar local newspapers have been published on dated 11/03/2018 & 13/03/2018 respectively. Copy of the same submitted on 14/03/2018.
d.	Upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same periodically;	Status of compliance of the stipulated environment clearance conditions, including results of monitored data is available on the web site of Shree Cement Ltd. www.shreecement.in
e.	Monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company;	<p>CEMS i.e. opacity meter for PM measurement has been provided at cement mill stack.</p> <p>CPP will be installed in 2nd phase, there-on CEMS for PM, SO2 & NOx will be installed with boiler stack.</p>
f.	Submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by-mail) to the Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB;	Compliance report is being submitted on regular basis to the Regional Office of MoEF&CC, Zonal Office of CPCB and the SPCB.
g.	submit the environmental statement for each financial year in Form- V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the	Environmental statement for each financial year ending 31 st March in Form-V has been submitted to the Jharkhand State Pollution Control Board and is available on the web site of Shree Cement Ltd. www.shreecement.in



	website of the company;	
h.	Inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Plant was commissioned on 31 st May, 2019. CA certified financial closure is enclosed as Annexure-15.



DETAILS SHOWING CSR EXPENSES BY SHREE JHARKHAND CEMENT PLANT (A UNIT OF SHREE CEMENT LTD.)		
Sr. No.	Heading	Expenses in Lakh
A	Eradicating hunger, poverty and malnutrition, promoting preventive health care and sanitation and making available safe drinking water	7.50
B	Promoting education, including special education and employment enhancing vocational skills especially among children, women, elderly and the differently abled and livelihood enhancement projects (Inc. consumer education and awareness)	8.36
C	Promoting gender equality, empowering women, setting up homes and hostels for women and orphans; setting up old age homes, day care centers and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups	3.94
D	Ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining quality of soil, air and water	3.22
E	Protection of national heritage, art and culture including restoration of buildings and sites of historical importance and works of art; setting up public libraries; promotion and development of traditional arts and handicrafts;	8.51
F	Training to promote rural sports, nationally recognized sports, Paralympic sports and Olympic sports	2.27
G	Rural development projects	20.92
	TOTAL	54.72



ANNEXURE - 2

Annexure-2

PHOTOGRAPHS SHOWING GREEN BELT DEVELOPMENT ALONG THE PLANT BOUNDARY



**PHOTOGRAPHS SHOWING GREEN BELT DEVELOPMENT ALONG THE PLANT
BOUNDARY**



**PHOTOGRAPHS SHOWING GREEN BELT DEVELOPMENT ALONG THE PLANT
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SHREE CEMENT LTD.

An ISO 9001, 14001, 45001 & 50001 Certified Company

Regd. Office:

BANGUR NAGAR, POST BOX NO.33, BEAWAR 305901, RAJASTHAN, INDIA

CERTIFIED TRUE ABSTRACT OF THE MINUTES OF THE MEETING OF THE ENVIRONMENT, SOCIAL & GOVERNANCE (ESG) COMMITTEE OF SHREE CEMENT LIMITED HELD ON 24TH APRIL, 2020 AT BANGUR NAGAR, BEAWAR

ENVIRONMENTAL ISSUES

The following points were deliberated and reviewed by the Committee on Company's performance in the area of Environment Management:

A. TO REVIEW LEVELS OF POLLUTION MAINTAINED BY THE COMPANY

The Pollution levels maintained by the Company at its various sites for the year 2019-20 were within the permissible limits. The annual average of actual pollution level and its comparison with permissible limits were as under:

SITE-WISE STACK EMISSION LEVEL

(a) Beawar, Ras, Raipur and Kodla

I. Stack Emission Level (Particulate Matter mg/Nm³)

Source	Beawar (Units)			Ras (Units)												Raipur			Kodla	
	Norms	I	II	Norms	III	IV	V	VI	VII	VIII	IX	X	RNC U-1	RN CU-2	Norms	I	II	Norm	Actual	
Raw Mill & Kiln	30	12.6	10.2	30	15.8	14.7	14.0	14.6	12.0	13.5	22.9	17.4	--	--	30	7.8	10.6	30	8.4	
Coal Mill	30	10.1	7.0	30	16.2	17.3	18.9	16.7	15.3	17.5	18.3	17.9	--	--	30	11.1	10.8	30	9.2	
Clinker Cooler	30	9.2	7.8	30	13.8	8.6	14.6	7.2	7.3	9.7	7.9	9.2	--	--	30	8.5	7.5	30	13.5	
Cement Mill	30	14.2	9.5	30	16.9	17.4	--	--	--	--	--	--	15.2	14.3	30	10.6	--	30	10.4	

II. Stack Emission Level Cement Plant (Flue Gas - mg/Nm³)

Source	Beawar (Units)				Ras (Units)										Raipur			Kodla		
	Norms	I	Norms	II	Norm	III	IV	V	VI	VII	VIII	IX	X	RNCU-1	RNCU-2	Norm	I	II	Norm	Actual
Raw Mill & Kiln	NOx (800)	460.7	NOx (1000)	410	NOx (800)	501.4	490.8	473.7	484.0	512.9	486.8	531.9	473.0	--	--	NOx (600)	276.3	283.4	NOx (600)	566
	SO2 (100)	1.4	SO2 (100)	0	SO2 (100)	3.0	2.3	1.6	2.9	0.3	6.1	1.0	3.8	--	--	SO2 (100)	18.9	25.5	SO2 (100)	2.8

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III. Stack Emission Level Power Plant (PM & Flue Gas in mg/Nm³)

Source	Beawar (Units)					Ras (Units)				Raipur (Units)	
	Norm	B-I (150 MW)	B-II (150 MW)	Norm	P-44 MW (B-I & II)	Norm	Boiler 2 & 3	Boiler 4 & 5	Boiler 6 & 7	Norm	CPP (mg/Nm ³)
Power Plant	PM-50 mg/Nm ³	20.9	22.8	PM-100 mg/Nm ³	19.5	PM (50 mg/Nm ³)	37.0	44.2	41.2	PM (50 mg/Nm ³)	19
	NO ₂ -300 mg/Nm ³	223	234	NO ₂ -600 mg/Nm ³	104	NO _x (300 mg/Nm ³)	82.9	110.7	96.1	NO _x (300 mg/Nm ³)	75.1
	SO ₂ -600 mg/Nm ³	369	403	SO ₂ -600 mg/Nm ³	260	SO ₂ (600 mg/Nm ³)	221.7	289.1	257.1	SO ₂ (600 mg/Nm ³)	189.1

(b) Grinding Units - Stack Emission Level (Particulate Matter mg/Nm³)

Source	Norms	K'khera	S'Garh		Jobner	Roorkee	Bihar	UP	Panipat	Jharkhand	
			SGU	BCU							
Cement mill-I	30	19	20	20	14	22	18	23	18	20	17.2
Cement mill-II	30	22	--	--	--	--	18	--	--	--	--

The details of site-wise Ambient Air Quality Level (PM 10, PM 2.5 and SO₂ Level) showing average of actual measurement V/s norms were also placed before the Committee. All actual pollution levels were within the norms. The Committee took note of the same and directed the Environment Department to take additional measures wherever required for further improvement.

B. TO REVIEW AND DELIBERATE ON INSTANCES OF ANY PERILS / HAZARDS OCCURRED ON ACCOUNT OF POLLUTION LEVELS AND WASTES GENERATED DURING THE PROCESSES

It was informed that there were no instances of any perils or hazards on account of pollution levels and wastes generated by the company.

C. TO REVIEW AND DELIBERATE ON THE PLANTATION ACTIVITIES UNDERTAKEN BY COMPANY

It was informed that the Company has undertaken planting of trees as an important exercise which is reflected in the number of plants and saplings planted during the year. The details of plantation activities for the 2019-20 were placed before the Committee as under:

Details	Beawar	Ras	Raipur	K'khera	S'Garh	Jobner	Roorkee	Bihar			Panipat	UP	Kodla			Jharkhand	Total
								Inside	Out side	Total			Plant	Mines	Kodla By-pass		
No. of plants nplanted	2550	13450	29,017	719	1674	536	500	11468	10000	21468	210	2355	19955	6659	1695	28309	1919
No. of Plants survived	2295	12201	26,359	595	1440	483	470	10285	7965	18250	185	2001	18405	6215	1539	26159	1653
% of Survival	90	90.71	90.84	82.75	86	90	94	90	80	85	88	85	92.23	93.30	90.79	92.40	86.14

The Committee took note of the same.

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SHREE CEMENT LTD.

An ISO 9001, 14001, 45001 & 50001 Certified Company

Regd. Office:

BANGUR NAGAR, POST BOX NO.33, BEAWAR 305901, RAJASTHAN, INDIA

D. TO TAKE NOTE OF THE ACTIVITIES / INITIATIVES UNDERTAKEN IN THE FIELD OF ENVIRONMENT CLEANLINESS AND WATER CONSERVATION

It was informed to the Committee that the Company is constantly making its efforts for environment cleanliness and water conservation in its plants operations. The following initiatives were undertaken by the Company in the field of environment cleanliness and water conservation during the year 2019-20:

Beawar	<ul style="list-style-type: none">• Construction of rainwater harvesting structures, rooftop harvesting, cleaning and maintenance work inside and outside plant premises ponds and anicuts• Various Hazardous wastes, plastic waste has been co-processed for gainful utilization• Human occupied sensor lights have been installed at offices for energy saving.• Indigenous species have been planted at plant and running mines area.• Online Digital Water Level Recorder (DWLR) with telemetry systems have been installed for continuous level monitoring of ground water.
Ras	<ul style="list-style-type: none">• Conserve more rain water by collecting in mine pit.• Using EVA lock (Bio degradable chemical) to control evaporation of water from mine pit.• Capacity increase of nearby ponds for collecting more rain water.• Used STP treated water in dual flushing in Bagatpura residential colony in Ras
Raipur	<ul style="list-style-type: none">• Constructed 2 Nos. of Rain Water Harvesting Ponds of 35,000 KL & 10,000 KL capacity.• Use of Mines pit water for colony domestic purpose.
Kodla	<ul style="list-style-type: none">• Water harvesting reservoir of capacity 2.6 Lakh liters has been constructed within plant area.• Spray water on haul road for dust control.• Piezometers constructed in plant & mines area for water level measurement.• Installed closed conveyor system from mines to plant for transfer of raw material to reduce fugitive emissions.
Grinding Units	<ul style="list-style-type: none">• Digital Water Level Recorder (DWLR) with telemetry system has been installed at piezometer well to monitor the water level.• Conservation of electrical energy through optimization of bore well pump operation.• Constructed raw material covered sheds for coal and gypsum storage to avoid fugitive emission.• Separation of drinking water line and plantation line to save water consumption.• Decomposition of canteen waste and bio fertilizer used in plantation.• Developed new recharge structures to recharge ground water.• Sprinklers are installed at plant area & all truck movement's area to save the water consumption as well controlling of fugitive & road emissions.• Green manure through composting of vegetation litter and garbage.• Optimization in mill water consumption from 12 KL/Hrs to 8-9 KL/Hrs subjected to the moisture availability in raw materials

The Committee discussed the initiatives and took note of the same.



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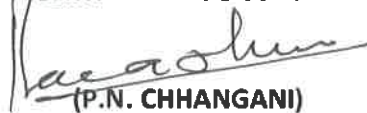
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J. TO REVIEW AND DELIBERATE THE COMPLIANCES OF APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS AND ANY SHOW- CAUSE NOTICE ISSUED BY CENTRAL/STATE POLLUTION BOARD

It was informed to the committee that there is a system wherein every Deptt head/Functional Head responsible for specific function sends a monthly certificate to the Company Secretary certifying compliance of laws and regulations related to that function. Based on this, a certificate is submitted to the Board of Directors stating compliance with all relevant laws and regulations by the company on quarterly basis. With regard to Environment the various laws and its responsibility matrix is as below: -

1	Air (Prevention and Control of Pollution) Act, 1981	Shri Vinay Saxena (for Unit I & II- Beawar)
2	Water (Prevention and Control of Pollution) Act, 1974	Shri Satish Maheshwari (Unit III- VIII and RNCU)
3	Water (Prevention and Control of Pollution) Cess Act, 1977	Shri Sanjay Jain (Unit IX, X and RNCU)
4	Environment Protection Act, 1986	
5.	Lead Acid Batteries (Management and Handling) Rules, 2000 and 2010	Shri K.L. Mahajan (For all existing grinding units including AAC plant except Bihar, Jharkhand and Raipur Units)
6.	Bio-Medical Waste (Management and Handling) Rules	
7.	Any other Rules, Regulations and Notifications related to their functional responsibility.	Shri R.K. Vijay (For Raipur cement plants and Bihar and Jharkhand Grinding Units)
8.	Compliance of regulatory requirements for transportation and use of Alternative Fuel (Industrial Waste)	Shri Arvind Kumar Patil (For Kodla Cement Plant) All power plants of the Company including GPPs- Shri M.M. Rathi
9.	Overall compliance management (including new projects)	Shri Anil Kumar Trivedi

CERTIFIED TRUE COPY


(P.N. CHHANGANI)

WHOLE TIME DIRECTOR



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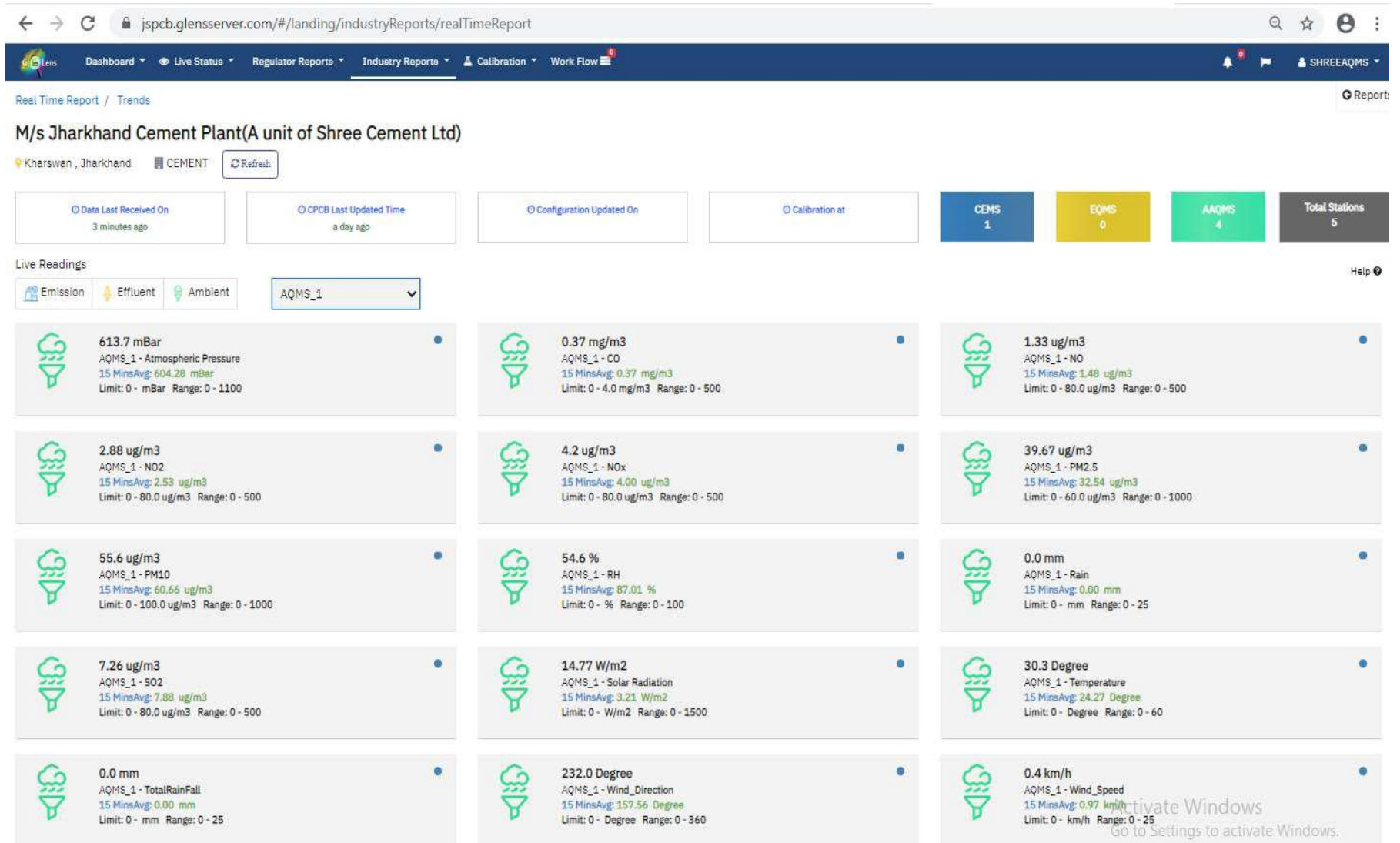
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Page No. _____

**Shree Jharkhand Cement Plant
(A unit of Shree Cement Limited)**

Stack Emission Monitoring Data (values in mg/Nm³)	
Months	Norms : 20 mg/Nm³
Apr-20	5.43
May-20	6.53
June-20	3.32
July-20	3.7
Aug-20	7.94
Sept-20	7.2

Fugitive Emission Monitoring Data (values in ug/m³)					
Locations	Cement Mill area	Clinker Silo	Cement Silo	Fly Ash Silo	Packing Plant
Norms	5000	5000	5000	5000	5000
Apr-20	Couldn't perform monitoring due to COVID-19 pandemic				
May-20	3888	3783	3778	4246	4387
June-20	3004	3085	3271	3755	4586
July-20	3280	3194	3209	3575	4487
Aug-20	3130	3246	3252	3578	4255
Sept-20	3093	3384	3424	3837	4498



ANNEXURE - 6

Page 1 of 1

Shree Jharkhand Cement Plant (A unit of Shree Cement Limited)

Ambient Air Quality Monitoring Data (values in $\mu\text{g}/\text{m}^3$)																
Locations	Plant boundary near logistic building				Plant boundary near Rain water harvesting pond				Plant boundary near railway siding				Plant boundary near wagon tippler			
Parameters	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂
Norms (24 hours)	100	60	80	80	100	60	80	80	100	60	80	80	100	60	80	80
Apr-20	Shutdown				49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82
May-20	Shutdown				49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82
June-20	Shutdown				49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82	49.48	23.43	9.91	11.82
July-20	47.33	25.88	9.86	10.46	47.64	23.42	7.78	12.64	31.28	15.88	9.22	17.11	42.62	21.50	11.07	12.56
Aug-20	45.94	25.43	10.62	10.17	43.45	26.80	11.19	12.62	49.46	28.36	11.40	11.19	45.94	25.43	10.62	10.17
Sept-20	48.31	14.49	10.74	12.54	40.63	21.32	9.51	13.30	31.39	19.10	11.87	17.23	37.61	19.77	12.15	13.06

**Shree Jharkhand Cement Plant
(A unit of Shree Cement Limited)**

Sewage Treatment Plant Outlet Analysis Report					
Parameters	pH	TSS	BOD	COD	O&G
Norms as per CTO No.– JSPCB/HO/RNC/CTO – 6972715/2020/210; dated 22/01/2020.	5.5-9.0	100 mg/L	30 mg/L	250 mg/L	10 mg/L
Apr-20	Couldn't perform monitoring due to COVID-19 pandemic				
May-20	7.58	41	18	69.5	<4.0
June-20	7.39	39	20	72.4	<4.0
July-20	7.38	39	21	69.5	<4.0
Aug-20	7.47	38	19	72.4	<4.0
Sept-20	7.32	34	20	73.8	<4.0

ANNEXURE - 8**COMPLIANCE TO THE RECOMMENDATIONS MENTIONED IN THE CREP GUIDELINES FOR THE CEMENT PLANT**

S. No.	Character Conditions	Compliance Status
1	Cement plants, which are not complying with notified standards, shall do the following to meet the standards: <ul style="list-style-type: none"> □ Augmentation of existing air pollution control devices- by July 2003 □ Replacement of existing air pollution control devices- by July 2004 	Unit commissioned on 31st May 2019 and complying with new emission norms.
2	Cement plants located in critically polluted or urban areas (including 5 km distance outside under urban boundary) will meet 100 mg/Nm ³ limit of particulate matter by December 2004 and continue working to reduce the emission of particulate matter to 50 mg/Nm ³ .	Unit complying with PM emission norms <20 mg/Nm ³ .
3	The new cement kilns to be accorded NOC/ Environmental clearance w.e.f. 01.04.2003 will meet the limit of 50 mg/Nm ³ .	Unit is clinker grinding unit only and complying with new emission norms.
4	CPCB will evolve load based standards by December 2003.	Load based standards issued by the MoEF is for Kiln only. This is cement grinding unit hence, this condition is not applicable.
5	CPCB and NCBM will evolve SO ₂ and NO _x emission standards by June 2004.	Unit is clinker grinding units only, this condition is not applicable.
6	The cement industries will control fugitive emissions from all the raw materials and products storage and transfer points by December 2003. However, the feasibility for the control of fugitive emissions from limestone and coal storage areas will be decided by National Task Force (NTF). The NTF shall submit its recommendations within three months.	To control the fugitive emissions, the following measures are proposed: <ul style="list-style-type: none"> • All conveyors belts are covered. • 57 numbers of bag filters are installed at all materials transfer point. • Fly ash stored in cement silo • Additives are stored in covered storage yard • Cement stored in cement silo • Clinker stored in clinker silo • Cemented road within plant area for vehicle movements
7	CPCB, NCBM, BIS and Oil refineries will jointly prepare the policy on use of petroleum coke as fuel in cement kiln by July 2003.	Not Applicable

8	After performance evaluation of various types of continuous monitoring equipment and feedback from the industries and equipment manufacturers, NTF will decide feasible unit operations/sections for installation of continuous monitoring equipment. The industry will install the continuous monitoring system (CMS) by December 2003.	Continuous emission monitoring system (CEMS) & Continuous Ambient air quality monitoring station (CAAQMS) are already installed.
9	Tripping in kiln ESP to be minimized by July 2003 as per the recommendations of NTF.	Not Applicable
10	Industries will submit the target date to enhance the utilization of waste material by April 2003.	Fly ash and slag is being used for PPC and PSC manufacturing
11	NCBM will carry out a study on hazardous waste utilization in cement kiln by December 2003.	Not Applicable
12	Cement industries will carry out feasibility study and submit target dates to CPCB for co-generation of power by July 2003.	Not Applicable



Anexure-1

S. No	Location	Capacity	No. of Bags	Qty.
1	Fly ash Truck unloader	50000	320	1
2	Fly ash TT	10000	81	1
3	Fly ash Silo Feeding Structure	7500	64	1
4	Fly ash silo top	15000	121	1
5	Fly ash silo discharge	7500	64	1
6	Clinker truck unloader	25000	196	3
7	Clinker tank bottom elevator	10000	81	1
8	Clinker tank extraction belt conv. on tunnel	15000	121	1
9	Clinker tank top	50000	320	1
10	Clinker tank extraction belt conv. on tunnel	10000	81	5
11	For clinker tank extraction belt conveyer near BRU	15000	121	1
12	Clinker tank Elevator top	15000	121	1
13	Clinker feed hopper	15000	121	1
14	Gypsum truck unloader	20000	156	1
15	Gypsum crushing building	7500	64	1
16	Stacker TT	6500	56	1
17	Reclaimer TT	6500	56	1
18	Gypsum feed hopper	5000	42	1
19	Gypsum feed hopper TT	10000	81	1
20	Coal truck unloader	20000	156	1
21	For coal at Gypsum crusher building	10000	81	1
22	Coal hopper building bottom	10000	81	1
23	Coal hopper building top	7500	64	1
24	HAG building top	6500	56	1
25	For weigh feeders	20000	156	1
26	Product transport air slide	7500	64	1
27	For weigh feeders & belt feeding mill	10000	81	1
28	Mill reject circuit elevator	15000	121	1
29	Mill fresh feed elevator	7500	64	1
30	Air slide below bag house	15000	121	1
31	For Cement Silo top PPC	15000	121	1
32	For Cement Silo top PSC	15000	121	1
33	PPC silo bin aeration	5000	42	1
34	PSC silo bin aeration	5000	42	1
35	Packing plant feeding air slide & boot elevator	7500	64	4
36	Roto packer dedusting	40000	320	4
37	Roto packer aux. dedusting	20000	156	4
38	Cement bulk loading	5000	42	1
39	Slag BRU	20000	156	1
40	Stacker TT	7500	64	1
41	Reclaimer TT	7500	64	1
42	At Transfer Tower	7500	64	1
43	At Hopper top	7500	64	1
44	Mill reject elevator	7500	64	1
45	For Pneumatic handling of fly ash	2500	72	1
Total				57



Carbon sequestration estimation

for

Shree Jharkhand Cement Plant

(A Unit of Shree Cement Limited)

2020



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List of abbreviations

AGB	Above Ground Biomass
dbh	diameter at breast height
GHG	Greenhouse Gas
MoEFCC	Ministry of Environment, Forests and Climate Change

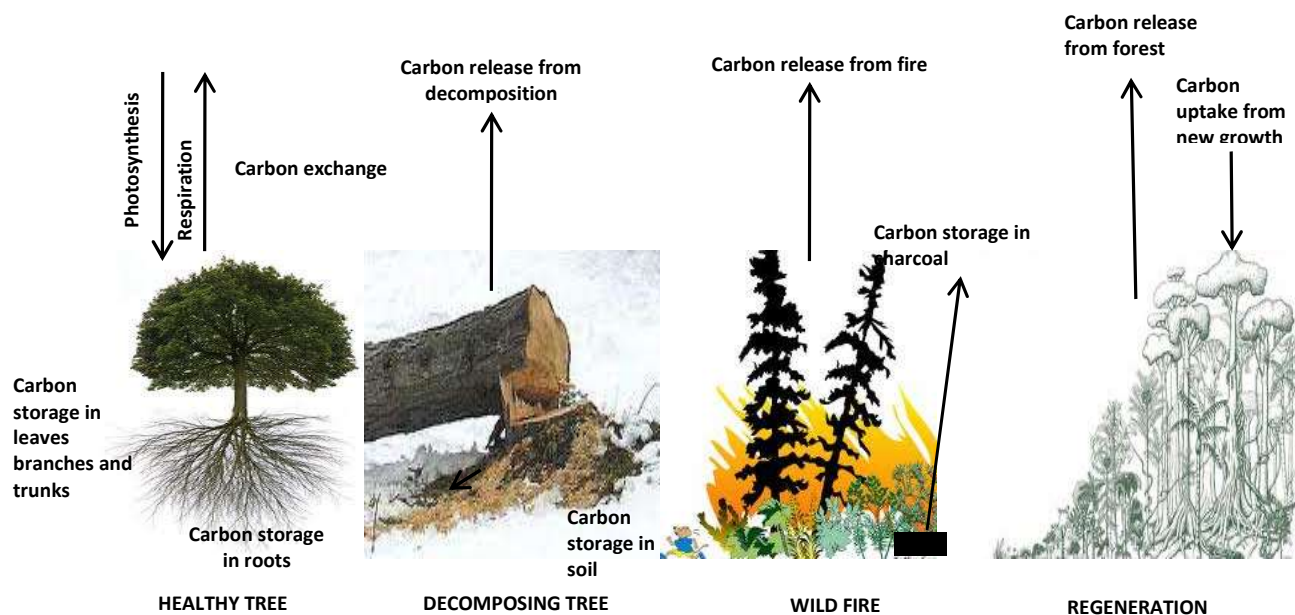
1 Background

1.1 Carbon and trees

It is acknowledged that forests and planted areas contribute to combatting climate change. They play an important role as carbon sinks and sources, thereby maintaining the global carbon balance. Trees sequester and store carbon through the process of photosynthesis, contributing to creation of five carbon pools in the form of living biomass of trees, and under story vegetation and dead mass of litter, woody debris and soil organic matter as illustrated in Figure 1.

Figure 1: Carbon pools in planted areas

Source: Forest Carbon Report of India (2013)



These pools necessitate the growing need to quantify the stocks, sources and sinks of carbon and other greenhouse gases (GHGs) in the context of anthropogenic impacts due to the global climate.

The carbon stored in the above ground biomass of trees is typically the largest pool, with young trees sequestering carbon at a faster rate because of their growth rate and the mature trees acting as storehouses of carbon. Thus, the forests and planted areas act as carbon sinks and when any forest fire occurs the stored carbon is released back in to the atmosphere as carbon dioxide. Furthermore, the bigger (and older) the trees, the higher is their ability to cycle and sequester carbon (*Morris Bishop, 1998*). This growth rate is a function of species planted the physiographic region which directly affects the decomposition rates, periods of photosynthesis. It is interesting to note that even within a

given area, carbon stocks will vary with elevation, rainfall and soil type. Due to which, a same species tree like Neem will not have same carbon stocking if grown in two different physiographic regions.

The areas which provide faster growing conditions to its vegetation will be more suitable for carbon stocking. For this reason, tropical and sub-tropical forests have very fast growth rates giving higher productivity per unit of area and time with consequently higher potential of carbon sequestration per unit of area. However, due to unscientific management of these areas the forests/plantations may act as carbon sources only (*Chaturvedi, 1994*).

1.1.1 Biomass

Tree biomass assessment is used to estimate the quantity of timber, fuel and fodder components in the tree (*Brown, 1997*). Tree biomass is defined as the net organic matter resulting from primary production through photosynthesis, out of which approximately 50% of dry forest biomass comprises of carbon (*Westlake, 1966*). Furthermore, biomass assessments provide information on the amount of carbon that may be lost or sequestered under different forest management regimes and plantations. The carbon in the tree biomass can be converted to carbon dioxide by multiplying the ratio of the molecular weight of CO₂ to the atomic weight of carbon.

1.1.2 Above-ground biomass

The AGB carbon pool consists of all living biomass broadly categorised as trees and understory. There are various approaches established to estimate the carbon, the most comprehensive of which is the destructive sampling. This method includes harvesting vegetation, drying to a constant mass and establishing wet-to-dry biomass ratio. It is an expensive approach and non-intuitive for promoting carbon sequestration. More commonly applied approach includes estimating biomass through regressing equations. The default biomass regression equations have been stratified by rainfall regime and region (*Brown, 1997; IPCC, 2003*). These default equations are based on a large sample of trees. Their application however, tends to reduce the accuracy of the biomass estimate.

1.2 Objective of the study

Understanding the critical role played by trees in carbon uptake from the atmosphere and the creation of carbon sinks as a mitigation strategy, Shree Jharkhnad Cement Plant has undertaken plantation activity inside plant premises since 2018. This study focusses on estimating the current carbon stock of above ground biomass at Shree Jharkhnad Cement

Plant (A Unit of Shree Cement Limited), Plantation site situated at Village: Hansda, P.O.: Burudih, Tehsil: Kharsawan and District: Saraikela- Kharsawan, Jharkhand.

2 Methodology

Biomass is an indicator to carbon sequestered. There are numerous ways to estimate the biomass in tress/ saplings. The table below presents the estimation method that has been used for localized carbon sequestration estimation in planted areas in India.

Table 1: Methods to estimate carbon sequestered in planted areas in India.

Study Area	Estimation method	References
Himalayan region of Uttar Pradesh in India	Aerial photographs and ground survey data.	<i>Tiwari and Singh, 1984</i>
Western Ghats	Harvesting method	<i>Rai and Proctor, 1986</i>
Tropical deciduous forests of India	Forest inventory, Remote sensing estimate	<i>Haripriya, 2000</i>
Northern Haryana	Remote sensing and Regression models	<i>Ravikumar et al. 2011</i>
Different forest types in Kolli hills, Tamil Nadu	Linear regression	<i>Mani and Parthasarathy 2007, Mohanraj et al. 2011</i>
Western Ghats Maharashtra	Spectral modeling	<i>Das & Singh, 2014</i>

Source: Adapted from *Das & Singh (2012)*

The choice of the method is subject to access to technology like remote sensing, aerial photography, trained personnel to collect inventory data, and time.

The methodology applied in this study is based on the biomass regression models developed by *Chave et al (2005)*. *Chave et al (2005)* has developed two models, Model I and Model II, based on the measurement parameters such as specific wood density, diameter, height and forest type - Model I uses diameter, height and forest type while Model II uses only diameter and forest type as dependent variables to estimate biomass. Here, Model II has been applied for estimating biomass of the plantation species. This equation is specific to tropical forests types namely dry, moist and mangroves; Jharkhand plantation sites fall under dry forest type. The step wise enumeration of carbon sequestration estimation is presented below:

1. Measuring girth (circumference) in m/inch at diameter breast height (dbh) which is 1.37m based on forest measurement principles, using measuring tape.
2. Converting girth into diameter in cm.
3. Obtaining specific wood density for species through literature review. For species where wood density has not been calibrated and published in literature, generalized wood density of 0.61gm/cm³ applicable for India has been used.
4. Estimating the biomass in kg of species by applying dry forest biomass regression equations of Model II (*Chave et al, 2005*). The equation is:

$$\text{Above ground biomass (dry forest type)} = \rho * e^{-0.667+1.784(\ln(D))+0.207(\ln(D*D))-0.0281(\ln(D*D*D))}$$

Where:

ρ is the wood density of the species in gm/cm³

D is the diameter of the sapling/tree in cm

5. Estimating the carbon sequestered in Tonnes in a sapling/tree from the product of biomass (kg) with carbon factor (50% or 0.50).
6. Estimating the carbon sequestered in Tonnes of carbon dioxide from the product of carbon sequestered in tonnes with molar value of carbon dioxide (3.67).

Sample estimation:

At site species of maximum abundance for instance Gulmohar has been selected for illustrative estimation presented below in table 1.

Table 1: Illustrative estimation

Site	Species name (common)	Species name (scientific)	Diameter (cm)	Specific density (gm/cm ³)	Biomass (kg)	Carbon sequestered (Tonnes) (Biomass*0.50/1000)	Number of saplings (same species)	Total carbon Sequestered (Tonnes)	Total carbon sequestered (Tonnes of CO ₂) (Carbon sequestered in Tonnes * 3.67)
SJHCP	Gulmohar	<i>Delonix regia</i>	1.85	0.30	0.50	0.00	1100	0.12	0.45

3 Data collection

The above elaborated methodology uses field data collected by us. Data collection includes sampling as complete enumerations are subject to availability of resources such as time, trained field experts and other resources. By definition, sampling infers information about an entire population by observing only a fraction of it.

3.1 Data from field sampling

This study includes plantation data for one-time data point i.e., 2020, and the field data that has been collected covers 100% sampling, due to availability of time and resources. The sampling design for estimating the carbon of the standing stock for the plantation plant sites of M/s. Shree Jharkhand Cement Plant (A Unit of Shree Cement Limited).

At each site, the following data parameters were collected by the Shree Jharkhand Cement Plant, team:

- 1 Location of the plantation
- 2 Type of plantation (Block / line/ sporadic)
- 3 Species name (common)
- 4 Species name (scientific)
- 5 Age (years)
- 6 Girth at 1.37m (Inch/cm)
- 7 Number of saplings (same species)
- 8 Total area of plantation

Equipped with this knowledge, the field team comprised of expert persons from Environment, Personnel and Administration, Land and Horticulture department who were further briefed before proceeding for data collection.

Measurements: Extensive exercise of field measurements was carried out at the plantation sites. The measured tree species were specially marked with in the sampling area.

Sampling: A field survey in the presence of the land surveyor was completed before the start of the sampling. Tree species were selected on the basis of canopy cover, foliage cover, height of the tree species, age of the tree species, and health of the tree species. A complete classification of the planted species was prepared.

The field area was segregated as per the density of the plantation area and was marked and boundary of the plantation area was fixed. For measurement of the girth a height of 1.37 meter from the ground level was considered.

Table 2: Plantation site specific data collection details

Field data collection parameter	Shree Jharkhand Cement Plant (A Unit of Shree Cement Ltd.)
Team - qualified team of expert persons from Environment and Horticulture department	10 members
Measurement time period	04 weeks
Sampling selection criteria	Min. age 1 year
Tools used	Measuring tapes, Vernier calipers along with the plastic scales
Total area sampled – inclusive of all sub-sites	110 acre

- Plantation area is 37.2 acre comprises 6270 numbers of trees



Some snapshot showing field data collection

4 Results

A high level summary of site-wise estimation of carbon sequestered in the standing stock (above ground biomass) for the plantations is presented as below:

Carbon estimation for above ground biomass*				
Plantation location	Type of plantation	No of saplings/trees	Tonnes of carbon sequestered	Tonnes of carbon dioxide sequestered
Plant area	Block & line	5619	3.56	13.07

Error percentage 5% (+ -)

Standard error 19.50%

Table 3: Age profile of plantations

Age profile of saplings/trees	
age (years)	number of saplings (same species)
1	1942

2	3677
Total	5619

4.1 Quality assurance

The biomass regression equations and other parameters like specific wood density of species and carbon factor used in this study are based on secondary literature published and accepted in the research domain. -which is known to have a high reliability

4.2 Conclusion

A total of **3.56** Tonnes of carbon and **13.07** Tonnes of CO₂ eq. has been sequestered in the standing stock (above ground biomass) at Shree Jharkhand Cement Plant (A Unit of Shree Cement Limited).

Snapsheet of Carbon sequestration estimation worksheet is attached as Annexure – 2.

Measures adopted for CO₂ reduction

Following measures have been taken for the reduction the CO₂ emission.

1. Unit has installed 1.999 MW Solar Power System (Solar PV based) within the existing clinker grinding unit.
2. Fly ash is being used for making of PPC cement
3. Slag is being used for making of PSC cement
4. Enhance the optimization of all electrical devices
5. Materials transported by vehicles as per their approved capacity
6. Increase the density of Green Belt development for more carbon sequestration
7. Ensure timely maintenance of plant vehicles

5 Annexures – 1 (Plantation data)

Area of plantation	Species name (common)	Species name (scientific)	Age (years)	Girth * (m)
SJHCP	Neem	<i>Azadirachta indica</i>	2	0.057
			1	0.033
SJHCP	Gulmohar	<i>Delonix regia</i>	2	0.058
			1	0.028
SJHCP	Shisham	<i>Dalbergia sissoo</i>	1	0.016
SJHCP	Karanj	<i>Pongamia pinnata</i>	1	0.017
SJHCP	Mango	<i>Mangifera indica</i>	1	0.024
SJHCP	Arjuna	<i>Terminalia arjuna</i>	2	0.044
			1	0.022
SJHCP	Jamun	<i>Syzygium cumini</i>	1	0.024
SJHCP	Kaju/ Cashew	<i>Anacardium occidentale</i>	1	0.014
SJHCP	Royal Palm	<i>Roystonea regia</i>	2	0.190
SJHCP	Siris	<i>Albizia lebbeck</i>	2	0.098
			1	0.048
SJHCP	Baula/Maulsari	<i>Mimusops elengi</i>	2	0.038
SJHCP	Sagwa/ Teak	<i>Tectona grandis</i>	2	0.058
			1	0.028
SJHCP	Pipal Tree	<i>Ficus religiosa</i>	2	0.045
SJHCP	Ashoka	<i>Saraca asoca</i>	2	0.036

6 Annexure – 2 (Carbon sequestration estimation snapshot)

Sr no	Site name	Type of plantation (Block / line/ sporadic)	Area of plantation	Species name (common)	Species name (scientific)	Age (years)	Girth * (m)	Diameter (cm)	Specific density (gm/cm 3)	Natural logarithm of Diameter	Biomass equation terms	Biomass (dry forest type) (kg)	Carbon sequestered in tonnes (Biomass* 0.50/1000)	Number of saplings (same species)	Total carbon Sequestered (Tonnes)	Total carbon sequestered (Tonnes of CO2) (Carbon sequestered in Tonnes * 3.67)
1	Shree Jharkh and Cement Plant (A Unit of Shree Cement Limited)	Block	Cement Plant	Neem	Azadirachta indica	2	0.057	1.82	0.69	0.60	0.46	1.10	0.00	1100.00	0.60	2.22
1						0.033	1.05	0.69	0.05	-0.58	0.39	0.00	290.00	0.06	0.21	
2		Block	Cement Plant	Gulmohar	Delonix regia	2	0.058	1.85	0.30	0.61	0.50	0.49	0.00	500.00	0.12	0.45
1						0.028	0.89	1.30	-0.11	-0.87	0.55	0.00	200.00	0.05	0.20	
3		Block	Cement Plant	Shisham	Dalbergia sissoo	1	0.016	0.51	1.63	-0.67	-1.77	0.28	0.00	185.00	0.03	0.09
4		Block	Cement Plant	Karanj	Pongamia pinnata	1	0.017	0.54	1.61	-0.61	-1.68	0.30	0.00	60.00	0.01	0.03
5		Block	Cement Plant	Mango	Mangifera indica	1	0.024	0.76	1.57	-0.27	-1.13	0.51	0.00	300.00	0.08	0.28
6		Block	Cement Plant	Arjun	Terminalia arjuna	2	0.044	1.40	0.60	0.34	-0.04	0.57	0.00	500.00	0.14	0.53
1						0.022	0.70	0.60	-0.36	-1.27	0.17	0.00	100.00	0.01	0.03	
7		Block	Cement Plant	Jamun	Syzygium cumini	1	0.024	0.76	1.60	-0.27	-1.13	0.52	0.00	100.00	0.03	0.09
8		Block	Cement Plant	Kaju/ Cashew	Anacardium occidentale	1	0.014	0.45	1.57	-0.81	-1.96	0.22	0.00	50.00	0.01	0.02
9		Block	Cement Plant	Royal Palm	Roystonea regia	2	0.190	6.05	0.67	1.80	3.05	14.19	0.01	97.00	0.69	2.52
10		Block	Cement Plant	Siris	Albizia lebbeck	2	0.098	3.12	0.61	1.14	1.59	2.99	0.00	927.00	1.39	5.09
1						0.048	1.53	0.60	0.42	0.13	0.68	0.00	190.00	0.06	0.24	
11		Block	Cement Plant	Baula/Maulsari	Mimusops elengi	2	0.038	1.20	0.47	0.18	-0.33	0.34	0.00	200.00	0.03	0.12
12		Block	Cement Plant	Sagwan	Tectona grandis	2	0.058	1.85	0.57	0.61	0.50	0.94	0.00	400.00	0.19	0.69
1						0.028	0.89	0.67	-0.11	-0.87	0.28	0.00	170.00	0.02	0.09	
13		Block	Cement Plant	Pipal Tree	Ficus religiosa	2	0.045	1.43	0.39	0.36	0.00	0.39	0.00	50.00	0.01	0.04
15		Block	Cement Plant	Ashoka	Saraca asoca	2	0.036	1.15	0.51	0.14	-0.42	0.34	0.00	200.00	0.03	0.12
Total													5619.00	3.56	13.07	

7 Plantation details

S. No.	Planted Species		Plantation	Species of trees Planted	
	Botanical Name	Local Name	Upto 2018	FY 2019-20	FY 2020-21
1	<i>Mangifera indica</i>	Mango	0	300	0
2	<i>Azadiracta indica</i>	Neem	1100	290	187
3	<i>Dalbergia sissoo</i>	Sissoo	0	185	193
4	<i>Terminalia arjuna</i>	Arjuna	500	100	176
5	<i>Syzygium cumini</i>	Jamun	0	100	0
6	<i>Pongamia pinnata</i>	Karanj	0	60	43
7	<i>Anacardium occidentale</i>	Kaju/ Cashew	0	50	0
8	<i>Roystonea regia</i>	Royal Palm	0	97	50
9	<i>Albizia lebbek</i>	Siris	927	190	171
10	<i>Delonix regia</i>	Gulmahar	500	200	289
11	<i>Mimusops elengi</i>	Baula/Maulsari	200	0	0
12	<i>Tectona grandis</i>	Sagwan	400	170	382
13	<i>Ficus religiosa</i>	Peepal	50	0	0
14	<i>Artocarpus heterophyllus</i>	Kathal/ Jackfruit	0	0	97
15	<i>Saraca asoca</i>	Ashoka	0	200	100
Total			3677	1942	1688
Total Numbers of sapling planted till date			7307 numbers		
Total numbers of species survived			6270 numbers		
Area Covered			37.2 acre		

**GHG Emission Inventory Statement
For M/s. Shree Jharkhand Cement Plant
(A Unit of Shree Cement Ltd.)**

A. CO₂ Sequestered by Green Belt development : 13.07 tons of CO₂

B. Measures adopted for CO₂ reduction :

Following measures have been taken for the reduction the CO₂ emission.

1. Unit has installed 1.999 MW Solar Power System (Solar PV based) within the existing clinker grinding unit.
2. Fly ash is being used for making of PPC cement
3. Slag is being used for making of PSC cement
4. Enhance the optimization of all electrical devices
5. Materials transported by vehicles as per their approved capacity
6. Increase the density of Green Belt development for more carbon sequestration
7. Ensure timely maintenance of plant vehicles



ANNEXURE - 10

CIN NO. : L26943RJ1979PLC001935
Phone : EPABX 01462 228101-6
Toll Free : 1800 180 6003 / 6004
Fax : 01462 228117 / 228119
E-mail : shreebwr@shreecementltd.com
Website : www.shreecement.com



SHREE JHARKHAND CEMENT PLANT

(A UNIT OF SHREE CEMENT LTD.)

VIII : Hansda-Burudih, Dist : Seraikela Kharsawan, Jharkhand 833220



Ref: JHGU/P&A/2020

Date: 24.08.2020

TO

The Chief Inspector of Factories, Jharkhand
Ranchi

Subject: Submission of Revised On-Site-Emergency Plan for Shree Jharkhand Cement Plant
(A unit of Shree Cement Ltd.)

Dear Sir,

In compliance of your letter no. 798 dtd. 17.08.2020 we are submitting herewith revised On-Site Emergency Plan of Shree Jharkhand Cement Plant in triplicate for your perusal and approval please.

With Regards,

For Shree Jharkhand Cement Plant
(A unit of Shree Cement Ltd.)

(Ashok Kumar)
Unit In-Charge

Encl :- 1. As stated above.

Signature
23/09/2020

कार्यालय
कारखाना निरीक्षक
सरायकेला-खरसावाँ अंचल नं०-२
सरायकेला

1.0 GENERAL INFORMATION ABOUT SHREE JHARKHAND CEMENT PLANT

SARAIKELA(KHARSAWAN)

1.	Name & Address Of The Factory	Shree Jharkhand Cement Plant (A Unit of Shree Cement Ltd) Village: Hansda - Burudih, Distt: Saraikela-Kharsawan State – Jharkhand
2.	Name, Address & Telephone Number Of Occupier	Prakash Narayan Chhangani Occupier Shree Cement Ltd –(JHGU) Beawar, Distt –Ajmer (Rajasthan) Mob-9214337020
3.	Name, address & telephone No of factory manager.	Prafull Sharma Factory Manager Shree Cement Ltd–(JHGU ,Saraikela-Kharsawan) Mob.: 7768915627
4.	Name, Address & Telephone Number Of Safety Officers	Mr. Rohit Mishra Mob: 9358836642
5.	Medical Officers	Dr. Sanub TS Mob:8789461823
6.	Installed Capacity	2.5 Million Ton,
7.	Products Manufactured	Cement(PPC)
8.	Physical State	Solid
9.	Raw Material & Their Source	a) Clinker: -SRCP(Raipur) b) Gypsum:-Oman, Bhutan, c) Pond ash/Dry Flyash:-Jharkhand, Bihar,
10.	Water Requirement	100 KLD
11.	Location Of Hazardous Storage & Processes	Used oil in cover shed near weigh bridge which is disposed to authorized recycler, No processing of hazardous material.

12.	Emergency Control Centre	Near to main gate
13.	Assembly points	Central Assembly Point Near Main Gate , and Near Vertical Roller Mill
14.	location of nearby hospitals, relief places, fire and police stations	MGM Hospital-06572360859, SADAR Hospital-0657-234002,
15.	Location Of Wind Socks	Cement silo top

2.0 DEFINITION AND GLOSSARY OF TERMS

2.01 EMERGENCY:

An emergency occurring in the plant is one that may affect a section of the plant or area within it as a result of deviation from normal operating conditions, malfunction of a system, human errors etc. However, this can be controlled by operation control procedures. If it is failed to control with OCPs, emergency may lead to a major emergency.

2.02 DISASTER:

A Disaster (Major Emergency) occurring in the plant is one that may affect several sections within it and or may cause serious injuries, loss of lives, extensive damage to property or serious disruption outside the works. It will require the best use of internal resources as well as outside resources to handle it effectively. Apart from the result of a malfunction of the system, human errors, it may also be precipitated by the intervention of outside force such as a cyclone, flood, deliberate acts of arson or sabotage.

2.03 ACCIDENT SITE:

The location of an unexpected occurrence, failure or loss either at a facility along a transportation route, resulting in a release of hazardous materials on incident site.

2.04 CHEMICAL ABSTRACT SERVICE NUMBER (CAS.NO.):

The chemicals are listed by their common names and also by their Chemical Abstract Service (CAS) number. While a chemical may be known by different names, the CAS number provides a unique and unambiguous identification.

2.05 CHRONIC EFFECTS:

Chronic health effects are those that become apparent or continue for some time after exposure to hazardous chemicals having long duration or frequent recurrence.

2.06 EVACUATION:

Removal of residents and other persons from an area of danger.

2.07 MOCK DRILL:

A simulated accident or a chemical release set up to test emergency response methods and for use as a training tool.

2.08 HAZARD:

Any situation that has the potential for doing damage to life, property and or the environment.

2.09 HAZARDOUS CHEMICALS:

A chemical which is explosive, flammable, poisonous, corrosive, reactive or radioactive and requires special care in handling because of the hazards it possess to public health and environment.

2.10 HAZARDOUS INSTALLATION:

An industry handling hazardous chemicals.

2.11 HAZARD IDENTIFICATION:

Provides information on available Extremely Hazardous Substances (EHS) on site, their nature, quantities and also on conditions of storage.

2.12 HAZARD ANALYSIS:

Identification of undesired events that lead to the materialization of the hazard. The analysis of the mechanism by which those undesired events could occur and usually the estimation of the nature, characteristics and magnitude of the possible loss/damage to life and property. The loss/damage, severity would be analyzed and assessed for each hazard identified.

2.13 IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH) LEVEL:

Immediately dangerous to life or health (IDLH) level means the maximum level to which a healthy worker can be exposed for 30 minutes without suffering irreversible health effects or escape impairing symptoms.

2.14 LETHAL CONCENTRATION LOW (LCL):

Where acute exposure data are available (30 minutes to 4 hours' exposure), the lowest exposure concentration causing death or irreversible health effects in any species is used as the IDLH concentration. These data are often reported as Lethal concentration low (LCL).

2.15 LETHAL:

Causing or capable of causing death.

2.16 LEVEL OF CONCERN (LOC):

The lowest concentration of an extremely hazardous substance (EHS) in the air above which there may be serious irreversible health effects or death as a result of a single exposure for a relatively short period of time.

2.17 ON-SITE EMERGENCY:

An accident which takes place in an industry handling hazardous materials and its effects are confined to the factory premises involving only the people working in the factory.

2.18 OFF-SITE EMERGENCY:

If an accident takes place in an industry handling hazardous materials and its effects are felt outside the factory premises, the situation thus generated is called an Off-Site Emergency.

2.19 OCCUPIER:

"Occupier" in relation to Jharkhand Cement Plant is occupier cleared by Board of Directors.

2.20 EMERGENCY RESPONSE:

The efforts to minimize the severity of an accident by protecting the people, the environment, or the property and the efforts to return the scene to normal pre-emergency conditions.

2.21 RISK:

The predicted or actual frequency of occurrence of an adverse effect of a chemical or other hazard.

2.22 CONTINGENCY PLAN:

A document to identify and catalogue the elements required to respond to an emergency, to define responsibilities and specific tasks and to serve as a response guide.

2.23 PROBABILITY:

A number expressing the likelihood of occurrence of a specific event, such as the ratio of the number of outcomes that will produce a given event to the total number of possible outcomes.

2.24 RADIUS OF VULNERABLE ZONE:

The maximum distance from the point of release of a hazardous substance at which the air borne concentration could reach the level of concern (LOC) or LCL under specified weather condition.

2.25 RISK ANALYSIS:

It is a relative measure of the likelihood of various possible hazardous events and enable the emergency plan to focus on the greatest potential risk.

2.26 SITE:

Any location where actually toxic chemicals are processed, stored, handled, used or disposed, in short any place where these chemicals may be found.

2.27 STORAGE:

Methods of keeping raw materials, finished goods, products while awaiting use, consumption or dispatch.

2.28 THRESHOLD PLANNING QUANTITY (TPQ):

A quantity designated for the storage/handling of each chemical in excess of which requires the occupier to take various steps in preparation of emergency planning like preparation of Onsite plan, submission of information for preparation of Off-site plan or making a safety report.

2.29 VULNERABLE ZONE:

It is an estimated geographical area that may be affected by the toxic release at levels that could cause irreversible acute health effects or death to human population within the area following an accidental release of chemicals.

2.30 CHIEF INCIDENT CONTROLLER (CIC):

The Unit incharge will be Chief Incident Controller. In the absence of the Unit Incharge, whoever is in charge of Unit will be the CIC.

2.31 WORKS INCIDENT CONTROLLER (WIC):

Head of Operation & Maintenance activities will be works Incident controller. In the absence of Head of O&M, whoever is in charge of Operation & Maintenance on that day will be the WIC.

2.32 INCIDENT CONTROLLER(IC):

Shift in-charge Engineer will be the Incident Controller

2.33 EMERGENCY COMMUNICATION OFFICER (ECO):

In charge (Public Relations) will be the Emergency Communication Officer.

2.34 KEY PERSONNEL:

The personnel who will have key role to play in providing advice and in implementing the decisions made by the Chief Incident Controller.

3.0

HEALTH AND SAFETY POLICY

1. The management will do, all required for promotion of Safety, Health & Environment measures as a mutual objective for management and employees at all levels. We believe that all accidents can be prevented and all identified health risks are containable. This has been guiding principle to all of us. Our responsibility and concern is for the health and safety of our employees and community around us.
2. To meet the above, the management will endeavor to maintain a safe and healthy working environment, will provide hazard free working equipment and machinery, necessary personal protective equipment's and medical assistance in case of an injury/accident.
3. Regarding the techniques and methods such as safety audit, risk assessment and periodical health status assessment, management will plan to keep the safety experts in consultation with the authorized institutes practicing in the field so that remedial measure can be taken in order to obviate the flaws.
Regarding the risk assessment of health, a system for periodical assessment of health studies shall be made. A register shall be maintained to record periodical results of medical checkup of all employees by our Medical Health Services Dept. In case, if any of the case warrants, it will be referred to the concerned specialist.
4. It will be responsibility of the contractors and sub-contractors to ensure safety measures and safe working conditions in respect of employees employed by them. Besides them, transporters and other agencies entering in the premises of the factory shall be made responsible for safe working practices. The relevant provision in the contract/agreement shall be incorporated to this effect.
5. The Department heads and staff members will be responsible for prevention of accidents in their respective departments, to maintain safe working conditions, good housekeeping and to ensure safe working practices of all work-force working under their control.
6. Work in-charges will investigate to determine the cause and devise action plan to prevent accidents for the jobs being executed under their control. They will also undertake inspection to trace unsafe conditions and will take corrective action such that no incident occurs.
7. Employees will exercise maximum care and good judgement while execution of job, follow safety rules to protect themselves and other fellow employees in order to prevent accidents. They will wear the personal protective equipment's while they move in plant and are at work.
8. A. Following are the arrangement for involving employees in the field of safety.

- i. By imparting training
- ii. Participation in the safety committee
- iii. By introducing suggestions scheme as to receive suggestions from employees in order to strengthen safety and healthy working condition.

B. The safety aspect while considering career advancement of individual is as follows:

The performance appraisal system shall be introduced under which performance individual based on the implementation of safety rules will be given due weightage and will be used as one of the yardstick while elevating the employees. Training and retraining is Management's philosophy wherein safety plays an important role and under which our employees are required to be trained. We wish to ensure that each of our employee should be well conversant about first aid, fire prevention and all other safety aspects.

9. Periodical medical checkup of employees is our policy. Management will not compromise on any issue which weakens our health, safety and environment policy. Our dispensary functions round the clock which is well equipped with pathological laboratory. We wish our employees and their family should remain free from all disease.
10. Our dispensary functions round the clock which is well equipped with pathological laboratory. We wish our employee and their family should remain free from all disease.
11. Whenever we will install any dangerous machinery or whenever any hazardous process will take place our medical team will be on the toes with all necessary equipment's and vehicle to ensure the tackling of accident cases, if any.
12. Besides, while placing orders for plant and machinery equipment we shall ensure that they conform to the safety standards of higher degree. We wish to have an ideal atmosphere and hazard free working conditions for our employees.
13. Regarding the environment we are very much conscious and we will try our level best to protect the environment. Technical measures are updated as and when required. Extensive plantation is a part of our horticulture activity and we wish to have a green belt in and around the factory.
14. In a nut shell, the Management would like their employees safe and healthy, actively participating in all safety activities in the factory and making it a safe place of work.

Health & Safety Policy

INTRODUCTION

4.1 What is Health & Safety Policy?

It is the commitment of management to look after health & safety of workers. It means to remove or reduce the risks to the health, safety & welfare of all workers, contractors and visitors and anyone else who may be affected by our business operations. It aims to ensure all work activities are done safely. Health & Safety Policy is prepared as per the expectation of Section 7-A and Section 41-B2 of Factory Act, 1948.

4.2 Objectives:

The management of Jharkhand Cement Plant is committed to eliminate hazards and to provide healthy and safe working environment to all its Associated Members & Visitors within area of operation. The company therefore adopts the policy for the purpose to create and maintain healthy & safe work environment.

4.3 The Policy:

- a) Occupational Health & Safety of all its Associated Members & Visitors is the utmost priority of the management.
- b) The Occupational Health & Safety Policy of the company is to serve for creating good safety culture throughout the operation and services.
- c) The management shall be responsible for the Occupational Health & Safety of all its Associated Members & Visitors and for the prevention of damage to the plant & equipment.
- d) Our effort shall be to identify, control and eliminate all hazardous condition, possible damage and loss to people, property and environment.
- e) The management shall identify Training Needs, Develop and implement yearly training plan for its Associated Members.
- f) The management shall identify and ensure compliance of rules, codes of practices, procedures and standards for safe working environment.
- g) Every employee of the company shall be responsible for his own safety. He is expected to utilize his knowledge and skills with regard to his own personal safety and that of his co-workers as well as of any material/property entrusted to his care. It shall ensure to:
 - i) Observe Plant Safety Rules.
 - ii) Adherence of our Five Cardinal Rules.

- iii) Adherence of Factory Discipline Directives.
- h) The management shall take action for violation of the statutory provisions of the Occupational Health & Safety management system.
- i) The management shall ensure to spread awareness amongst all the Associated Members & Visitors towards health & safety work practices.
- j) Safety Induction shall be imparted to all the Associated Members during joining.
- k) The Safety performance of individual employees and service vendors shall be evaluated yearly for career advancement and renewal of contracts.
- l) The management shall be responsible at every level to implement and comply with the statutory provisions on Occupational Health & Safety prescribed under different legislations.
- m) Recognition/Rewards for demonstration of Safety Leadership.

4.4 Joint Consultations:

- A. It shall be responsibility of the company to attract the fullest co-operation of the employees through their representatives to effectively implement the Occupational Health & Safety policy of the company.
- B. Employees' representatives shall be assigned the responsibility of :
 - i. Ensuring effective implementation of Occupational Health & Safety Policy of the company.
 - ii. Ensuring implementation & compliance of the statutory provisions of Occupational Health & Safety.
 - iii. Advise management on various issues concerning the Occupational Health & Safety of the employees.

4.5 Funds & Facilities:

The management shall ensure & provide sufficient funds and facilities in order to implement the company's Occupational Health & Safety Policy effectively.

4.6 Rules & Procedures:

- A. The rules & procedures for the effective implementation of the Occupational Health & Safety Policy of the company shall be made available and known to all its associated employees in Hindi & English.
- B. The rules and procedures framed in Hindi & English language would be supplementary to the statutory provisions under Health & Safety Rules.

4.7 Statistics, Audit & Review:

- A. The management shall conduct periodic audits to improve and strengthen of our Occupational Health & Safety Management Systems to ascertain the effective implementation of the policy.
- B. In the event of non-compliance of the provisions of Occupational Health & Safety policy audit report shall be submitted to the Factory Manager with recommendation for implementation.

4.8 Medical Examination:

- a. Any new incumbents at the time of recruitment shall undergo medical fitness test and declared medically fit by the Company's Medical Officer before joining.
- b. The periodical medical examination in accordance with the rules and procedures framed shall be conducted for all the associated members and the record shall be kept by the management.
- c. The medical officer would ensure rendering of immediate medical attention wherever so indicated and would get effects of Health Hazards examined with a view to advising the unit Head of the company for preventive measures and safeguards as may be necessary.

4.9 Standing Orders:

- a. Every employees and contractors shall abide by the provisions of law and of the standing orders on Occupational Health & Safety.
- b. The internal safety committee would be responsible for effective implementation of the standing orders on Occupational Health & Safety.

4.10 Safety organization:

- a. A Safety Committee shall be formed and manned by trained, experienced and qualified persons from various levels.
- b. Internal Safety Committee shall be a Technical wing with multi-disciplinary team, covering different branches of engineering functions and shall have Personnel Manager and Medical Officer as its member.
- c. Internal Safety Committee shall have the following functions:
 - i) Incident prevention and control including maintenance and upkeep of safety appliances.
 - ii) Publicity, propaganda, education & training.
 - iii) Environmental control and co-ordination of Occupational health activities.

5.0

GENERAL

5.1 Introduction

M/s Jharkhand Cement Plant is a Cement grinding unit. Cement Industries are classified as 'Hazardous Industry under the first schedule (section 2cb) of the Factories Act 1948, listing the 29 industries involved in hazardous processes and that safe planning and operation of facilities is highly important in order to prevent accidents involving hazardous substances and hazardous installations. The OSEP prepared in compliance with the statutes will help management to start disseminating information to every person at site about the relevant provisions, conduct mock drills. Continue this exercise routinely thereafter at least in every two months' interval. The whole purpose of plant management is to put emergency planning activities/programs into place as to localize any accident that may occur and, if possible, contain them and thereby minimize their harmful effects on health of persons, environment and property.

6.0 Legal Obligation

The preparation of Onsite Emergency Plan with detailed Disaster Control Measures and the revision of the same wherever any change in process/management, is the legal responsibility of the occupier of the factory as per section 41-D(4) of the factories act 1948.

7.0 Basis of preparation of OSEP

An emergency has been defined by the Ministry of Labor, Government of India as an unplanned event relating, in particular from fire, explosion or toxic releases. This occurrence may be termed a major incidence if it leads to serious dangers to life, property or environment. It may result from uncontrolled development like plant failure or human error in course of an industrial activity and involve release of hazardous substances in quantities above permitted threshold under the legislations.

According to OECD (Organization for Economic Cooperation & Development) guiding principles addressing the range of issues relating to (i) Preventing the occurrence of incidents; (ii) preparing for accident mitigation (iii) responding to minimize adverse effects and (iv) follow up for initial clean up, reporting and investigation, the prerequisite for effective emergency planning is the identification of hazardous installations located on site i.e. fixed installations where hazardous substances are produced, processed, handled, stored or disposed of.

A formal written OSEP is prepared on the basis of step by step identification of principal accident potentials at the installation together with their risk potential, describing how such accidents and their

consequences should be handled either on-site or off-site. On-site emergency plan should include details of appropriate technical and organizational procedures that are appropriate to minimize incidents that could lead to losses. It is regarded as an essential element of any major hazard control. The structure of the Plan is based on the schedule XI of the rule 13(1) of manufacture, storage and import of hazardous chemicals (MSIHC) rules 1989 and elements of the onsite emergency plan suggested in the guidelines on Chemical (Industrial) Disaster issued in May 2007 by the National Disaster Management Authority, set up under Disaster Management Act, 2005.

The Plan has been prepared in accordance with the existing activities and facilities available at the site required for handling emergencies. The risks envisaged are considered on the basis of the past experiences.

8.0 Objective of the OSEP

The objective of preparation of plan is to develop a state of readiness for prompt and orderly response to an onsite emergency and if possible, eliminate them or minimize the harmful effects of an emergency on people, property and the environment. The OSEP is prepared to:

- a. Assess the size & nature of emergency and the relative likelihood of their occurrence.
- b. Have readily available a high order of preparedness (equipment /personnel /outside help) according to the level of risk to prevent the emergency turning into a disaster
- c. Ensure orderly and timely decision making for emergency response, effective rescue operation and treatment of casualties
- d. Provide emergency management organization with clear guidelines of authority to act with confidence
- e. Bring back the normal situation in the least possible time.
- f. Ensure that no panic is created among general public and no exploitation or exaggeration of the situation is done by any agency.

This OSEP is targeted to quick relief and rescue operations without delay so as to minimize casualties, prevent injuries and minimize property damage and losses.

9.0 Scope of the Plan

The Jharkhand Cement Plant management takes the required care for preventing accidents through good design, latest equipment, modern project management techniques, safe operation & maintenance and safety practices etc. This reduces the risks of an accident, but cannot eliminate it all together. An absolute safety is not achievable. An essential part of hazard control by plant management is therefore concerned with mitigating the effects of a major accident, assessing the

consequence of such accidents and deciding on the emergency procedures that would be implemented in the event of an emergency.

This OSEP covers the following type of emergencies inside the plant —

- a. Fire, explosion, structure failure, release of chemicals, vapors or any other type of emergency due to process/maintenance failure in the plant
- b. Natural calamities such as flood, earthquake, storm etc.
- c. Man-made emergencies: such as bomb threat, poisoning, air raid.

10.0 ABOUT THE FACTORY

10.1 Plant Location

This plant is located in Saraikela-Kharsawan district of Jharkhand. This plant is situated at Hansda - Burudih Saraikela-Kharsawan. Nearest Railway Station 2.0 KM Mahali murum and nearest Airport Ranchi is 150 km from the plant.

10.2 Activity:

The plant has the cement grinding capacity of producing 2.5 million T/Annum. Main equipment and storage vessels are clinker silo, fly ash silo, gypsum shed, cement mill, cement silos, packers and loading facilities for cement through trucks. Other service areas are as electric sub stations, laboratory, pump house and stores.

Manufacturing Process:

- a. Clinker procured by trucks from suppliers is unloaded into truck tipple hoppers and transported to the storage gantry and Mill Hopper by Belt Conveyors.
- b. Gypsum procured from the various suppliers is transported to the gypsum gantry and is fed to Mill Gypsum Hopper.
 - i) Similarly, Fly Ash procured from suppliers is transported to the Fly silo by bulker and is fed to Mill in controlled manner through 20 MT Bin/solid flow meter.
 - ii) From the Cement Silos, the cement is extracted from the Silo through control bin and packed in 50 kg. bags by Electronic Rotary Packers.
 - iii) The packed bags are loaded in trucks by Truck Loading Machines and in truck by truck loading machine and dispatched to the destinations.
 - iv) The plant is fully computerized and operated through centralized control room (CCR) which is equipped with latest and most modern Automation Equipment.
 - v) There is no fugitive or any other emission, since most effective pollution control equipment and bag house are installed. The plant is totally environment friendly.
 - vi) Power requirement for the plant, taken from the Jharkhand Electricity Board.
 - vii) All relevant testing of the Cement is done at Grinding and Packing stage as per the statutory requirement.

Composition of Raw Material		
		%
1	Clinker	61
2	Gypsum	5
3	Fly ash	34

Storage capacity of raw material		
Clinker	60000MT	
Gypsum	15000MT	
Fly ash	5000MT	
Cement		
Cement silo	22500MT	

c) Support service departments are there as HR (personnel. Administration Security), commercial, safety etc.

10.3 Brief Process Description

- I. Raw material required for manufacturing the PPC is clinker (61%),DFA(34%) and gypsum (5%) approx..
- II. All raw materials are taken in respective hopper /bins and weighed quantity is fed inside mill for grinding.
- III. Grinding mills consists of six rollers and are rotating table. Material fed on table and ground by applying hydraulic pressure.
- IV. Fines particles of cement came out from mill and captured in bag house, dust free air is recycled back into the mill as per process requirement, HAG also run to provide required heat.
- V. Fine cement from the bag house is transferred mechanically to cement silo and packed in bag with the help of packer.
- VI. Loaded bag is transferred in truck for marketing purpose.

10.4 Material Feeding Circuit

Clinker, Gypsum & Wet fly ash from their respective storage hoppers shall be fed to the mill by belt conveyors, bucket elevator & weigh feeders in a controlled manner. Cooling in case of hot clinker,

drying in case of wet fly ash and the partial separation of them will take place inside the mill. On detection of metal, diverting gate shall divert the rejects to bin for a defined time limit. Material stored in the reject bin shall be extracted via vibrating-feeder and fed back to the system. To remove the foreign particles from the reject material magnetic separators and metal detectors are installed on feeder conveyor. Bag filters are installed for the necessary de-dusting of the circuit.

Usage of fly ash as an additive for producing PPC grade is also envisaged in this grinding system. Fly ash shall be extracted from fly ash storage bin via one slide gate and a dosing valve and fed to Vertical Roller mill. Fly ash can be fed either at Vertical Roller mill inlet or outlet by means of diverting gates installed in the air slide gate. The feed rate of fly ash shall be monitored by the flow meter and controlled by the set point of dosing valve installed after the storage bin. Bag filter is installed for de-dusting of the circuit.

11.0 LIKELY EMERGENCIES IN THE FACTORY

Location	Chemical/Material	Emergency
Packing plant & empty bag godown	Gunny Bags	Fire
Whole Plant	Lubricating Oil	Spillage and fire
Elec. Sub Stations	Electricity	Short circuit & Fire

11.1 Natural and Manmade Calamities Which Can Lead to Emergency

a) Earthquake

The Jharkhand District falls under the seismic zone, which is the low risk area. Earthquake cannot usually be forecasted and therefore precautions prior to such events are not usually predictable. Apart from some of the counter-measures to be taken in foreseeable cases, emergency recovery plan has been considered by the emergency management team as per the situation and site conditions as follows:

Step	Activity	Action By
Planning & Preparedness	Identify and constitute Emergency Response Team Identify ECC, if the identified ones are damaged Control centers to be equipped with Communication facilities Emergency vehicles/equipment's List of emergency contacts & suppliers Medical facilities.	Plant Key Person
Action during effective period	Do not panic, Raise alarm Avoid standing near to windows external walls Assemble at Emergency assemble point, if instructions are given Expect aftershocks of similar or lesser intensity, do not panic	Individuals(s)
Action after effective period (Emergency Control Centre, Site	Take head count Activate emergency plan as situation demands	Incident Controller, Site Main Controller, Coordinators (Fire

Main Controller to direct all activities)	Assess situation and initiate shut down of plants (if required) Initiate search & rescue (if required) Provide first aid to victims. Remove casualties. Key persons to report to site Assess damage Undertake restorative measures & repairs	& Security, Safety, Material, Medical) and Plant Key Person
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b) Storm

The contingency actions during storm shall be based on the weather forecasts obtained from meteorological stations and the local meteorological department. Some of the important actions to be carried out are as follows:

C) Prior to Storm

Establish regular contact with the local meteorological department.

Establish distances from storm in order to execute preparatory actions in a shorter time.

Appraise the factory operation in-charge and consider the consequences that the emergency might have on operations and personnel.

Check the availability of tools, batteries, non-perishable foods and other materials that might be required.

Review all operations carefully to ensure that systems at jeopardy are taken care of or shut down.

Ensure the readiness of first aiders, emergency vehicles, medical centre, medicines etc.

Metallic sheets, loose materials, empty drums and other light objects shall be properly secured.

Flush the drainage systems.

d) During Storm

- ❖ Remain calm
- ❖ Do not go outdoors and stand under OH power lines
- ❖ Do not seal the office completely as the suction created by the difference in atmospheric pressure inside and outside can rip open a window or door by breaking window glass panes?

e) After The Storm

- ❖ Do not touch electric lines.
- ❖ Stay away from the disaster area.

- ❖ Take special precautions in driving vehicles since the under-pavement could cave in due to the weight of automobile.

f) Flood

Flooding the facilities in Jharkhand cement plant or their subsidence would occur if early prevention of such events is not undertaken. It is noted that such emergency usually develops gradually and there is usually adequate time to respond in order to prevent the condition from worsening.

g) Initial Response

When Cement Works personnel feel that excessive downpour and possible flooding has potential that may adversely affect and damage the plant process, product as well as equipment, the following should be followed:

- ❖ Assess the condition of the site:
- ❖ Raise concerns with the Incident controller/Site Controller
- ❖ Await further instructions from the Site Controller and his team.

h) Emergency Action Plan

Emergency Action Team shall inform the Incident Controller on the event. The Incident controller shall assess the situation and decide if the situation warrants activation of the Emergency Response Plan. The emergency action team shall perform specific tasks such as constructing a dyke around low areas and keeping ready for operation the high capacity dewatering pumps etc., depending on instructions given by the Incident Controller. If assistance from the external emergency services is required, the Incident Controller shall notify the Site Controller to make the necessary callout.

i) Air Raid

Air raid warning would be obtained from the District Emergency Authority or Defense Authorities, during which total blackout of the entire complex should be considered. Some of the contingency actions to be considered during an air raid are as follows:

- ❖ The Aviation Lights installed on highest point inside the factory shall be switched off.
- ❖ All the lighting on the Streets shall be put off.
- ❖ All the plant lighting shall be put off.
- ❖ Brown curtains shall be provided for all windows inside the building.
- ❖ Other emergency actions shall be followed in addition as per the general procedure.

j) Bomb Threat

In view of the probable acts of terrorism, the possibility of receiving bomb threats or the sabotage cannot be ruled out. Therefore, consider all bomb threats as genuine and act accordingly keeping in mind the safety of the people in the factory and the property. For such situation, the security people

will take action under the guidance of the Head (Security). The Bomb threats may be received in writing or may be received on phone. The expected actions by telephone receiver are as follows:

- ❖ Keep the caller on the line as long as possible. Request him to repeat the message, listen carefully as every word spoken by the person has to be recorded mentally or penned down.
- ❖ If the caller does not indicate the location of the bomb or the time of possible detonation, it is advisable to try to ask him for this information.
- ❖ Pay particular attention to peculiar background noises such as motors running, background music and any other noise, which may give a clue as to from where the call is being made.
- ❖ Listen closely to the voice (male, female), voice quality (calm, excited), accents and speech impediments. Immediately after the caller hangs up, report should be made to the immediate senior manager or security officer on duty about all the above details.
- ❖ In consultation with SMC, the Liaison Officer can immediately inform the nearest Police station and Police Chowaki over phone and also Bomb diffusion squad.
- ❖ If the location is identified, cordon-off the area and ask people to leave the area and assemble at designated assembly point.
- ❖ During strikes police will be informed by the Liaison Officer in advance and take their help to maintain law and order.

k) Food & Water Poisoning

Food and water poisoning to people, due to canteen food or other means, is another scenario which can lead to major emergency. In this case, Medical Officer would be informed immediately by the senior most person available at site and then to SIC and WMC. In such situation, doctors will act and if situation demands additional help such as ambulances, doctors and medicine would be arranged from nearby hospitals. For such situations WMC may decide whether siren is required to blow or not and arrange to inform key persons in the factory and if required set up ECC at Hospital. HOD (HR) would rush to ECC and assist WMC for informing nearby hospitals, doctors and govt. authorities in consultation with the doctor.

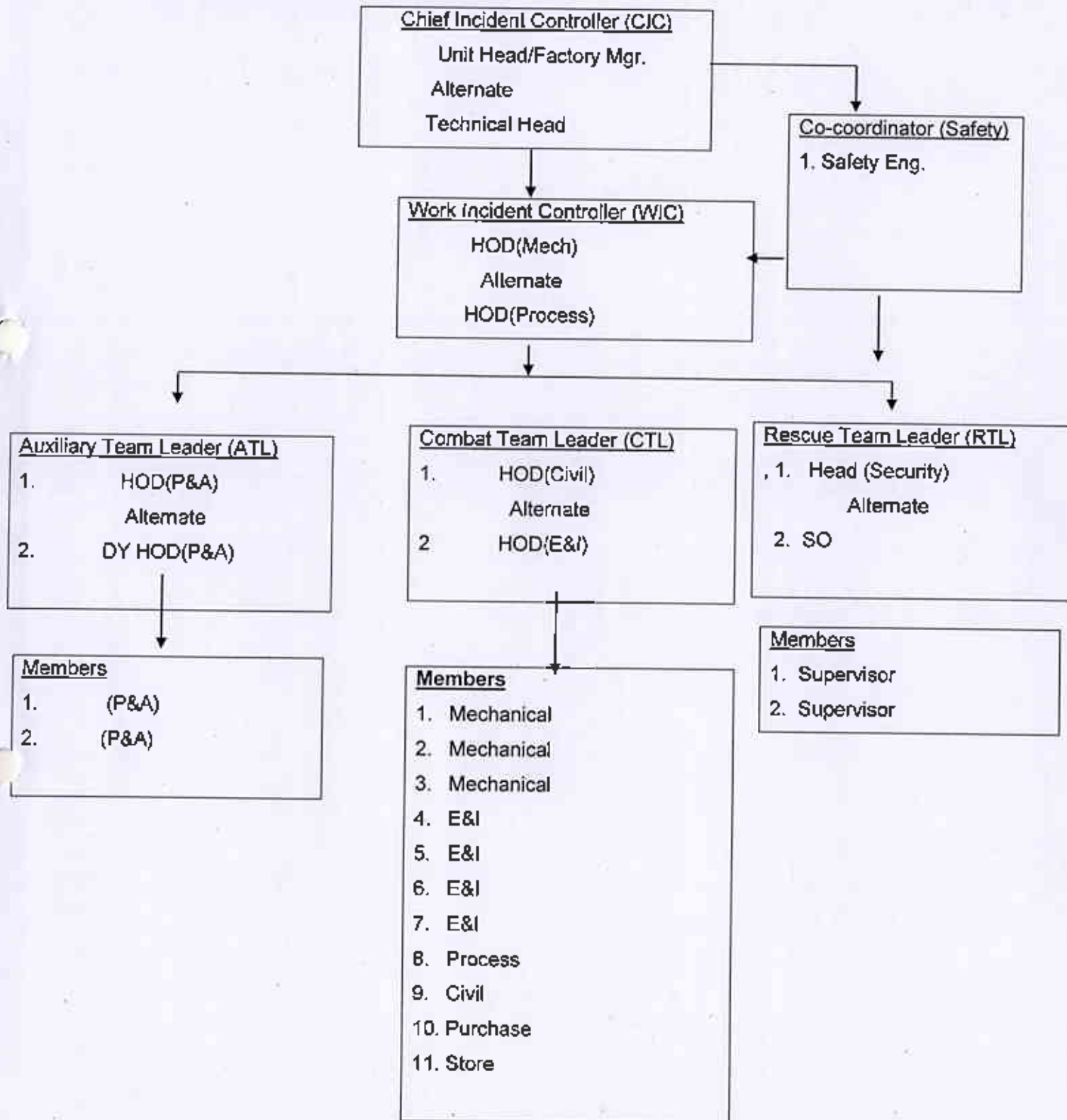
Plan to deal with food & water poisoning can be divided in following stages:

Step	Activity	Action By
Planning & Preparedness	Maintain adequate inventory/ supply of medicines, saline water etc. and identify resources to obtain during emergency Impart awareness training regarding food/water poisoning	Medical Coordinator

Action during effective period (Establish Emergency Control Center, Works Main Controller to direct all activities)	Identify the contaminant source Seized contaminated material and keep out of circulation Take preventive measures for avoiding recurrence Inform all concerned persons Arrange alternate supplies Arrange medical assistance to the victims Mobilize	Main Controller Medical coordinator and SH (QC)
Action after effective period	Conduct detailed epidemiological investigation to identify the cause of contamination Take appropriate preventive measures to avoid recurrence Follow up on causalities	Works Main Controller, Medical coordinator and HOD (HR)

12.0 EMERGENCY MANAGEMENT ORGANISATION

12.1 Emergency Command Structure:



Note:

CIC- SL No. 2 shall play the role of CIC in the absence of SL No. 1; otherwise he will assist SL No.1

SIC- SL No. 2 shall play the role of SIC in the absence of SL No. 1; otherwise he will assist SL No.1

CTL- SL No. 2 shall act as CTL in the order of preference in absence of SL No.1; otherwise he will assist to SL. No. 1

ATL- SL No. 2 shall act as ATL in the order of preference in absence of SL No.1; otherwise he will assist to SL. No. 1

RTL- SL No. 2 shall act as RTL in the order of preference in absence of SL No.1

12.2 Closure of Emergency / RESTORATION OF NORMALCY

a Authorization

Only CIC is authorized to take the decision to "call off" the emergency only after consulting the Incident Controller and other key personnel that the situation is under control and the emergency is over. He will then order to actuate the ALL-CLEAR siren.

b Declaration of the End of Emergency:

The emergency would be considered to have ended on the actuation of "ALL-CLEAR" siren.

c Communication of the Declaration of the End of Emergency

- All persons within the Plant are informed through the "ALL-CLEAR SIREN".
- External agencies, viz., District Collector Office, Factory Inspectorate, Police, and Petroleum & Explosives Safety Organization are again contacted by HOD (P&A) or his Alternate to communicate the end of emergency.
- Inform by WMC to the Corporate/Head Office about end of emergency.

d Restoring Normalcy

When the "ALL-CLEAR" siren is sounded, it indicates end of emergency. However, each plant shall resume to normal operation after assessing the situation and by following the laid down procedures.

e Sequence of Actions After the "All-Clear Siren" is actuated

- i) WMC contacts all plants to communicate them the emergency has been called off and instructs for actions to be taken by the person inside.
- ii) The senior person in each plant takes a small meeting of all his workers and briefs them and instructs them to go back to their workplaces or as directed by WMC.

- iii) The SIC in consultation with WMC and senior-most official of the Plant takes necessary steps to resume normal work.
- iv) Plants start operations as per the laid down procedures.

13.0 LIST OF OUTSIDE HELP FOR FIRE FIGHTING & MEDICAL SERVICES

In case of fire incidence District Fire Station & other industries nearby will be contacted. For medical services Government Hospitals as well as Private Nursing Homes will be contacted.

13.1 Mutual Aid and Response Group (MARG)

There are a number of reputed industries in Saralkela-Kharsawan Jharkhand area. When needed, help can be sought from these industries under the guidance of HOD (P&A, Security & Admin) will contact the industries.

14.0 PRELIMINARY HAZARD ANALYSIS

Few activities in the plant have been identified as hazardous activities. There are inherent hazards associated with these critical jobs. Preliminary hazard analysis (PHA) has been done in respect of some of these critical jobs and their emergency mitigating procedures are described as given below:

Job Description: Gas Welding & Cutting Operation

Sr. No.	Description	Potential Emergency	Emergency Mitigation	Emergency response procedure
1	Handling of gas cylinders (oxygen & D.A)	Foot injury Hand injury	a) Use of appropriate P.P.E. like safety shoes, hand gloves. b) Handling should be done through hand trolley or by forklift truck.	In case of emergency, the following measure should be adopted: Try for giving First Aid to the injured person and send him to Dispensary.
2	Fixing of gas hose, regulators, cutting torch etc.	a) Damage to gas hose, regulators, and cutting torch resulting leakage of gas	a) All (Acetylene, Oxygen, LPG) cylinders must be kept in upright position & be secured. b) Inspection of all necessary accessories before they are taken in use.	Immediately inform to the Time Office station the nature of emergency. Inform Dept. Head, Safety dept. & Emergency coordinator (AGM-Plant Operation)
3	Cleaning of surface to be cut or welded	a) Hand injury while cleaning	a) Cleaning of surface to be carried out by using wire brush & use of cotton hand gloves to be ensured	First aid to be provided to the injured and he should be shifted to Works Dispensary.

4	Open the Knob of the cylinders & regulate the gas flow.	a) Back fire b) Fire & explosion	a) Adjust pressure as per requirement of the job/thickness. b) Torch nozzle holes to be cleaned frequently. c) Non return valve must be used in D.A. hose to avoid flash back.	In case of fire try to extinguish fire by adopting fire emergency procedure.
5	Lighting of gas torch & adjust the flame	Burn injury	a) Always keep a bucket of water in nearby area and cool down the cutting torch as & when required. b) Never try to get feel at flow using naked hand immediately after the flame in the torch is extinguished as this may lead to reappearance of fire (Due to residual fire) & cause burn injury.	Give first aid and shift victim to the plant medical center for further treatment.
6	Start cutting or gas welding	Occupational hazard.	a) Use mask to avoid occupational injury/ health hazards.	

14.2 Job Description: Replacement of Internal Lining Plate, Diaphragm Etc. In Mill Internal

Sr. No.	Description	Potential Emergency	Emergency Mitigation	Emergency response procedure
1	a) Communication to operating staff to stop the mill and its auxiliaries (Man hole position on top).	a) Communication gap	a) Instruction are to be passed on to operating staff by Departmental Head	In case of emergency following measures should be adopted-
2	After confirmation line clearance is obtained for mill auxiliaries & obtained work permit.	b) Accidental start of the mill	b) A practice is there that all agency involved in the mill shall take line clearance Follow LOTO.	Immediately inform the time office stating the nature of Emergency. Inform the departmental head safety engineer, Emergency coordinator
3	Opening the mill manhole & tying it with chains of holding it by chain block.	c) Failure of lifting tools & tackles.	c) Departmental lifting tools & tackles are to be periodically checked by a competent person.	Try to cordon the whole area and if possible start first aid to the victims by taking them out from Danger area. Without affecting your own safety.
4	Being at top, mill bolts are cut wherever access is possible.	d) Fall of or slip of a person. e) Welding & gas cutting	d) While working In mills only experienced should be	In case of fire, try to extinguish the fire by adopting Fire

		hazards (back fire etc.)	deputed. e) Proper identification mark should be marked in the auxiliaries to avoid any confusion.	Emergency Planning & Procedure.
5	Punching of bolts and removing of plate, diaphragm etc.	f) Common hazards of materials handling	f) Time to time written instructions must be passed on to the workman & supervisor for obtaining line clearance by all agencies and proper handing over of charge is to be ensured.	Provide First aid & shift victim to plant medical center
6	Fixing of new plates diaphragm and tightening of mill bolts	a) Slipping of spanners, tools failure.	Regular inspection of tools and replacement as and when required. h) Coordination amongst the people is important while lifting the lining plate or	
7	After all the plate are fixed and man hole is closed properly. The scrap lining plate etc. must	h) Bad housekeeping.	i) Scraps to be immediately shifted from site in order to attain good	

	be removed from the mill area to scrap yard		<p>j) Use non return valve for D.A. cylinders hose to avoid back fire and maintain the cutter in lip top condilion</p> <p>k) Before starting the mill it must be ensured that no one is working in the mills & its auxiliaries.</p>	
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14.3 Job Description- Hazard in Packing House

No.	Sr.	Description	Potential Emergency	Emergency Mitigation	Emergency response procedures
1		Storage, packing & loading of cement.	<p>a) Eye injury -</p> <p>b) Foot injury c)</p> <p>Dust emission</p>	<p>a) Use safety Goggles. mask & safely shoes. b)</p> <p>Dust collectors have been provided in silo top and packer machine</p>	In case of Emergency, following measures to be adopted
		Storage of PP bags	d) Fire in bags and fumes	c) Bags go-downs have been	1. Immediately communicate to the

		<p>generation during firing which may impair the environment.</p>	<p>declared as No Smoking zones.</p> <p>d) Regular inspections of Electrical supply line etc. to prevent overloading, loose connections & short-circuiting etc.</p> <p>e) Proper ventilation has been provided.</p> <p>f) Regular training is imparted to the staff.</p>	<p>time office stating nature of emergency. Inform the Deptt. Head, Safety engineer, Emergency coordinator.</p> <p>2. Try to cordon the whole area and if possible start first aid to the victims by taking them out from the danger area without affecting your own safety</p> <p>3. In case of fire, try to extinguish by adopting fire emergency plan procedure mentioned in this emergency plan at later</p> <p>4. Provide First Aid and shift the victim to plant medical unit.</p>
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14.4 Job Description: Transportation, Handling and Storage of Gas Cylinders

No.	Sr.	Description	Potential Emergency	Emergency Mitigation	Emergency response procedures
1		Receiving Oxygen and Dissolved acetylene from vendors.	a) Leakage or damage of cylinder valve. b) Fire c) Explosion d) Hand or foot injury while handling cylinders.	a) As per statutory requirement, minimum numbers of cylinders which can be kept in stores are-D.A.- 15 nos. Oxygen- 50nos. Check cylinders physically for damage before use b) While unloading the cylinder drop it softly on the 15-mm thick rubber belt piece or on tyre c) Keep cylinders under shed in a cool place d) Handling is done by hand trolley and manually where movement of trolley is restricted. e) Statutory clearance has to	In case of an emergency Immediately communicate to the Time office stating the nature of emergency. Inform the Dept. Head, Safety Engineer, Emergency Coordinator 2. Try to cordon the whole area and if possible start first aid to the victim by taking them out of danger zone without affecting your own safety. 3. In case of Fire try to extinguish fire adopting Fire emergency procedure mentioned in emergency plan 4. Provide First Aid and Shift the victim to plant medical unit

			<p>be obtained if norm of storing fifty O₂ cylinders or fifteen DA cylinders are exceeded</p> <p>f) It is necessary to secure the cylinders when they are kept upright by suitable fixing arrangement. g) Cylinders are never stacked more than four high if they are kept horizontally. h) DA Cylinders should be kept or stored away from source of heat. It should be ensured that it is not kept under direct sun light/heat. i) Oxygen regulator fittings should be kept away from all source of contamination such as oil, grease etc.</p>	
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			<p>j) The recommended practice of lifting cylinders is to use fiber rope slings in lieu of the metal chains. k) DA Cylinders must be color coded with maroon and Oxygen with black.</p> <p>l) Keep Cylinders away from live electrical wires Of electrical apparatus.</p> <p>m) Valve protection cap must be maintained in place</p> <p>n) Wear, hand gloves & safety shoes while handling cylinders</p> <p>o) Before putting cylinders in use examine for the validity of date of statutory test done & marked on the name plate</p>	
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14.5 Job Description: Collapse of Cement Silos

Sr. No.	Description	Potential Emergency	Emergency Mitigation	Emergency response procedures
1	Bursting of storage silo.		a) Routine inspection of silo jointing. b) Ensure proper running of dust collection etc. so that silo does not get pressurized. c) Maintain material level 2.0 m below from the top of the silo. d) Maintain empty height 2 meters from bottom	In case of Emergency, 1. Immediately communicate with the Time office stating nature of emergency. Inform the deptt. Head, Safety Engineer, Emergency Coordinator. 2. Try to cordon the whole area and if possible start first aid to the victim by taking them out of danger zone without affecting own safety. 3. In case of a Fire try to extinguish fire following Fire emergency procedure 4. Provide First Aid and Shift the victim to plant medical center

14.6 SIGNIFICANT EMERGENCY SITUATIONS AND EVACUATION

PROCEDURES:

	Potential Emergency situation	Possible Potential damage	Control measures to be followed	Action in case of emergency situation
FIRE				
a	Fires could occur in HSD storage tank due to presence of ignition source at or near the source	Persons In vicinity of up to 30 meter distance are exposed to heat and radiation which may cause serious burn injuries Property damage can also occur. Air Pollution.	1. Storage tank is to be designed, constructed, used and maintained following guidelines in the Petroleum Rules 2. Suitable type and adequate number of Fire quenching equipment and sand buckets are made available at the site. 3. Trained fire fighters are posted in every shift.	1. Wear safety devices like fire proximity suit, self-breathing apparatus if required. 2. Use foam type / dry chemical powder fire extinguishers for controlling fire. 3. Take help of external fire service at saraikela,
b	Possibility of fire & explosion in diesel generator set. The probable hazardous area can be lubrication system in the generator	Property damage/loss	1. Preventive maintenance 2. Temperature monitoring 3. Suitable and adequate number of Fire extinguishing equipment and sand buckets are	Use CO ₂ type fire extinguishers

			made available at the site. 4. Trained fire fighters are made available in every shift.	
c	Major hazardous areas in Substation Buildings are Cable Galleries, Control Rooms, Switch gears, Oil drums stored at Ground Floor level, and Battery Rooms	Men in control room exposed to electrical flash and fire, causing serious burn injuries, asphyxiation Damage to electrical panels, cable, control room Disruption of power supply	1. Preventive maintenance of all electrical installations. 2. Suitable and adequate number of Fire extinguishing equipment and sand buckets are made available at suitable location 3. Trained fire fighters are made available in every shift.	1. Wear safety equipment 2. Use DCP or CO ₂ type fire extinguishers
d	Fire due to leakage of flammable gas LPG, DA, etc. from cylinders coming in contact with open fire, Match box, or sparks.	Damage of property due to fire and radiant heat in vicinity	1. No smoking or open flames or sparks near by 2. Cylinders are stored and handled as per Gas Cylinders Rules, 1981. 3. Adequate fire extinguishers are kept nearby.	If detected fire in cylinder 1. Use CO ₂ fire Extinguishers Or spray water for cooling

e	Fire due to faults in Electrical equipment such as Generators, Motors, Transformers, Breakers, Current Transformers (CT), Potential Transformers (PT), Lightning Arrester, Switch gear, Cables, Connections etc.	People in control room exposed to electrical flash and fire, causing serious burn injuries, asphyxiation. Damage to electrical panels, cable, control room, Disruption of power supply to the plant	1. Emergency doors are located and marked for escape. 2. Adequate fire extinguishers are provided 3. Electrical installations are Selected erected as per The Indian Electricity Rules, 1956.	1. As soon as fire occurs in the control room the personnel should evacuate the work place and come out of the room and try to switch off power supply. 2. Use CO ₂ / dry chemical type fire extinguishers for controlling the fire.
f	Fire due to leakage or spillage in the Lubricant oils coming in contact with high temperature areas (girth gear)	Property Damage	1. Proper storage practices are followed. 2. Good housekeeping is maintained 3. Suitable and adequate number of Fire extinguishing equipment and sand buckets are made available at the site. 4. Trained firemen are made available in every shift	Use dry chemical or CO ₂ type fire extinguishers
g	Spontaneous combustion in coal yard	Property damage weakens the structure exposed	1. Maintained height of coal stacks as less as possible	1. For open yard use hydrant water for extinguishing fire

		to heat and radiation	<p>2. Avoid keeping long time storage in bunkers the coal is emptied out if it is not going to be used within 2 to 3 days to avoid spontaneous combustion.</p> <p>3. Necessary fire hydrant points are provided to meet emergency need</p> <p>4. Trained fire men are available</p> <p>5. Automatic fire detecting, CO₂ flooding system is provided</p>	<p>2. Cool the bunkers from outside by water. 3. Do not stand in front of bottom doors, if required to open, hot coal dust or flames may cause burn injuries.</p> <p>4. Wear necessary personal safety equipment</p>
h	Fire due to leakage spillage in the fine coal & diesel oil systems proximity to high temperature	Proper damage	<p>Preventive maintenance is practiced to arrest leakage of fine coal/diesel oil</p> <p>Good housekeeping is practiced</p>	<p>1. Wear necessary safety equipment</p> <p>2. Use water spray for fires on open ground.</p>
i	Leakage from hydraulic and lubricating oil system coming in contact with high temperature zones in Heavy Earth	Proper damage	<p>1. Suitable & adequate numbers of Fire extinguishing equipment are made available with every</p>	<p>Use CO₂ or dry chemical powder fire extinguishers</p>

	Moving machineries (Dozer, Pay Loader)		2. HEM operators are trained in firefighting.	
j	Fire due to PP Bags catching fire from open matches or flame in Packing house bags godown	Persons in vicinity will be exposed to toxic and poisonous gases, Property damage	1. Strict slacking procedures are being followed. 2. Smoking is prohibited 3. Suitable and adequate number of Fire extinguishing equipment and sand buckels are made available at the site. 4. Trained fireman are made available in every shift	1. Use hydrant water to extinguish fire 2. Use sand bucket for small fire
k	Fire on belt conveyor due to friction (caused by jammed rollers) electrical discharges (static electricity) mainly in the rubber belt conveyor system	Property damage	1. Earthing and bonding of structure to eliminate sparks due to static discharge. 2. Planned Preventive maintenance 3. Provision of zero speed switches 4. Suitable and adequate number of Fire extinguishing	1. Use hydrant water spray or CO2, / dry chemical powder type fire extinguishers 2. Use sand buckets. 3. Heat sensor should stop the conveyer and prevent fire spread

			equipment and sand buckets are made available at the site. 5. Trained firemen are available in shifts	
L	Fire due to /Lightening or Electrical surges	Serious injuries to the persons in close proximity Property damage	1. Maintenance of lightening arresters 2. Earthing and bonding of the electrical arresters 3. Suitable and adequate number of Fire extinguishing equipment and sand buckets are available at the site. 4. Trained manpower are deputed in every shift	Use CO ₂ fire extinguishers
M	Fire due to acts of arson, sabotage etc.	Property damage	Strong security guarding	Evacuate to safe assembly points and follow the guides.
N	Fire due to Human failures	Injuries to the exposed persons Property damage	Training, knowledge enhancement, skill development for behavioral	Take suitable control measures as per need at site. Training and re-training based on

			changes and minimize failures	need analysis are organized
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14.7 Location of hazardous area in the Factory:

Location	Chemical/Material	Emergency
DG area	HSD	Fire & Explosion
Packing plant & empty bags go down	Gunny Bags	Fire
Whole Plant	Lubricating Oil	Spillage and Fire
Elec. Sub stations	Electricity	Short circuit & Fire

14.8 Location Wise Likely Emergencies, Their Control Measures

1) HSD Storage

Location: Near Main Gate

Likely Emergency

- ❖ Possibility of catching fire at the oil storage tanks
- ❖ Oil spillage from storage tanks.

Control Measures provided:

- ❖ Adequate number of suitable fire extinguishers are provided
- ❖ Fire hydrant lines are provided near tanks area
- ❖ Hot work is allowed only after hot work permit is obtained

In case of Emergency:

The personnel noticing any sort of fire, shall immediately yell & inform the Main gate security and reveal the location and nature of the fire

The concerned Process Shift In-charge will immediately rush to the affected site. If the emergency is major, depending upon the gravity of the situation he will inform the concerned IC.

The IC will arrive at the site and if situation is beyond control and likely to develop major emergency, he will inform SMC and then SMC will decide. in consultation with IC, about declaration of emergency.

2) PP Bags Godown

Location: Packaging Plant

Likely Emergency

- ❖ Possibility of major fires

Control Measures Provided:

- ❖ The PP bags storage building has high roof design

- ❖ Fire hydrant lines are provided near the bag storage building
- ❖ The storage area is declared as non-smoking zone
- ❖ The electrical wiring & fittings are located in elevated points (with at least 3 ft. gap from all sides) and the control is given from outside the storage area
- ❖ Suitable fire extinguishers are provided at suitable location
- ❖ Smoke detectors are provided inside the shed
- ❖ The on duty staff are trained in Firefighting techniques
- ❖ Permit to Work for Hot Works is made compulsory
- ❖ Adequate Drainage for immediate draining out firefighting water is constructed
- ❖ The store is adequately ventilated & kept cool, free from weeds.
- ❖ High housekeeping standard is ensured.
- ❖ Misuse of extension cords for power/lighting connection is controlled restrictively

In case of emergency:

- ❖ In case of major fire, the shift persons shall inform the main gate security immediately. Depending upon the gravity of the situation the Shift In-charge will immediately rush to the affected site.
- ❖ Before the arrival of security staff, the personnel available at the spot shall try to extinguish the fire with help of fire extinguishers available at the location.
- ❖ On hearing the information, the security staff shall immediately rush to the spot with necessary equipment and extinguish the fire with the help of fire extinguishers or fire hydrants depending on the impact of the situation
- ❖ The security and safety officers shall personally supervise the relief operations
- ❖ If the emergency is of major type he will inform IC and SMC. IC will get in touch with SMC, if it is major emergency he will ask IC to declare on site emergency by blowing the siren.

3) Lubricating Oil

Possible Emergency — Oil spillage & fires

Location — Whole Plant

Control Measures Provided:

- ❖ Suitable fire extinguishers are provided near the storage areas.
- ❖ Lubrication Oil drums are kept upright and undamaged
- ❖ Spillage is attended at once
- ❖ Good housekeeping is maintained at the storage areas.

- ❖ Loose electrical wiring/joint is avoided

In case of emergency:

- ❖ Anyone noticing fire near these areas shall inform main gate security. In case of small fire, the departmental staff will extinguish the fire with fire extinguishers.
- ❖ The main gate security staff on receipt of the information shall immediately reach to the site and extinguish the fire.
- ❖ In case of major oil spillage, the person noticing the same shall inform his immediate superior who will in-turn report to the concerned for taking corrective actions.

4) Electricity

Possible Emergency:

Fires from short circuiting & fatal shocks

Location: Electrical Sub-Stations and Electrical Room cable gallery

Control Measures provided:

- ❖ Rubber mats of IS type are provided in front and rear portions of the MCC Panel
- ❖ Employees use standard PPEs like industrial shoes, insulation hand gloves, apron & protective glasses
- ❖ Suitable fire extinguishers are provided in all the sub-stations and Electric Rooms in compliance with IE Rules
- ❖ Protection relays have been provided to trip the circuits in case of a fault occurring
- ❖ Feeder cabinets are marked boldly & distinctly for proper identification. All cables are numbered at feeder as well as load ends
- ❖ Cable basement, channels are maintained dry from water & oil, ventilated for cooling & dust free

In Case of Emergency

- ❖ The person noticing any short circuit and fire shall immediately contact Electrical Shift room to isolate the power and inform the main gate security in case of a fire.
- ❖ The Electric Shift staff shall immediately arrange for isolation of power and keep their immediate superior informed.
- ❖ Depending upon the gravity of the situation the Electrical Shift In-charge will immediately rush to the affected site and douse the fire using right fire extinguisher. If the fire emergency is major, he will inform IC and SMC in consultation with IC will declare emergency.

Accidental Dust Emission from Stacks/Air Pollution

Possible Emergency

- ❖ Dusty unhealthy condition in and around the plant precinct, public hue & cry

- ❖ Restricted visibility and damaging effects on human health due to contact & inhalation of dusts
- ❖ Soiling of machines from dusts requiring cleaning/maintenance.

Control Measures Provided

- ❖ High capacity pulse-jet type dust collectors (99.5% efficient) are installed at all locations where dusts generate. They are maintained electrically interlocked with the process system through PLC.
- ❖ Chimney heights and exhauster capacity are designed for adequate dispersal and distribution of dusts puffing out from chimney mouth around a wider area thereby minimizing their concentration in natural at breathing level and on agricultural land
- ❖ Routine maintenance of dust catchers including collecting hood, transport ducts and exhauster fans are ensured
- ❖ In an event of restriction in power availability dust catchers are kept running through DG supply.

Role of Personnel

- ❖ The Process engineer investigates the cause and takes corrective actions with the help of operation, instrumentation and maintenance engineers
- ❖ Informs HOD (Production), HOD (Maintenance) for any assistance required to correct the situation.

14.9 EMERGENCY RESPONSE ARRANGEMENTS & FACILITIES

A) Emergency Control Centre

The Emergency Control Centre (ECC) is a place from where the Site Main Controller (SMC) would provide direction/guidance and coordinate various agencies/activities to effectively handle the emergency situation. Security office at main gate will be the ECC. SMC will proceed to that ECC and take overall control of the emergency. All the key personnel (except IC and the persons he would need) would assemble at ECC.

Office of the respective incident controller or nearest location from the emergency site will be incident controller center. IC will conduct all operations to combat & control the emergency from ICC. He will guide fire & rescue, medical & other teams from ICC.

Equipment and Facilities Available In ECC

- ❖ Internal and external telephone lines separately
- ❖ A plot plan showing the location of
- ❖ Areas where there are large inventory of combustible and toxic material
- ❖ Fire hydrant system Location of assembly points

- ❖ Location of health Centre - Sources of Safety Equipment - Stock of firefighting equipment
- ❖ Habitation within 1 kilometer distance
- ❖ Nominal roll call of employees (to be provided by the Liaison Officer during emergency).
- ❖ List of key personnel with their addresses, telephone / mobile numbers.
- ❖ List of outside emergency control agencies with their contact numbers.
- ❖ Stationary items
- ❖ First aid box

Manning Of ECC during Emergency

- ❖ Site Main Controller and his alternate
- ❖ Assistant to WMC
- ❖ Telephone Attendant
- ❖ Messenger
- ❖ Key Personnel as per the matrix.

B) Assembly Points

All the persons of the emergency area, those are not part of immediate response teams, would evacuate their work area, if directed by respective SIC, after declaration of emergency and report at the designated Assembly Point (AP). The decision to evacuate the work area will be taken by WMC after getting feedback from the Incident Controller. Evacuating visitors and handicapped persons would be the responsibility of the respective SIC. The routes to be followed to reach the "Assembly Point" shall be known as "Escape Routes" and are predetermined, kept free from obstructions and prominently marked on the plant layout drawing.

B) Assembly Points

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c) Escape Routes

At the break out of emergency it becomes essential to evacuate the affected personnel from the locations and assist them to collect in the identified assembly points (AP). In order to carry out the evacuation, two escape routes have been identified and designated. These routes have been marked in the plant layout drawing and enclosed as annexure. However, in case both the identified routes

are also affected or blocked. the Security department shall open available exit gates of the plant for faster evacuation. The following precautions have been ensured:

- ❖ Putting up identification boards with glow sign on the entry, exit and turnings of escape routes.
- ❖ Keeping routes free from obstructions
- ❖ Providing adequate illumination on roads for movement of emergency services
- ❖ Maintaining roads in good order
- ❖ Keeping all doors for entry and exit unlocked and unobstructed in all the departments

Locations

There are Two Assembly Points in the factory. These points are indicated in the Plant Layout drawing).

Assembly Point	Location	Who should assemble
AP-1	Near Main Gate	Personnel working area
AP-2	In front of VRM.	Personnel working in Cement mill area.

The above Assembly Point in-charges will be decided by the time office under the guidance of HOD-P&A and they will act as Emergency Wardens. In case of emergency, they should take the roll call and ensure safety of personnel. If the wind direction for a particular assembly point is not favorable, the concerned assembly point in-charge would have to take on the spot decision for shifting the personnel under their control, to a safer location. In case someone is suspected to have been entrapped in the emergency, they should immediately inform to WMC and SIC through personal mobile or use nearest contact point. After "All Clear" siren, all assembly point in-charge will report to ECC with list of roll call.

15.0 Emergency Siren (Details regarding warning, alarm, safety system)

A high power emergency siren is installed at the top of Reject Building. Depending on the nature of emergency; siren will be sounded for warning people in entire plant. If required more sirens can be installed in selected locations in future.

Location of the sirens will be as below:

Sr. No.	Siren	Location	For the area
01	1	Reject Building	For entire plant

Sirens will be sounded from CCR.

The emergency siren should be operated in the following modes:

- a. **Declaration Of Emergency:** The siren will operate with a wailing Sound for 3 times with 30 seconds up & 10 seconds down cycle i.e.

On	off	on	off	on
30sec	10sec	30sec	10sec	30sec

b. All Clear: The siren will operate with a continuous sound for 3 minutes. It would be activated only after the clearance from SMC in consultation with the IC

c. Testing: All the emergency sirens will be tested on every "Friday" at 11.00 hours for 01 minute

d. Wind Socks

One wind socks are installed in the plant Cement silo top and are visible from all corners of the plant so as the plant people can see the direction of the wind and escape safely in a direction perpendicular to the wind flow.

16.0 Hazardous Chemicals / Materials, Inventory and Locations

- ❖ HSD is fire hazardous chemical, hence all the arrangements for firefighting have been made in the area. Any hot job is done only with hot work permit in the area. Smoking and open fire is totally prohibited.
- ❖ PP bags go down in packing plant is another place where big fire can occur. Storage of (inventory for 10 to 15 days) at one place is a serious fire hazard.

16.1 Likely Emergencies in the Factory

Location	Chemical/Material	Emergency
Packing Plant	Gunny Bags	Fire
Whole Plant	Lubricating Oil	Spillage and fire
Elec. Sub stations	Electricity	Short circuit & Fire

17.0 DETAILS OF COMMUNICATION FACILITIES AVAILABLE DURING EMERGENCY

17.1 Employee Information during an Emergency

- ❖ Employees would be warned by raising siren in specific pattern. Employees have been given training on escaping through specific routes
- ❖ Taking shelter, protecting from dust/toxic effects. Employees would be provided with information related to fire hazards, antidotes and first aid measures
- ❖ Those who are designated as key personnel and essential employees have been given training on emergency response methodology.

17.2 Public Information and Warning

- ❖ During various stages of operation in Cement making emission of dust into working atmosphere is possible. Dust emission in dry process is comparatively more due to nonworking dust extraction equipment.
- ❖ The effects of Emergency related to this plant would mostly be related to dust pollution and shall remain confined within the plant area.
- ❖ Mechanical Exhaust systems is designed to remain electrically interlocked with the process plant to ensure its effective maintenance
- ❖ The detailed risk analysis indicates that the effects of emergency situation would not be felt outside. However, as precautionary measures the information related to chemicals in use would be furnished to District Emergency Authority for necessary dissemination to general public and for any use during an off-site emergency.

17.3 Co-Ordination with Local Authorities

- ❖ Keeping in view of the nature of emergency, two levels of coordination are proposed. In the case of an On Site Emergency, resources within the organization would be mobilized and in the event of extreme emergency help from local authorities would be sought.
- ❖ In the event of an emergency developing into an off-site emergency, local authority and District Emergency Authority (normally the Collector) would be apprised and the Off Site Emergency Management Plan would be exercised under his leadership.
- ❖ For this purpose, the facilities that are available locally, i.e. medical, transport, personnel, rescue accommodation, voluntary organizations etc. would be mustered.

- ❖ Mutual aid in the form of technical personnel, runners, helpers, special protective equipment, transport vehicles, communication facility etc. will be sought from the neighboring industrial managements and medical centers if required and if situation so warrants.

17.4 Important Information

Important information such names and addresses of key personnel, essential employees, medical personnel, outside help, transporters' address, address of those connected with Site Emergency such as Police, Local Authorities, Fire & Emergency Services, District Emergency Authority is maintained

18.0 DETAILS OF FIRE FIGHTING ARRANGEMENTS:

Sl. NO.	Location	CO ₂	ABC 6KG	ABC 4 KG	MECH FOAM, 9LIT	SAND BUCKET
1	MAIN GATE	2	1	1	2	4
2	CCR BUILDING	4	0	1	2	4
3	HAG	0	1	0	5	4
4	VRM	0	2	0	0	4
5	HOPPER BUILDING	4	3	0	0	4
6	PACKING PLANT	0	9	0	0	4
7	COMPRESSOR ROOM	1	1	0	3	1
8	BAG HOUSE PANEL ROOM	1	1	0	0	0
9	GRR ROOM	1	1	0	3	0
10	CEMENT SILO GROUND	0	1	0	0	4
11	RECORCI;ATOPM BUILDING TOP	1	1	0	0	1
12	GROUND LEVEL	2	1	0	0	0
13	MIDDLE LEVEL	0	1	0	0	0
14	DIESEL PUMP	1	1	0	4	8
15	CABLE CELLER	0	1	0	0	0
16	PP PACKER FLOOR	2	2	2	2	0
17	PP PACKER-2	0	1	1	1	0
18	PP PACKER-3	0	1	1	1	0
19	PHYSICAL LAB	0	0	2	0	4
20	CHEMICAL LAB	0	0	2	0	0

21	HYDRAULIC ROOM	0	1	0	2	0
22	LC5	4	0	4	0	0
23	LC6	4	0	3	0	4
24	SWITCH YARD	4	1	1	0	4
	TOTAL	34	31	20	25	50

LOCATION OF HYDRANT POINT: -

Sl. No.	Location	No.
1	COAL HOPPER BOTTOM	1
2	COAL HOPPER TOP	1
3	HYDRAULIC ROOM	1
4	CEMENT MILL BAG HOUSE	1
5	MECHANICAL WORKSHOP	1
6	PACKING PLANT PACKER FLOOR	1
7	PACKING PLANT BAG GODOWN	1
8	PACKING PLAT GROUND FLOOR	1
9	HAG	1
10	STORE BUILDING	1

19.0 Sequence of Actions after Declaration of Emergency

- (1) After declaration of an emergency, CIC instructs HOD (HR) to notify the nearby Hospitals, Police Stations and other industry for help.
- (2) The CIC contacts SIC on intercom to know about the incident
- (3) The identified teams carry out their respective functions
- (4) The other plant personnel, except key personnel and those have role during emergency occupy their respective offices and follow instructions from CIC.
- (5) WIC should interact with the SIC and other senior persons in each plant site.
- (6) SIC in consultation with the other team leaders at the site of emergency informs the situation to CIC.
- (7) WIC in consultation with the SIC and other key personnel decides whether to shut down the plant.

- (8) If evacuation of the people at the other area is required CIC will inform the Sr. Personnel of the area to evacuate the area and ask them to assemble at their respective assembly points.
- (9) If the CIC orders evacuation, all personnel not belonging to emergency organization (not required for emergency handling directly) should proceed to the notified assembly point and wait for further instructions

19.1 Communication

19.2 Persons

The security personnel present in Fire Station or other designated person will act as ECC operator during emergency. After receipt of emergency message, the Security Shift In-charge will deploy one of the securities at ECC, who will work as ECC operator.

19.3 Responsibilities

ECC Operator (Security gate)

1. To receive all incoming calls, note them down in the Standard Format.
2. To telephonically contact CIC and other persons as required by the Plant's site Incident Controller (SIC)
3. To ensure that communication system is always kept in good working condition.
4. To keep records of all incoming and outgoing calls

19.4 Communication of Emergency

Communication to persons inside the factory and outside is considered to be very crucial for effective handling of emergency.

As the emergency develops, it becomes necessary to communicate with personnel all over the factory such as personnel in the affected area, personnel in other threatened areas, and more importantly, the key personnel.

- ❖ Communication can be possible by using one or more of the following means: Actuating the siren (as detailed above).
- ❖ Declaring emergency and giving specific instructions, using public address system, SMS, Intercoms or messengers.

The SIC briefs the CIC about the status of the incident or emergency, its likelihood to affect other plants and also the areas beyond the plant boundary. He also discusses with CIC the methodology he would follow in controlling the incident. The CIC consult with other key personnel and briefs them on the strategy he would like to follow and seeks their views and as well as instructs them on emergency response.

19.5 External Communication**19.6 Key personnel not Immediately available at the site**

CIC gets in touch with the key personnel through external telephones and instructs them on emergency response actions.

19.7 Communication to nearby communities

CIC through HOD (P&A) establishes telephonic contact with the identified (pre-determined) key persons in the neighboring communities, if situation demands. Public address system will be used for announcing in the nearby areas.

19.8 Communication with local authorities and emergency response agencies

The CIC through HOD (P&A) shall inform the local authorities such as District Collector, Police, Directorate of Industrial Safety & Health, Petroleum & Explosives Safety Organization, etc.

19.9 Names and tel. Nos. Of key personnel and emergency response agencies

A Telephone directory has been prepared and kept at strategic places such as; ECC. Main entry gate. Plant offices, etc.

19.10 Designated persons for interaction with media

The HOD (P&A) would be the company's authorized spokesperson for interacting with media (newspapers, TV channels, etc.).

19.11 Procedure for notifying families of injured persons Communication to the families regarding injury/fatality would be the responsibility of HOD (P&A). The messages should not make the family panic but give the factual information as to where the injured are receiving treatment.

19.12 Central Reporting Office

ECC would be the central reporting office during the emergency.

20. TRAINING AND EMERGENCY DRILLS

20.1 Training

Training would be undertaken as follows:

20.2 Training of Team Leaders

All the Team Leaders would undergo training in the following areas:

- ❖ Knowledge of hazardous chemicals handled; their physical, chemical and hazardous properties. MSDS, what to do during emergency related to the chemical, antidotes etc.
- ❖ Procedure for reporting emergency
- ❖ Siren System
- ❖ Location-wise types and the numbers of fire extinguishers, and how to use them, etc.
- ❖ Types, numbers and locations of different types of PPE (including SCBA and fire suit), situations where they should be used, method of using, etc.
- ❖ Fundamentals of rescue and first aid.

- ❖ Evacuation Procedure, i.e., assembling at the designated Assembling Points, head-count, their records, followed by method of evacuation.
- ❖ Documentation of emergencies.

20.3 Training of Emergency Responders

Different emergency responder teams would be given in-depth training on the various aspects of responses such as Fire Fighting, Rescue Operations, First Aid, Medical Response, Traffic Control, Head-Count at Assembly Point, etc.

20.4 Training of Team Leaders Site Incident Controllers and Works Main Controller

A training workshop should be conducted to understand not only role of individual Team Leader, but also issues of coordination, chain of command, etc. through simulation and Table-Top Exercises. Periodic refresher training would also be needed.

The above training would be periodical. The training department, in consultation with Unit Head would decide the periodicity.

20.5 Emergency Drills

The emergency response plans and emergency preparedness level would be tested through the following drills:

1. Table-top exercise (TTE)
2. Functional exercise (FE)
3. Full-scale exercise (FSE)

All elements/procedures of the On-Site Emergency Plan would be first tested through TTE and perfected to the extent possible. The Plan then would be modified/ updated. Functional Exercises basically to ensure proper functioning of various equipment such as the fire-fighting equipment and the fire hydrant system. The Full-Scale Drill would be conducted to know the level of preparedness of all teams. Initially, TTE and FE would be conducted periodically.

The following drills are conducted periodically:

- ❖ Plant Emergency Drill for fire
- ❖ Fire Drills at offices and admin building
- ❖ Plant Emergency Drills (fire scenario involving evacuation)

20.6 Periodicity and Responsibility

Sr. No.	Type of Drill	Frequency	Responsibility
1	Fire incidence	Once in two months	HOD

2	Plant emergency (fire scenario involving evacuation)	Once in three month to start with	Technical Head
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After each drill, there should be a critical review by all participants (including the drill observers). All suggestions and recommendations should be noted for future reference. These should be the basis for the periodic review and updating of the Emergency Management Plan. This way the plan gets more and more refined and updated.

20.7 REGULAR TESTS OF EMERGENCY PROCEDURES

As mentioned against sec. 10.5 & 10.6 above, drills, regular tests of functioning of Emergency Organization as well as procedures would be carried out through exercises based on simulated emergencies. Besides these exercises, the tests would include -

- ❖ **Siren System** - The Siren System would be tested at 11.00 hr. on every Friday and run for 1-minute duration. The testing would include - activation system, check intensity of the siren from different places so that all in the Plants can distinctly hear it. Emergency buzzers at control rooms are also being tested weekly on Mondays.
- ❖ **Fire Tender**- The factory has a fire tender, which is tested at every shift. A checklist has been developed for daily, fortnightly and monthly checking of the fire tender.
- ❖ **Portable Fire Extinguishers** - Testing of operation of different types of fire extinguishers and their periodical inspection, charging, repair/ replacement of parts, etc. are planned as per the approved schedule. All the fire extinguishers are physically inspected & tested periodically, i.e. every month and records of such inspections are maintained. This also includes testing and operation of the portable fire extinguishers that can be done through conducting drills. It would serve benefit of testing the operation and at the same time provide opportunity to the personnel to test their skill in handling this equipment. Record of such drills would be kept. The prime responsibility for the testing, inspection and examination is with Security & Fire Department.
- ❖ **Evacuation practice** - This include how to assemble at Assembly Points; take head count and transporting them to a safer place. This practice would be done twice in a year. A list of 5 numbers light motor Vehicles available for transporting victims in the process of evacuation would be available with Head (P&A) In extreme situation employee's vehicle can also be used during emergency for evacuation of persons.

21.0 REVIEW/ DISTRIBUTION OF ON SITE EMERGENCY PLAN REVIEW AND UPDATING

It is necessary that the on-site emergency plan be tested periodically. As mentioned under Chapters 8 and 9, the testing of the plan would be through Table-Top Exercises, Functional Exercises and Full-Scale Drills.

21.1 Review of The Plan

This plan is a dynamic document and would be reviewed/ updated in the following situations: -

- ❖ The plan would be tested from time to time (details given under Sec. 8). Short comings/ lacunas that would be surfaced during testing of the plan, would be recorded/ documented, discussed during debriefing session following the test, decisions are taken to include them in the plan.

- ❖ If there were a change in process(s), which may add scenario(s) of possible emergencies, the plan would be modified taking into account these additional scenario(s).
- ❖ Change in contact details such as addresses and telephone numbers.

21.2 Responsibility

Updating the Plans would be the responsibility of the Officer (Safety). This would also include updating of contact information such as address, telephone numbers etc.

21.3 Procedure

The Plan would be updated after approved by the Functional Heads and Unit Head in writing. The Officer (Safety) would submit the proposal as mentioned in Sec. 10.2 above duly supported by justifications to the Unit Head. After its approval, update the plan and circulate it to the concerned persons. If there is any change in the Division/Department such as name, telephone no. then section head would inform in writing to the Officer (Safety). For such change no authorization is required.

21.4 Controlled Copies of the Plan

The On-Site Emergency Plan when approved by the management, sufficient number of copies would be printed: each copy would be identified by a certain number and issued to different persons who have roles to play during the emergency. A register would be maintained indicating which identified copy is issued to a specific person. Complete responsibility of getting the management's approval, printing a number of copies, giving them identification numbers, issuing them, registering the issue, would be the responsibility of the HOD (Safety). It will also be his responsibility to replace the copies after each modification by giving them identification numbers and re-registering them. This is required to ensure that only up-dated copies are with different personnel.

Annexure-1**IMPORTANT CONTACTS IN AN EMERGENCY**

NAME	CONTACT NUMBER
Sh Ashok Kumar (Unit Incharge)	7727002102
Sh Ramakant Singh HOD(P&A)	7091593242
Sh Indervir Singh HOD(Security)	6307617904
Sh Rohit Mishra(Safety Deptt)	9358836642
Sh Sanub TS Medical staff	8789461623

MAJOR EQUIPMENT LIST

Truck Tippler
Belt Conveyors
Bag Filters
Hydraulic unit of Truck Tippler
Separator
Vertical Roller Mill
Bucket Elevators
Silos
Roto Packers
Truck Loading Machine
Weigh Feeders
Compressors
Cooling Tower Pumps
ID fans
Air Slides
All Gear Boxes
Vibrating Screen
Magnetic Separator
Metal detector

LIST OF CRITICAL EQUIPMENTS IN TERMS OF SAFETY

Belt Conveyors

Vertical Roller Mill

Roto Packers

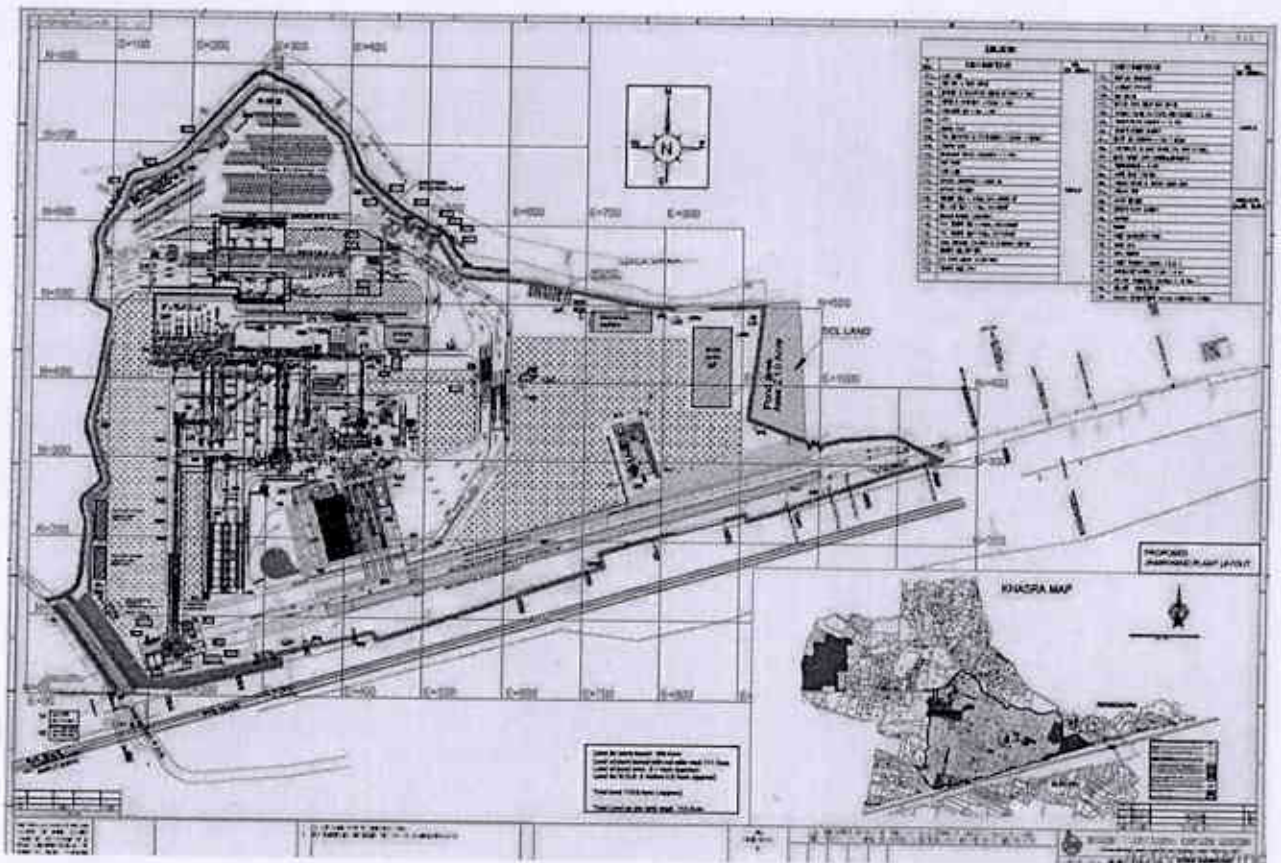
Truck Loading machine

Bag filters

List of Pressure Vessels and Lifting Tools and Tackles			
Sl. No.	Equipment's / tools & tackles	CAPACITY	QUANTITY
1	Chain Pulley Block	1 TON	3
	Chain Pulley Block	2 TON	3
	Chain Pulley Block	3 TON	3
	Chain Pulley Block	5 TON	3
	Chain Pulley Block	10 TON	3
2	EOT Crane	55/5TON	1
	EOT Crane	10 TON	1
3	D -Shackles	2 TON	4
	D -Shackles	3 TON	4
	D -Shackles	5 TON	4
	D -Shackles	10 TON	4
	D -Shackles	20 TON	4
	D -Shackles	25 TON	4
4	Eye Bolts	2 TON	10
	Eye Bolts	5 TON	10
	Eye Bolts	10TON	10
	Eye Bolts	20 TON	10
	Eye Bolts	40 TON	10
	Eye Bolts	60 TON	10
5	Hydra Crane	14 TON	3

6	Hydraulic Jack	200 TON	1
	Hydraulic Jack	150 TON	1
	Hydraulic Button Jack	50 TON	2
	Hydraulic Hollow Jack	100 TON	1
	Hydraulic Jack	100 TON	2
7	Lift	1500 Kg / 16 Person	2
8	Nylon Rope	1"	20 Mtrs
9	Truck Tippler (Hydraulic Truck Unloader)	100 Ton	6
10	Wire Rope Sling, Length 1.5 MTR	1/2"	4
	Wire Rope Sling, Length 2.0 MTR	1/2"	3
	Wire Rope Sling, Length 3.0 MTR	1/2"	3
	Wire Rope Sling, Length 1.5 MTR	3/4"	3
	Wire Rope Sling, Length 2.0 MTR	3/4"	3
	Wire Rope Sling, Length 3.0 MTR	3/4"	3
	Wire Rope Sling, Length 1.5 MTR	1"	2
	Wire Rope Sling, Length 2.0 MTR	1"	2
	Wire Rope Sling, Length 3.0 MTR	1"	2
	Wire Rope Sling, Length 6.0 MTR	2.5"	3
11	Air Reciver	1m3	18
	Air Reciver	2m3	7
	Air Reciver	5m3	6
12	Air Drier	2340m3/hr	
	Air Drier	4680m3/Hr	
13	Compressor	180 cfm	2
	Compressor	412 cfm	5
	Compressor	644 cfm	5
14	Screw Compressor	1067m3/hr	1
	Screw Compressor	1067m3/hr	1

APPROVED DRAWING



LIST OF IMPORTANT GOVT. OFFICIALS AND HOSPITALS

Annexure-5

Sr. No.	Particulars	Contact No.	Remark
1	D C SARAIKELA	234002(O)	
2	PCB	2431030,100(O)	
3	ADITYAPUR PS	2372666	
4	S&P	234004(O)	
5	GAS LEAKAGE LPG	9234703505	
6	TMH EMERGENCY	2431035	
7	MGM HOSPITAL	08572360859	
8	SADAR HOSPITAL	0657-234002	
9	FIRE DEPARTMNET	09471129929	

CONFINED SPACE

- a) Cement silo
- b) Flyash silo
- c) Hopper building
- d) Hot air generator
- e) Clinker silo
- f) Vertical Roller Mill

LIST OF FIRST AID BOX LOCATIONS

FIRST AID BOX LOCATIONS & AREA OWNER LIST			
#	AREA	QTY	AREA OWNER / RESPONSIBILITY
1	CCR Main office	1	Security
2	Packing Plant	1	Packing Plant
3	Store	1	Store
4	Security main gate	1	Security
5	Logistics office	1	Logistics
6	Ambulance	1	Security
7	RMP Gate	1	Security
8	Mech Workshop	1	Mech
9	VRM Area	1	Mech
10	Truck yard	1	Security

ANNEXURE 8

LIST OF PPEs USED IN PLANT

S. No	Details of PPE	Storage location
1	Full Body Safety Harness, life-line & Fall arrester. Retractable fall arrestor,	Main Stores
2	GUM BOOT	Main Stores
3	EAR PLUG	Main Stores
4	WELDING BLACK GLASS 3 1/4" x 4 1/4"	Main Stores
5	HAND GLOVE COTTON 14"	Main Stores
6	HAND GLOVE LEATHER	Main Stores
7	HAND GLOVE RUBBER ACID & ALCOHOLIC PROOF 14"	Main Stores
8	GOGGLE WHITE	Main Stores
9	SAFETY HELMET FIBER, (White, Yellow, Green, Blue & Red)	Main Stores
10	DUST MASK	Main Stores
11	HAND SCREEN FOR WELDING WITH HANDLE	Main Stores
12	TAPE BARICADING 4" (300 MTR. ROLLES)	Main Stores
13	LEG GUARD, APRON & ARM GUARD	Main Stores
14	SAFETY SHOES	Main Stores

SAFETY TRAINING

1. Induction training
2. Road safety training for Drivers/Khalasi
3. Workers training
4. Staffs training
5. Safety day gate meeting.
6. Firefighting training

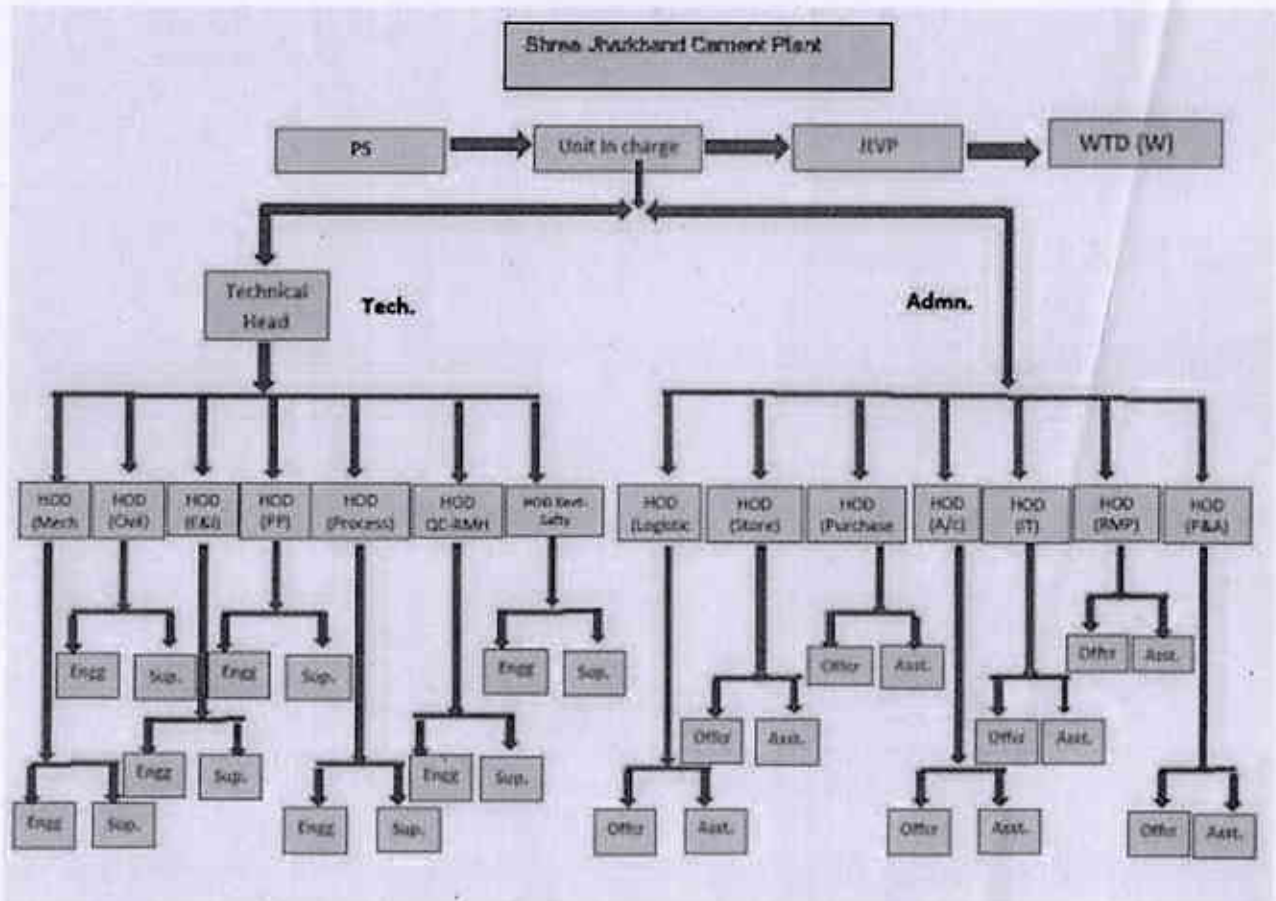
LIST OF KEY PERSONS

NAME	CONTACT NUMBER
Sh Ashok Kumar (Unit Incharge)	7727002102
Sh Ramakant Singh HOD(P&A)	7091593242
Sh Indervir Singh HOD(Security)	6307617904
Sh Rohit Mishra(Safety Deptt)	9358836642
Sh Sanub TS (Medical staff)	8789461823

ANNEXURE-11**EMERGENCY CONTACT NO.**

- 1) Fire Brigade:- 9358800406
- 2) Ambulance:- 9358800405
- 3) Medical aid:- 8789461823
- 4) Electrical emergency:- 9358836654
- 5) Time office/HOD(P&A):- 9116667464/7091593242
- 6) Safety patroller :- 9358836642
- 7) Security In charge:- 6307617904

ORG CHART



Shree Jharkhand Cement Plant

A Unit of Shree Cement Ltd.

Heat Stress Prevention Plan

Scope: This Plan covers employees who are exposed to heat stress hazards on the job.

Policy: Organization is committed to protecting employees from the hazards of hot conditions and to preventing heat-related illnesses at the workplace. We will identify, evaluate, and control potential exposure of our employees to extreme temperature, humidity, and other heat-related factors.

Plan Administration

Plan Administrator. The Plan Administrator is responsible for implementing the Heat Stress Prevention Program, monitoring work area heat conditions and worker physiological parameters, and for ensuring that employees are trained to recognize the signs and symptoms of heat stress and what to do if these occur.

The Administrator may designate and authorize other personnel to implement specific components of the Plan.

Supervisors. Supervisors are responsible for monitoring weather conditions at the jobsite and adjusting work schedules as necessary, encouraging employees to frequently consume water and take periodic rest breaks when working in hot conditions, monitoring employees for signs of heat stress, providing appropriate first aid, and contacting emergency services if necessary.

Employees. Employees are responsible for monitoring their own personal risk factors for heat-related illness and taking appropriate steps to prevent heat stress, including frequent consumption of water and other acceptable fluids and periodic rest breaks. In addition, employees may be paired with a "buddy" to monitor for signs and symptoms of heat stress.

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Plan Review and Update

This Plan will be periodically reviewed and updated when:

- New activities or equipment that create heat stress hazards are introduced into the workplace.
- Evaluations of heat stress hazards, injuries, and illnesses demonstrate that the current Plan is outdated or not effective.
- Regulatory or applicable national consensus standards change that require this Plan to be updated.

Definitions

Acclimatization or acclimate is the physiological (i.e., physical, mechanical, and biochemical) change that allows the human body to adapt or get used to the effects of a new physical environment or climate. After a period of acclimatization, the same physical activity will produce fewer cardiovascular demands. The worker will sweat more efficiently, causing better evaporative cooling, and thus will more easily be able to maintain normal body temperatures.

Environmental risk factors for heat illness includes working conditions that increase the likelihood of heat illness, such as air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, and protective clothing and equipment worn by employees.

Evaporative cooling takes place when sweat evaporates from the skin. High humidity reduces the rate of evaporation and thus reduces the effectiveness of the body's primary cooling mechanism.

Globe temperature is the temperature inside a blackened, hollow, thin copper globe.

Heat is a measure of energy that is transferred by a difference in temperature.

Heat wave is any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit (°F) and at least 10°F higher than the average daily temperature in the preceding 5 days.

Heat illness or heat stress is a serious medical condition resulting from the body's inability to cope with a particular heat load. It includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

Metabolic heat is a byproduct of the body's activity.

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Natural wet bulb (NWB) temperature is measured by exposing a wet sensor, such as a wet cotton wick fitted over the bulb of a thermometer, to the effects of evaporation and convection. The term "natural" refers to the movement of air around the sensor.

Personal risk factors for heat illness includes factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that may affect the body's physiological response to heat.

Radiation is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

Heat-Related Illnesses

Heat syncope is a condition where the brain does not receive enough oxygen because blood pools in the extremities, resulting in a loss of consciousness. This reaction is similar to that of heat exhaustion and does not affect the body's heat balance. However, the onset of heat syncope is rapid and unpredictable. Heat syncope is a fainting episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. Cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution ($\pm 0.3\%$ sodium chloride), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Recent studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat exhaustion is a condition with symptoms of headache, nausea, vertigo, weakness, thirst, and giddiness. Fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a medical emergency.

Heat fatigue is a temporary state of discomfort and mental or psychological strain arising from prolonged heat exposure. It is generally caused by fluid loss. Workers unaccustomed to the heat are particularly susceptible and can suffer, to varying degrees, a decline in task performance, coordination, alertness, and vigilance. There is no treatment for heat fatigue except to remove the

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heat stress before a more serious heat-related condition develops. The severity of transient heat fatigue will be lessened by a period of gradual adjustment to the hot environment (heat acclimatization).

Heat rash is "prickly" heat manifested as red papules (i.e., small, inflammatory, irritated spots on skin) and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs on skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat stroke occurs when the body's system of temperature regulation fails, and body temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are confusion, irrational behavior, loss of consciousness, convulsions, a lack of sweating (usually), hot and dry skin, and an extremely high body temperature. If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of work load and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict.

Rhabdomyolysis is a medical condition sometimes caused by heat stress and prolonged physical exertion in which muscle fibers break down, die, and release electrolytes and proteins into the bloodstream. Left untreated, it can lead to kidney damage, irregular heart rhythms, and death. Symptoms include muscle cramps, muscle pain, dark urine, weakness, inability or decreased ability to perform physical exercise at the normally expected level or duration, and joint pain or stiffness.

Hazard Assessment

The Administrator or designee will conduct an initial inspection and hazard assessment of all work areas and environments where hot conditions are anticipated or may occur. He or she will periodically conduct follow-up inspections to ensure compliance with this Plan and to evaluate the effectiveness of heat stress control measures.

During the assessment the inspector will:

- *For outdoor environments:* Determine when weather conditions and work demands may increase the risk of heat-related illness
- *For indoor environments:* Determine building and facility operating characteristics that may cause, contribute to, or alleviate hot conditions.
- Determine whether engineering and administrative controls are functioning properly.
- Verify information obtained from employee interviews.

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- Perform temperature measurements and make other determinations to identify potential sources of heat stress.

Investigators will discuss any operations that have the potential to cause heat stress with engineers or other knowledgeable personnel. A walk-around inspection will cover all affected areas. Heat sources such as furnaces, ovens, and boilers, and relative heat load per employee will be noted. In addition, personal protective equipment (PPE) and protective clothing will be assessed for its potential to increase the risk of heat stress.

Heat Stress Factors

The following workplace factors will be considered in the assessment for heat stress:

- Air temperature
- Weather conditions
- Availability of shade
- Radiant heat sources
- Conductive heat sources
- Humidity
- Direct physical contact with hot objects
- Workload activity and duration
- Semipermeable or impermeable protective clothing

The following worker heat sensitivity factors will also be considered in evaluating the potential for heat stress:

- Age
- Weight
- Degree of physical fitness
- Degree of acclimatization
- Metabolism
- Use of alcohol or drugs
- Medical conditions and use of prescription medications
- Prior heat injury (predisposes an individual to additional injury)

Physical signs and symptoms of heat stress will be discussed with employees every 45 minutes and reviewed as necessary. Employees will be trained and directed to monitor each other's actions, speech, and appearance for signs and symptoms of heat-related illnesses.

Heart rate. To check the heart rate, count the radial pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period.

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Oral temperature. Oral temperature can be checked with a clinical thermometer after work but before the employee drinks water. If the oral temperature taken under the tongue exceeds 37.6°C (100°F), shorten the next work cycle by one-third.

Body water loss. Body water loss can be measured by weighing the worker on a scale at the beginning and end of each work day. The worker's weight loss should not exceed 1.5% of total body weight in a work day. If a weight loss exceeding this amount is observed, fluid intake should be increased.

Monitoring Hot Conditions

For outdoor work environments, the following monitoring methods will be used to assess the risk of heat stress:

- Local weather forecasts, including temperature, humidity, and heat index
- weather forecasts by government.
- For indoor work environments, the following monitoring methods will be used to assess the risk of heat stress.

	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Medium	Medium	Medium	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	High

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Heat Index-associated protective measures for workers

Heat Index	Risk level	Protective measure
Less than 91°F (33°C)	Lower (caution)	Basic health and safety planning
91°F to 103°F (33°C to 39°C)	Moderate	Implement precautions and heighten awareness
103°F to 115°F (39°C to 46°C)	High	Additional precautions to protect workers

Heat Stress Prevention Program

This Heat Stress Prevention Program describes controls and work practices to protect employees from heat stress while working in hot conditions.

General Ventilation

General ventilation will be used where feasible and practical to dilute hot air with cooler air. Portable or local exhaust systems will be provided for small areas where general ventilation is not feasible or practical. If the dry bulb temperature is higher than 35°C (95°F) and the air is dry, evaporative cooling may be improved by air movement. When the dry bulb temperature exceeds 35°C and the relative humidity is 100%, air movement will make the worker hotter and forced ventilation will not be used to alleviate heat stress.

Fans

Fans will be provided where general ventilation is insufficient or impractical and when evaporative cooling will be improved by air movement.

Air Cooling or Conditioning

Air cooling or conditioning systems will be provided where feasible and practical.

Shields

Shields may be used to reduce radiant heat (i.e., heat coming from hot surfaces) for surfaces that exceed 35°C (95°F) within the worker's line of sight. Cooler surfaces surrounding the worker assist in cooling because the worker's body radiates heat toward them. The reflective surface of the shield will be kept clean to maintain its effectiveness.

Insulation

Heating pipes will be insulated or otherwise shielded to reduce radiant heat.

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Rest Room

Cool rooms will be used as a recovery area near hot jobs.

Heat Stress Prevention Work Practices

Work practices will be implemented to reduce the risk of elevating an employee's core body temperature. Heat stress prevention practices that may be implemented individually or in combination include:

- Employee work and rest intervals.
- Continual personal monitoring of physiological signs of heat stress.
- Provide and encourage workers to drink water and/or other suitable cool liquids at a rate of at least 1 quart per employee per hour.
- Establish and implement acclimatization schedules.
- Use warm-weather cooling garments.
- Reduce the physical demands of work, e.g., excessive lifting or digging with heavy objects.
- Provide recovery areas such as air-conditioned enclosures and rooms.
- Use shifts such as early morning, cool part of the day, or night work.
- Use intermittent rest periods with water breaks.
- Use relief workers.
- Use worker pacing.
- Assign extra workers and limit worker occupancy, or the number of workers present, especially in confined or enclosed spaces.
- Schedule work in hot conditions for the cooler part of the day.
- Schedule routine maintenance and repair work in hot areas for the cooler seasons of the year.

Rest Breaks and Shade

The Administrator or designee will determine the work/rest intervals and communicate them to employees by SOP. Work/rest intervals are adjusted throughout the work shift as needed and communicated to each employee at the conclusion of an applicable rest period, prior to reentry into a work area. Guidelines for work/rest schedules for this site are provided in the Work/Rest Schedule for Heat Stress Table.

For outdoor work, a shaded area will be provided for employees to take rest breaks. The shaded area will be large enough to accommodate all employees who are taking a rest break at any given point in time. Shaded structures will be located as close as practicable to the work area and will be accessible to all workers. Employees will be allowed and encouraged to take preventative cool-down rest breaks to prevent heat stress as needed.

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Work/Rest Schedule for Heat Stress Table (HAG & Cement Mill Operation Area)

Work Area or Air Adjusted Temperature Range	PPE Level	Work Period
Air (1.5 meter far from HAG wall): 28 to 33 Degree °C	Heat Resistance Apron, Face Shield, Hand Gloves & Safety Shoes	approx. 20 to 30 min work in Hot zone at regular interval of approx. 2 Hrs.
Floor (1.5 meter far from HAG wall): 30 to 35 Degree °C		
Feeder door(Inside): 354 Degree °C		
HAG wall: 60 C to 68 Degree °C		
Wall (1.5 meter far from HAG wall): 26 to 32 Degree °C		
1.5 meter far from HAG wall: 30 to 32 Degree °C		
HAG furnace: Approx. 800 to 1000 Degree °C		
Cement mill operation working area Air: 27 to 30 °C		

*Readings taken with the help of pyrometer.

Fluid Replacement

Since dehydration is a primary cause of heat illness, employees on this site follow the regimen for liquid consumption detailed in the table Liquid Replacement Regimen.

Work Area Air or Adjusted Temperature Range	Work Period Between Drinks	Liquid Type
High	whenever required	Water or ORS
Medium	45 minutes	Water or ORS
Low	60 minutes	Water or ORS

Cool (50°-60°F) water or other cool caffeine- and alcohol-free liquid will be made available to workers free of charge to encourage them to drink small amounts frequently. Ample supplies of liquids will be placed close to the work area. Enough water will be provided to allow all workers to consume at least one quart per hour throughout the entire work shift.

For workers exposed to heat stress hazards who are traveling to remote jobsites or otherwise away from a fixed location, any necessary purchases of bottled water or other suitable liquids for the prevention of heat illness will be reimbursed.

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Daily exposure time. The acclimatization program will expose employees to work in hot conditions for progressively longer periods. For workers who have had previous experience in jobs where heat levels are high enough to produce heat stress, the exposure time per day progression will be:

- 50% exposure on day one
- 60% on day two
- 80% on day three
- 100% on day four

For new workers who will be similarly exposed, the exposure time per day progression will be:

- 20% on day one
- 20% increase in exposure each additional day

During a heat wave (any day in which the predicted high temperature for the day will be at least 80°F and at least 10°F higher than the average daily temperature in the preceding 5 days, all employees will be closely observed by a supervisor or other designated individual for signs of heat stress.

Personal Protective Equipment

The Administrator or designee will determine the types of PPE that may be used to minimize heat stress after engineering controls and work practices have been implemented and workers are still exposed to heat stress hazards. Such PPE will be provided as needed and where feasible and practical.

Reflective Clothing

Reflective clothing varies from aprons and jackets to suits that completely enclose the worker from neck to feet and can stop the skin from absorbing radiant heat. Because most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary cooling systems can be used under the reflective clothing.

High Heat Procedures

When the temperature equals or exceeds 95°F, additional high-heat procedures will be implemented. High heat procedures include:

- Effective communication by voice, direct observation, a mandatory buddy system, or other means will be maintained so that employees can contact a supervisor at any time. If the supervisor is unable to be in physical proximity to workers for observation or communication purposes, an electronic device such as a cell phone may be used if reception is reliable.

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- Frequent communication will be maintained with employees working alone or in smaller groups via phone, two-way radio, or other means to assess for possible signs of heat stress. Employees will be contacted regularly and as frequently as possible throughout the day.
- Effective communication and direct observation for alertness and/or signs and symptoms of heat illness will be conducted frequently. When the supervisor is not available, a designated alternate responsible person must be assigned to look for signs and symptoms of heat illness. If a supervisor, designated observer, or any employee reports any signs or symptoms of heat illness in any employee, the supervisor or designated person will take immediate action commensurate with the severity of the illness.
- Employees will be reminded constantly throughout the work shift to drink plenty of water and take preventative cool-down rest breaks as needed.
- One or more employees will be designated on each worksite to call for emergency medical services if necessary.
- Pre shift meetings will review the high heat procedures, encourage employees to drink water, and remind them of the availability of shaded areas for cool-down rest breaks.

Emergency Response

The Administrator or designee will implement the following emergency response procedures for the type of heat stress indicated.

An effective method of communicating in order to summon emergency medical services will be maintained at all times at all worksites. The following specific methods will be used:

- Landline telephone
- Cell phone
- Notify the supervisor
- Contact OHC

Heat Stroke

If a worker shows signs of possible heat stroke, professional medical treatment will be obtained immediately.

The supervisor or co-workers will take the following steps to treat a worker with heat stroke:

1. Call ambulance and notify the supervisor. Provide clear and precise directions to the worksite to emergency responders as specified above.
2. Move the sick worker to a cool, shaded area where he or she can be reached by an emergency medical provider.
3. Cool the worker using methods such as soaking his or her clothes with water, spraying, sponging, or showering him or her with water, and fanning his or her body.

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The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first-aid treatment. Regardless of the worker's protests, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Heat Exhaustion

Heat exhaustion responds readily to prompt treatment. A worker suffering from heat exhaustion should:

- Rest in a cool, shaded, or air-conditioned area.
- Drink plenty of water or other cool, nonalcoholic beverages.
- Take a cool shower, bath, or sponge bath.

Workers suffering from heat exhaustion will be removed from the hot environment and given fluid replacement. They will also be encouraged to get adequate rest.

Heat Syncope (Fainting)

Workers who exhibit signs of heat syncope will be instructed by a supervisor or co-workers to:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.

Heat Cramps

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Not return to strenuous work for a few hours after the cramps subside, because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if the worker has heart problems, the worker is on a low-sodium diet, or the cramps do not subside within one hour.

Heat Rash

Workers experiencing heat rash will be treated according to the following procedures:

- Directed to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Use dusting powder to help increase comfort.

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Training

All employees who are exposed or potentially exposed to heat stress will receive training regarding heat stress-related injuries and illnesses and prevention measures at the time of assignment to work activities that involve hot conditions.

Training on the following topics will be provided to all employees with the potential for exposure to heat stress hazards:

- Procedures for preventing heat stress as described in this Plan.
- Knowledge of the hazards of heat stress, including environmental factors that might contribute to the risk of heat-related illness (temperature, humidity, radiant heat, air movement, conductive heat sources, workload activity and duration, and personal protective equipment).
- Recognition of predisposing factors, danger signs, and symptoms (e.g., age, degree acclimatization, medical conditions, consuming alcohol, caffeine use, nicotine use, and use of medications that affect the body's response to heat).
- The importance of frequent drinking of small quantities of water.
- The importance of and procedures for taking frequent rest breaks in shaded areas during hot conditions.
- The different types of heat illness and the signs and symptoms of each.
- Awareness of first-aid procedures for heat stroke and other heat stress-related illnesses.
- The procedure for reporting signs and symptoms of heat-related illness in themselves and co-workers.
- Employee responsibilities in avoiding heat stress.
- The concept, importance, and methods of acclimatization.
- Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments.
- Use of protective clothing and equipment, including the importance of removing heat-retaining PPE, such as non-breathable chemical resistant clothing, during breaks.
- First aid and other emergency response procedures

In addition to the above, supervisors will receive additional training on the following topics:

- The procedures supervisors are expected to follow to carry out their duties under this Plan.
- The procedures to follow when an employee demonstrates signs or reports symptoms of possible heat illness, including emergency response procedures.
- How to monitor weather reports and respond to hot weather advisories.

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Refresher Training

Personnel covered by this Plan will receive refresher heat stress training at least once per year, and whenever there is a change in work assignment or hot conditions, or when a new heat source is introduced to a work area.

Recordkeeping

Heat stress-related illnesses that are relieved by first aid and do not require additional medical treatment will not be recorded in injury and illness records.

Heat stress-related illnesses that require medical treatment beyond first aid will be recorded as an illness or injury and illness recordkeeping forms. For example, the administration of fluids by intravenous injections is recordable as medical treatment, and more serious cases of heat disorders involving such injections will be entered into the injury and illness records. In addition, any diagnosis by a physician or other licensed healthcare professional of heat syncope (fainting due to heat) will be recorded.

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SHREE JHARKHAND CEMENT PLANT

(A UNIT OF SHREE CEMENT LTD.)

VIII : Hansda-Burudih, Dist : Seraikela Kharsawan, Jharkhand 833220



Ref: JHGU/P&A/2020

Date: 24.08.2020

TO

The Chief Inspector of Factories, Jharkhand
Ranchi

Subject: Submission of Revised HIRA (Hazards Identification & Risk Analysis) for Shree Jharkhand Cement Plant (A unit of Shree Cement Ltd.)

Dear Sir,

We are submitting herewith HIRA (Hazards Identification & Risk Analysis) documents of Shree Jharkhand Cement Plant in triplicate for your perusal and approval please.

With Regards,

For Shree Jharkhand Cement Plant
(A unit of Shree Cement Ltd.)

(Ashok Kumar)
Unit In-Charge

Encl :- 1. As stated above.

[Handwritten signature]
03/09/2020
कार्यालय
कारखाना निरीक्षक
सरायकेला-खरसावाँ अंचल नं०-३
झारखण्ड

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RECORD

Hazard Identification & Risk Analysis

Prepared By: Shri Sanjay
Kumar Sharma

Dept Mechanical

Sl. No.	Location	Description of Activity	Sub-Activity	Activity Type (HSE)	Check Interval	Expiry	Occur Time	Hazard & Consequence	Frequency of Occurrence	Significance	Preventive Measures	Control Measures	Responsible Person	Assessment (V)	Remarks
1	Maintenance of Compressors		Maint. of other equipments in vicinity	RT	D		Physical	None Generated	3	High	Isolation	Use of relevant PPE's	D	2	Use of PPE's
Cleaning			RT	D		Physical	Compressed Air Leakage	1	High	Isolation	Isolation, Work Permit	D	2	Isolation, Work Permit	
Conditioning of equipment			RT	D		Physical	Spillage of oil	3	High & Fat	Isolation	Use of containment Bags	D	2	Isolation	
Dust Cleaning from Hopper			RT	D		Physical	Sudden start-up of the agit. during maintenance work	3	High	Isolation	Isolation	D	2	Isolation	
2	Maintenance of Bag Filters		Dust Cleaning from Hopper	RT	D		Physical	Dust exposure	3	High	Isolation	Use of relevant PPE's	D	2	Isolation
Caps Replacement			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Maint. Of Rotary Air Locks			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
3	Maintenance of Bag Filters		Bags Replacement/Cleaning	RT	D		Physical	Sudden start-up of the agit. during maintenance work	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
4	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
5	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
6	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
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Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
7	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
8	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
9	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
10	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
11	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
12	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
13	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
14	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
15	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
16	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
17	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
18	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
19	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
20	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
21	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
22	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
23	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
24	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
25	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
26	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
27	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation	
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
28	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
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Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
29	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
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Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
30	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
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Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
31	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
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Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
32	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
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Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
33	Maintenance of Churn Phase System		Replacement of Seal	RT	D		Physical	Exposure to moving Machinery	3	High	Isolation	Isolation	D	2	Isolation
Isolation			RT	D		Physical	Fall from height	3	High	Isolation	Isolation	D	2	Isolation	
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34	Maintenance of Churn Phase System		Replacement of Seal	RT											

Hazard Identification & Risk Analysis

Dept: Mechanical

Sl. No	Location	Area/Activity	Activity Type (RISKS)	Event/Initiator	Exposure	Hazard Type	Hazard Sub Category	Frequency of Occurrence	Time Available for Action	Existing Controls in Place	Likelihood	Severity and Extent of Injury	Acceptable (Y/N)	Feasibility of Control	
1	PPC Silo	Silo cleaning work	R	D	High	Physical	Gate to be inspect for material fluidity	Potential hazard	22	physical injury	platform, safety belt, PPE	Minor	Low	Y	Engineering Control & PPE
							Air slide to dismantle of block gate from Pneumatic gate, only manual gate to be kept for material controlling	Potential hazard, suddenly equipment start up	22	physical injury	Working platform, isolation & lock out	Minor	Low	Y	Engineering & administrative control
							Hang extraction air slide from adopter box side to find out space for cleaning	tools & tackles failure, potential hazard	22	physical injury	SWL & test certificate checking, safety belt	Minor	Low	Y	Engineering Control & PPE
							Adopter box mouth to be clean by applying air pressure of about 6 kg and if required chipping to be done to break lumps & Lightning arrangement to be provided at 3mm	dust emission, potential hazard	22	physical injury	PPE & Safety belt	Minor	Low	Y	Engineering Control & PPE
							Winch machine rope to be hang out and man cage arrangement to be provided to clean cone portion	tools & tackles failure, potential hazard	22	physical injury	SWL & test certificate checking, safety belt	Minor	Low	Y	Engineering Control & PPE
							Silo cone cleaning to be done by chipping machine	tools & tackles failure, potential hazard, electrical hazard	22	physical injury, electrical shock	SWL & test certificate checking, safety belt, proper termination & earthing	Major	High	Y	Engineering, administrative control & PPE
							Silo wall cleaning to be done by chipping machine	tools & tackles failure, potential hazard, electrical hazard	22	physical injury	SWL & test certificate checking, safety belt, proper termination & earthing	Major	High	Y	Engineering Control & PPE
							Cleaned material to be taken out through manual gate	dust emission, potential hazard	22	physical injury	joggle, nose mask & safety belt	Minor	Low	Y	PPE
							After ensuring the cleanliness of silo Air slide to be fix with pneumatic & motorize gate	tools & tackles failure, potential hazard	22	physical injury	SWL & test certificate, safety belt	Minor	Low	Y	Engineering Control & PPE
									22	physical injury		Minor	Low	Y	Engineering Control & PPE



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

CRANE OPERATION

Prepared by: Sachin sharma

Reviewed by: Rohit Bhati

Approved by: Sanjay Kumar Agrawal

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Pre-operation Inspection of Crane	Nil	<ol style="list-style-type: none">1. Conduct a visual inspection of the Crane.2. Carry out daily checks in accordance with the crane manufacturer's instructions.3. Record inspections in the crane log book.4. Any faults identified need to be reported to the Site Manager and the Crane NOT used until all faults have been repaired.5. Person responsible for operating the crane must hold an appropriate crane ticket.6. Determine the weight of the load to be lifted and ensure the capacity of the Crane (in relation to extension) is not exceeded.	Crane Operator/ Supervisor
2	Start-up and plan the use of the Crane	<ol style="list-style-type: none">1. Unstable or uneven ground surface, potential rollover of Crane.	<ol style="list-style-type: none">1. Ground surfaces must be inspected to ensure the even surface and ensure that surface will be tough enough to move crane.2. Plan the travel path and ensure route is clear of obstructions and maintain a safe distance from all site workers.	Supervisor/Crane Driver



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

CRANE OPERATION

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
		2. Overhead power lines, potential electrocution.	3. Check for and ensure no overhead power lines are within the range of crane.	
3	Operate and mobilise the Crane	Collision with other site vehicles and workers may cause physical injury	<ol style="list-style-type: none">1. Before operating the Crane check for and ensure all ground workers and other vehicles are well clear of the work area.2. Ensure reverse horn are audible and all back and front lights are working at all times.3. Operating speed when driving the Crane must be within the limit of plant.4. Ground surfaces must be inspected to ensure there would be no topple of crane.	Crane Driver



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

CRANE OPERATION

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
4	Lifting	<p>Falling materials resulting injury of workman and equipment's.</p> <p>General Public / Traffic interaction, potential collision and crush injuries</p>	<ol style="list-style-type: none">1. Qualified rigger to be deployed for load attachment.2. Choose a sling of adequate capacity and Safe working load to be define before attachment.3. Position the lifting assembly over the centre of gravity and aim for a direct lift.4. Ensure all workers, including the riggers are well clear before lifting the load.5. Smoothly and gradually raise the load 150mm off the ground and hold. Check the slinging and balance of the load.6. When the load is stable, continue the lift until it is high enough to clear all objects in its path.7. Tag Lines are to be used if the load is raised above shoulder height.8. Maintain visual sight of crane driver at all times. If the rigger cannot see the crane driver, lifting is to stop immediately.	Crane Driver/ Rigger
5	Travelling	Falling materials, crush injuries to riggers and/or other workers	<ol style="list-style-type: none">1. When travelling with a suspended load, brake and accelerate gently to minimise load swing.2. Ensure load is lowered as far as possible before travelling with load.	Crane Driver/ Rigger



SRI CEMENT LIMITED

JOB SAFETY ANALYSIS

CRANE OPERATION

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
		General Public / Traffic interaction, potential collision and crush injuries	<ol style="list-style-type: none">3. Maintain visual sight of crane driver at all times. If the rigger cannot see the crane driver, travelling is to stop immediately.4. Ensure all workers are well clear of the crane and load. Crane driver is to stop if obstructions or workers are in close proximity to travel route.5. If loading / unloading in a public space, a spotter / traffic controller must be positioned in the immediate work area for the duration of the task.6. Where required, barricading and signage must be positioned to warn pedestrians and drivers of the crane activity.7. Crane driver is to give way to all other traffic and pedestrians, unless managed by a traffic controller.	

 SRI CEMENT LIMITED	<p style="text-align: center;">JOB SAFETY ANALYSIS</p> <p style="text-align: center;">Grinding, Welding & Gas cutting</p>
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Prepared by: Amit gautam

Reviewed by: Akash Singh

Approved by: Sanjay Kumar Sharma

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Work start-up and issue permit to work	<ol style="list-style-type: none"> 1. Unauthorized work 2. Invalid permit 3. Lack of competency 4. Lack or poor communication 	<ol style="list-style-type: none"> 1. Obtain a hot work permit before starting the job 2. Get the permit validated for the specific day 3. Area in charge must ensure that all work activities are carried out by competent personnel 4. Conduct Toolbox meeting and Job safety analysis to all workman involved in the work activities. 5. Responsible person will conduct inspection, monitor the work activities considering all safety aspect 	Area In charge
2	Grinding	<ol style="list-style-type: none"> 1. Spark during grinding. 2. Damaged grinding disc 3. Flying object/eye injuries 	<ol style="list-style-type: none"> 1. Make sure guards are fitted to all moving parts 2. Ensure the proper use of guards 3. Inspect the grinding discs prior to starting work (ring test) 4. Make sure that disc is compatible with the grinding machine 5. Proper PPE (Gloves + Mask). Goggles, Helmet. 6. Only experienced personnel to use the equipment. 	Supervisor



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Grinding, Welding & Gas cutting

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
3	Gas Cutting	<ol style="list-style-type: none">1. Burns.2. Fire Hazard.3. Explosion.4. Lack of competency5. Damaged or leaking cylinders or hoses	<ol style="list-style-type: none">7. Wear a face shield while grinding8. Make sure an eye wash station is available nearby6. Proper isolation of system.7. All cylinders to be secured.8. Flash back arrestor to be use between the cylinder & torch9. Hoses in good condition.10. Proper PPE.11. Correct Fire Extinguisher to be available at site.12. Deployment of Experienced personnel.13. Inspect the cylinders & hoses before starting the job14. Color coding of hoses (L.P.G.&O2).	Supervisor and Workers



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Grinding, Welding & Gas cutting

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
4	Welding	<ol style="list-style-type: none">1. Fire Hazard2. Burns.3. Spatter burns4. Damage cable5. Hot end pieces of welding rods.6. Sparking7. Damage cable8. UV rays	<ol style="list-style-type: none">1. Before starting welding make sure the area is clear of all types of combustible materials2. Make sure fire extinguishers are available on site3. Wear proper PPE for welding ie., Hand Gloves, welding goggles/welding mask,4. Certified Equipment to be use.5. Proper earthing of equipment and direct earthing to the equipment.6. Certified Welder.7. Proper lugs for cable to be used.8. Ensure that rod holder is in good condition.9. Ensure that forward and return cables are in good working condition.10. Use proper cable connector for extension and connection to the welding M/C.11. If cables are crossing the road then ensure proper protection.12. The welder must wear welding goggles	Supervisor and worker

Depth: 9.03 Lib

[illegible]

SHREE JHARKAHND CEMENT LIMITED

Deptt. : Q.C & Lab

Section : Sample Preparation Room

Location : Jharkahnd

Sr.No	Activity	D	Potential Aspect of Quality/Environment/Safety	N	Q	Potential Impact on Quality/Environment/Health & Safety	Potential Causes/Mech a-nisms of	Sev.	Occ/Det	Current Control	RPN	Evaluation Criteria			Status of Significance	Applicable Legal Requirement	Recommended Action	Responsibility	Target Date	Actual Action Taken	Severity	Occurrence	Detection	RPN(Residual)
												LC	BC	IPC	Yes	No								
01	Crushing of samples	I	Dust Generation	N	E*	Air Pollution	Failure Due to	1	4	1	4	✓	✓	✓	✓	✓								
			Dust Inhalation	N	S	Health Hazard	Reduction	1	1	1	1	✓	✓	✓	✓	✓								
			Noise Generation	N	S	Health Hazard	In size of	1	1	1	1	✓	✓	✓	✓	✓								
			Injury	N	S	Safety	Stores by	1	1	1	1	✓	✓	✓	✓	✓								
02	Grinding of Samples	I	Dust Generation	N	E*	Air Pollution	Crusher Due to	1	4	1	4	✓	✓	✓	✓	✓								
			Dust Inhalation	N	S	Health Hazard	Grinding	1	1	1	1	✓	✓	✓	✓	✓								
			Noise Generation	N	S	Health Hazard	Grinding of Material	1	1	1	1	✓	✓	✓	✓	✓								
			Injury	N	S	Safety		1	1	1	1	✓	✓	✓	✓	✓								
			Injury	N	S	Safety	Handling of	1	1	1	1	✓	✓	✓	✓	✓								
03	Oiling & Greasing of Laboratory Equipment	I	Consumption of Oil/Grease	N	E*	Resources Depletion	Grinding bowl Oil & Grease	1	3	1	3	✓	✓	✓	✓	✓								
			Sprinkle of Oil/Grease	N	E*	Resources Depletion	Consumed	1	1	1	1	✓	✓	✓	✓	✓								
04	Disposal of Samples Left after Testing	I	Wastage of Natural Resources	A	E*	Waste Management	Required quantity of Sample is used for Testing	1	4	1	4	✓	✓	✓	✓	✓								
05	Storage & handling of material	I	Mishandling of Material	N	Q	Wear & Tear & wrong placement of the material	Lock of knowledge or ignorance of the material rapidly	1	4	1	4	✓	✓	✓	✓	✓								
06	Working with rotating machines or parts	I	Chances of Accident	N	S	Injury	Failure to warn or obey rules	1	4	1	4	✓	✓	✓	✓	✓								

SHREE JHARKAHND CEMENT LIMITED

Deptt. Q.C & Lab		Section : Residue Testing Room		Location : Jharkhand																						
Sr.No	Activity	D	Potential Aspect of Quality/Environment/ Safety	N	Q	Potential Impact on Quality/Environment/ Health & Safety	Potential Causes/Mechanisms of accidents	Sev	One	Two	Current Control	RPN	Evaluation Criteria			Status of Significance		Applicable Legal Requirement	Recommended Action	Responsibility	Target Date	Actual Action Taken	Severity	Occurrence	Direction	RPN(Residue)
													LC	BC	IPC	Yes	No									
01	Sample Preparation	I	Dust Generation Dust Inhalation	N	E	Air Pollution Hazard	Failure Transfer & Mixing of Samples	1	4	1	1 Use of Dust Mask	4	4	✓	✓	✓	✓									
02	Residue Testing	D	Water Consumption	N	E	Resource Depletion	Water is used for residue	1	4	1	1 Required/Specified Quantity is used	4	4	✓	✓	✓	✓									
03	Disposal of Tested Specimen	I	Results not within Specified Limits Solid Waste Generation	A	Q	Poor Quality Waste Management	Testing Process Fault Specimen Prepared for Testing	1	1	1	1 Informed to CCR for Corrective Action 1 Tested Specimen is collected by Civil Deptt. And used for Civil Work	1	1	✓	✓	✓	✓									
04	Sample Collection From Sampler	I	Injury	N	S	Safety	Cycling in unsafe area	1	4	1	1 Cycling for Sample Collection through Safe area	4	4	✓	✓	✓	✓									
05	Storage & handling of material	I	Mishandling of Material	N	Q	Wear & Tear & wrong placement of the material	Lack of knowledge or experience in doing the material rapidly	1	4	1	1 To ensure proper handling of the material by employing skilled workforce	4	4	✓	✓	✓	✓									

SHREE JHARKAHND CEMENT LIMITED

SHREE JHARKHAND CEMENT LIMITED

Deptt. : Q.C. & Lab.

Section : Chemical Section

Location : Jharkhand

Sr.No	Activity	D	Potential Aspect of Quality/Environment/ Safety	N	Q	Potential Impact on Quality/Environment/ Health & Safety	Potential Causes/Mechanisms of a-riams of	Srv	Occ. Del.	Current Control	RPN	Evaluation Criteria	Status of Significance	Applicable Legal Requirement	Recommended Action	Responsibility	Target Date	Actual Action Taken	Severity	Occurrence	Detection	RPN(Residual)
01	Gravimetric Analysis	D	Fumes & Gases Generation	N	E	Air Pollution	Due to heating of chemical solutions	1	4	1 Use of Exhaust Fan	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				N	S	Health Hazard		1	1	1 Proper Handling of Chemicals	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
										Use of apron & PPEs												
										During Testing												
02	Cleaning of Glass- Wares & Disposal of Chemical Contaminated Water	I	Waste Water Generation	N	S	Health Hazard	Due to contact of chemicals with parts of body.	1	1	1 Follow the instructions displayed in Chemical Lab. & MSDS & use of PPEs	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				N	E	Water Management	Contamination of Chemicals in Water	1	4	1 Water is disposed of After Acid/base treatment i.e. maintaining pH between 6 to 8 (OCP No. 21.07.01 OCP.06)	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

SHREE JHARKHAND CEMENT LIMITED

Dept: Q.C & Lab		Section: Computer Room, Chemical Section, Physical Section, X-Ray Room, Sample preparation Room										Location: Jharkhand																				
Sr.No	Activity	D Potential Aspect of Quality/ Environment/ Safety	N Q Potential Impact on Quality/ Environment/ Health & Safety	N Q Potential Causes/Mech a-nisms of	Sev	Occ	Det	Current Control	RPN	Evaluation Criteria			Status of Significance		Applicable Legal Requirement	Recommended Action	Responsibility	Target Date	Actual Action Taken	Severity	Occurrence	RPN/Residual										
										LC	BC	IPC	Yes	No																		
01	Testing by Electrically Operated Equipment/ Instrument	1	D Consumption of Energy	N E*	N E*	Resources Depletion	Electrical Failure Supply is Given to Machines for operation	1	4	1	Reduction of load/ Switch off when Testing is not Carried out	4	4	✓																		
												4	4	✓																		
												4	4	✓																		
												4	4	✓																		
02	Report Generation		D Use of Papers	N E*	N E*	Resources Depletion	Printing on Papers	1	4	1	Only Final Report is Generated after Sourcing/Checking on Computer	4	4	✓																		
												4	4	✓																		
												4	4	✓																		
												4	4	✓																		
	Solid Waste Generation		N E*	N E*	Waste Management	Collected at a specified area & sent to Site Dept for burn in fire	1	4	1	Waste Papers are collected at a specified area & sent to Site Dept for burn in fire	4	4	✓																			
											4	4	✓																			
											4	4	✓																			
											4	4	✓																			
	UV Rays		N S	N S	Health Hazard	Radiation From monitor effects eye sight	1	4	1	Use of anti-glare screen/low radiation monitors	4	4	✓	✓																		
											4	4	✓	✓																		
											4	4	✓	✓																		
											4	4	✓	✓																		
	Body Pain		N S	N S	Safety	Wrong posture	1	4	1	Use of proper Chair	4	4	✓	✓																		
											4	4	✓	✓																		
											4	4	✓	✓																		
											4	4	✓	✓																		
03	Cleaning of Laboratory		D Solid Waste Generation	N E*	N E*	Waste Management	Cleaning of Dust	1	4	1	Garbage & Dust Disposed of at the Specified Place	4	4																			
												4	4																			
												4	4																			
												4	4																			
04	Working on Computer		D Wrong data entry	N Q	N Q	Creation of wrong record	Lack of knowledge or may be due to stress	1	4	1	To provide repeated training	4	4	✓																		
												4	4	✓																		
												4	4	✓																		
												4	4	✓																		

D=Direct, I=Indirect, N=Normal, A=Abnormal, E=Emergency, Q=Quality, E=Environmental, S=Safety, LC=Legislation Concern, BC=Business Concern, IPC=Interest Party Concern, RPN=Risk Priority Number
 Sev=Severity, Occ=Occurrence, Det=Detection, Significance Criteria = At present all RPN of 6 and above are considered as Significant

Prepared by

Approved by

Issued by

Issue Date

SHREE CEMENT LIMITED
IMS REVIEW

Dept : Packing plant										Section : PACKING PLANT			Location: SJHCP						
Doc. No. : IMS/13/01/IMR/01																			
Edition No. :										Effective Date : 01.07.19									
S.No.	Activity	D	Potential Aspects of Quality / Environment/ Health & Safety	N	Q	Potential Impact on Quality / Environment/ Health & Safety	Potential Causes / Mechanisms of failure	Sev.	Occ.	Det.	Current Control	R P N		Evaluation Criteria			Status of Significance		Applicable Legal Requirement
												Present	Last	LC	BC	IPC	YES	NO	
1+A15: T26	Placement	I	Dustemission Inhalation of Dust	N	E	Air pollution	Dust lying on floor	2	2	1	Regular Sweeping By Machine	3	4	Y	Y	Y	Y ⁴		Air (Prevention and Control of pollution) Act, 1981 ⁴
2	Weightment checking of filled bags at weighing scale	D	Under or Over Weight	N	S	Respiratory problems	Cement particle	1	1	1	Providing dust mask & goggles Hourly	1	1		Y			Y	
				N	Q	Customer complaints	Due to calibration disturb & due to quality of Cement	1	4	1		4	5	Y	Y		Y ⁴		Weight and Measurement
		D	Dust generation	N	E	Air pollution	Dustemission from porosity of bags	1	1	1	NIL	1	1	Y	Y	Y	Y ⁴		Air (Prevention and Control of pollution) Act, 1981 ⁴
				N	S	Respiratory problems	Cement particle Defective loading	1	1	1	Use of PPEs	1	1		Y			Y	
3	Stacking of bags	D	Loading not as per pattern Dust generation due to bags when put on slack on hight Inhalation of Dust	A	Q	Chance of wrong loading Air pollution		1	1	5	Pattern advice slip	5	5		Y			Y	
				N	E	Respiratory problems	Spillage from bags	1	5	1	Continues awarness & training Providing dust mask & goggle	4	5						Air (Prevention and Control of pollution) Act, 1981 ⁴
4	Collection of spillages Cement	D	Dust emission Inhalation of Dust	N	S	Respiratory problems	Cement particle	1	1	1		1	1		Y			Y	Air (Prevention and Control of pollution)
				N	E	Air pollution	Open Tractor/ Trolley	1	5	1		5	5	Y	Y	Y	Y ⁴		
5	Loading of loose cement	D	Spillage	N	E	Respiratory problems	Cement particle	1	5	1	Providing dust mask and goggles	4	5		Y			Y	
				N	E	Air pollution	Spillage from over loading , Uncontrolable valve	1	5	1	Slop overloading , use both gates of bin	5	5				Y ⁴		Air (Prevention and Control of pollution) Act, 1981 ⁴
6	Working on computer ⁵	D	Wrong data entry	N	Q	creation of wrong record	Lack of knowledge or may be due to stress	2	1	2	To provide respected training	3	4		Y				

ANNEXURE - 11

Ed-01 / Is-06 / 01.04.14

SHREE CEMENT LIMITED IMS REVIEW

Dept : Packing plant	Section : PACKING PLANT	Location: SJHCP
Doc. No. : IMS/13/01/IMR/01		
Revision No. : 1	Effective Date : 01.07.19	

S.No.	Activity	D	Potential Aspects of Quality / Environment/ Health & Safety	N	Potential Impact on Quality / Environment/ Health & Safety		Potential Causes / Mechanisms of failure	Sev.	Occ.	Det.	Current Control	R P N		Evaluation Criteria			Status of Significance		Applicable Legal Requirement		
					Q	A						E	S	Present	Last	LC	BC	IPC		YES	NO
7	office work General/ Routine	D	Ergonomics hazard	N	S	Muscular pain ,headache overexertion	Wrong posture of sitting or inadequate infrastructure	2	1	2	To ensure adequate infrastructure	3	4		Y			Y			
8	without safety helmet Moving In Plant	D	Body injury	A	S	Head injury	Due to non use of Helmet	3	1	1	use of helmet during moving in	4	4		Y			Y			
9	Engagement of contractual workforce	D	workingwork force may engage	N	G	Abolition of Employees Act	Child labour may be engage at work place	3	1	1	To follow Rules & standards	4	4		Y			Y			

D=Direct, I=Indirect, N=Normal, A=Abnormal, E=Emergency, Q=Quality, E=Environmental, S=Safety. LC=Legislation Concern, BC=Business Concern, IPC=Interest Party Concern, Significance Criteria = At present all RPN of 6 and above are considered as Significant

Prepared by

Santosh Kumar pandey

Approved by

Amit Kumar

JHOU (of Sirree Cement Ltd)	
Deptt:- Civil	
Hazard Identification & Risk Analysis	
Deptt: Civil	
S/N	
Location	
Description of Activity	
Sub Activity	
Activity Type (S/N)	
Direct Indirect	
Legal	
Hazard Type	
Hazard Sub Category	
Apparatus # of Risk	
Risk Associated	
Existing controls in place	
Initial Risk Level	
Accepted by (N/A)	
Hierarchy of controls	
Control by Action	
Responsibility for (overseeing) action	
Target date for completion	
Residual risk assessment	
Residual Risk Level	

Sr No	Location	Description of Activity	Sub Activity	Activity Type (S/N)	Direct/Indirect	Legal	Hazard Type	Hazard Sub Category	Potential # of Risk	Risk Associated	Existing controls in place	Initial Risk Level	Accepted by (N/A)	Hierarchy of controls	Control by Action	Responsibility for corrective action	Target date for completion	Residual risk assessment				
1	At Site (Public Plant premises)	Loading & unloading of materials	NR	I			Physical	Exposure to dust	2	Health Problem	use of proper PPE's	medium	N	Usage of PPEs				C	4	medium		
2			NR	I			Physical	Hazard associated with movement of heavy earth materials	3	Injury	Excavation permit, Risk assessment, Tool box talk, inspection & maintenance of tools & use of PPEs	medium	N	Admin control				D	3	medium		
3			NR	I			Physical	collapse due to loose soil	3	Injury, engulfment	Work instruction	medium	N	Engg Control Admin Control				D	3	medium		
4		Soil laying	NR	I			Physical	Cut with sharp edges	3	Injury	use of proper PPE's	medium	N	Usage of PPEs						D	4	Low
5			NR	I	1	Physical	Working at height	3	Injury due to fall	Work Permit, Tool Box Talk	medium	N	Admin control						C	4	medium	
6			NR	I		Physical	slipping of pipe due to mislanding	3	Injury	Tagged & cased with chain tags	Low	Y	Engg Control PPE's						E	4	Low	
7		Construction/ Digging/ Excavation/ Paving/ Paving etc.	NR	I			Physical	Collapse of soil		slip & fall	Baricading	medium	N	Admin Control						E	3	Low
8			NR	I		Physical	Falling at object	3	Injury	Use of proper PPE's	medium	N	Usage of PPEs						D	4	medium	
9			NR	I		Physical	Carrying weight	1	spinal disorder	Work instruction	medium	N	Engg Control						C	3	medium	
10		Chipping with vibrating hammer	NR	D			Ergonomic	Vibration	1	fatigue	Tool box talk, Job rotation	medium	N	Admin control						C	4	medium
11			NR	D		Physical	Flying object	1	Injury	use of proper PPE's	medium	N	Usage of PPEs						C	4	medium	
12			NR	D		Physical	Electric shock	1	Injury/ Shock	Work instruction	medium	N	Admin control						D	4	Low	
13		Scaffolding	NR	I			Physical	Collapse due to improper bracing or deviation from design parameters	5	Injury	Approved Designs of scaffold, Routine inspection & supervision, WAH permit, Deploy Trained scaffolders	medium	N	Engg Control						D	3	medium
14			NR	I		Physical	Hit by painting tools	1	Injury	use of proper PPE's	medium	N	Usage of PPEs						C	4	medium	
15			NR	I		Physical	Exposure to VOC's Chemicals	1	Respiratory problems skin irritation	use of proper PPE's	medium	N	Usage of PPEs						C	4	medium	
16		Painting/ repainting	NR	I			Physical	Fall from Height	1	Injury	Inspection of expt, Tool box talk, WAH Permit, PPE	medium	N	Admin control, usage of PPE's						D	3	medium
17	NR		I		Physical	Exposure to Noise	3	Hearing loss	use of proper PPE's	medium	N	Usage of PPEs						C	4	medium		
18	R		D		Physical	Exposure to dust	2	Health Problem	Use of proper PPE's	medium	N	Usage of PPEs						D	4	medium		

Construction/
Digging/
Excavation/
Painting/
Pumping etc
At Site
(within Plant
premises)

17	Chaining	Outlets & drains	R	I		Biological	Out. description	Z	Disease or Injury	Use of PPEs, material, personal hygiene & medical test	medium	N	Use, PPEs					C	4	medium
18	Capacity Work	Repairing or Making of wooden turn	NR	I		Physical	Out. description	1	Injury	Foot box use, use of proper PPEs	medium	N	Usage of PPEs					D	4	Low
19	Lifting / lowering heavy objects	Mal handling during construction activities	NR	D		Physical	Fall of Object/ Equipment	2	Injury	Work instruction, Training	Medium	N	Admin Control					D	2	Medium
20	Handover	Malware Movement	R	D		Physical	Slips by heavy force		Injury	First Aid Control / PPEs	Medium	N	Admin control					D	2	Low
21			R	DI		Physical	Slippage due to water logging/ accumulation		Injury	Immediate cleaning & prevent leakage	Medium	N	Administrative & Control					D	4	Low
22	Plant	Operational Equip	NR	I		Physical	Topple fire to incinerator / air pollution / plating or plating without turning stabilizers	2	Injury	Training Sessions with Leveling Adjustment	medium	N	Engg. Control					E	3	Low
23	Elevated Work Platform	Working on Equip	NR	I		Physical / Fall from height	Working at Height	1	Injury	Routine inspection & supervision, & Use of PPEs	Low	Y	Admin Control					E	4	Low
24			NR	I		Physical / Fall from height	Failure of Operating System	1	Injury	Emergency Stop Switches, Emergency Release Valve & Interlock (for slow lowering)	Medium	N	Engg. Control					E	4	Low
25	Demolition of structure	Manual Handling / Fall of Material	NR	DI		Physical / Fall from height	Fall of Object/ Equipment	2	Injury	Work Permit, Tool Box Talk	medium	N	Administrative					C	4	medium

Jharkhand Cement Plant (A Unit of Shree Cement Plant)
Job Safety analysis for Excavation Work
Civil Department,

Activity	Hazards	Mitigation/Reduction Plan
Excavation	Hitting buried utilities Property Damage Electrocution Crushing, flying, debris & noise	<ul style="list-style-type: none"> • Completed mark-outs of utilities and excavation permit prior to start of excavation work • Confirm location of all utilities within excavation area by hand digging • Verify mark-out was completed. • Wear proper PPE. • Keep appropriate distance for task at hand. • Have competent person examine area before work. • Keep spoils pile at least 01 mtr from edge of excavation. • Keep non-essential personnel away from work activities • Nearby installed equipment inspected well before excavation & effect of excavation during excavation to be observed carefully. If the equipment is within 1.2 mtr from excavation edge .

UNIT - Thermal Cement Plant	Hazard Identification & Risk Analysis	Prepared By: Chaitanya Thakur
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Dents Process

No.	Location	Description of activity	Exposure	Exposure Time (hrs)	Exposure Level	Hazard Type	Exposure to Contaminant	Frequency of Exposure	Potential for Injury	Exposure to Contaminant	Exposure Level	Exposure Time (hrs)	Exposure Level	Exposure to Contaminant	Exposure Level	Exposure Time (hrs)	Exposure Level
1	CCR	Process Operation	Cement Mill Operation	R	D	Physical	Potential hazard	15	physical injury	Equipment Starting, Stopping, Interlocking of drives	Unlikely	Major	Unlikely	Major	Unlikely	Major	Unlikely
				R	D	Physical	Potential hazard	10	physical injury	Equipment Starting, Stopping, Interlocking of drives	Unlikely	Major	Unlikely	Major	Unlikely	Major	Unlikely
				R	D	Physical	Potential hazard, HotWork	5	Burn injury	Training, Work Permit, Use of relevant PPE's	Possible	Major	Possible	Major	Possible	Major	Possible
				NR	D	Physical	Potential hazard, HotWork	2	Burn injury	Training, Work Permit, Use of relevant PPE's	Possible	Major	Possible	Major	Possible	Major	Possible
2	HAG	Maintenance of HAG and local furnace	HAG Coaling Cleaning	NR	D	Physical	Potential hazard, HotWork	5	Burn injury	Training, Work Permit, Use of relevant PPE's	Unlikely	Major	Unlikely	Major	Unlikely	Major	Unlikely
			Local Furnace Cleaning	NR	D	Physical	Potential hazard, HotWork	2	Burn injury	Training, Work Permit, Use of relevant PPE's	Unlikely	Moderate	Unlikely	Moderate	Unlikely	Moderate	Unlikely



JOB SAFETY ANALYSIS

HAG Coating cleaning

Prepared by: Rohit Kumar

Approved by: Chitrakant thakur

Reviewed by: Dev kumar

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Work start-up and issue permit to work	<ol style="list-style-type: none"> 1. Unauthorized work 2. Invalid permit 3. Lack of competency 	<ol style="list-style-type: none"> 1. Obtain an electrical isolation permit before starting the job. 2. Ensure all the PPEs available to workman at site. 3. Area in charge must ensure that all work activities are carried out by competent personnel 4. Conduct Toolbox meeting and Job safety analysis to all workman involved in the work activities. 5. Responsible person will conduct inspection, monitor the work activities considering all safety aspect 	CCR OFFICER
2	HAG Coating Cleaning	<ol style="list-style-type: none"> 1. Dust pollution 2. Burn Injuri 	<ol style="list-style-type: none"> 1. Proper isolation of system. 2. Use nose mask, googles & hand gloves while cleaning the hot dust. 3. Ensure proper tools and tackles while checking the hot coating material. 4. Only experienced personnel to use the equipment. 	CCR OFFICER



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

HAG Coating cleaning

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

RIGGING

Prepared by: Amit gautam

Approved by: Sanjay Kumar Sharma

Reviewed by: Akash Singh

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1.	After receiving the lift assignment and its weight, the participant will Conduct Two Minute Rule and Pre-Job Briefing	<ol style="list-style-type: none">General housekeeping issues (debris on floor or in load path) potential slips, tripping, or fallsOverhead obstacles and clearances that could come into contact with the crane operating zoneObstructed load path	<ol style="list-style-type: none">Remove any object posing a hazardSelect alternate load path if possible or brief on the location of the obstacle and how to maintain proper clearanceClear obstruction.	Area in charge/ Supervisor
2.	The participant selects and inspects rigging tools and tackles to use for the load to be rigged and lifted.	<ol style="list-style-type: none">Sharp edges on identified loads, wire rope slings, and related rigging tools and tacklesSelection of defective rigging hardware	<ol style="list-style-type: none">Use all PPE'S related to specified job like hand gloves, goggle, safety shoe and safety helmet etc.Select approved tools and tackles without defects and ensure safe working load	Supervisor/ Workman



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

RIGGING

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
3.	Attach rigging tools and tackles to the load.	1. Selection of tools and tackles under-rated for the load. 2. Unstable hitch for the load. 3. Slings contacting sharp edges	Determine safe working load as configured prior to lift, and select rigging tools rated for the loads to be lifted. Rig with different hitch Use softeners or edge protectors as appropriate	Supervisor / Rigger
4.	Use proper hand signals to raise load slightly and check balance	1. Unstable load	Determine Load Drop Zone. 1. Reattachment of slings and rigging tools to ensure the load is properly balanced. 2. Selection of different hitch if need to balance load. (Only one attempt to re-rig will be granted and at this step only). Repeat previous steps.	Supervisor / Rigger
5.	Attach tag line and use proper hand signals to lift move and land the load	1. Load drop causing employee/ workman injury	1. Set up load lifting zone, load path and lay down areas for each lifting exercise. 2. Instruct workman to keep away load lifting and load path zone. 3. Use a tag line to control load while being lifted or moved. 4. Use "move load slowly hand signals when starting and as appropriate to cause smooth operation of hoists to avoid jerking or other erratic movements during lifting exercises. 5. Use proper hand signals to direct load movement..	Supervisor / Rigger



JOB SAFETY ANALYSIS


Maintenance Weigh feeder

Prepared by: Lokesh Kumar Gautam

Reviewed by: Sudhansu Ranjan

Approved by: Bikas Bhardwaj

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Work start-up and issue permit to work	<ol style="list-style-type: none"> 1. Unauthorized work 2. Invalid permit 3. Lack of competency 	<ol style="list-style-type: none"> 1. Obtain an electrical isolation permit before starting the job. 2. Ensure all the PPEs available to workman at site. 3. Area in charge must ensure that all work activities are carried out by competent personnel 4. Conduct Toolbox meeting and Job safety analysis to all workman involved in the work activities. 5. Responsible person will conduct inspection, monitor the work activities considering all safety aspect 	Section In charge
2	Maintenance of weigh feeder	<ol style="list-style-type: none"> 1. Dust pollution. 2. Injuries. 	<ol style="list-style-type: none"> 1. Proper isolation of system. 2. Use nose mask and googles while cleaning the dust accumulation on weighing and load cell area. 3. Ensure proper tools and tackles while checking the load cell and measuring idlers. 4. Only experienced personnel to use the equipment. 	Section Engineer

 SHSCE CEMENT LIMITED		JOB SAFETY ANALYSIS	
		Maintenance Weigh feeder	
Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures
			Responsible Person

 SHREE CEMENT LIMITED	<div data-bbox="167 918 199 1187">JOB SAFETY ANALYSIS</div> <div data-bbox="255 851 287 1254">Maintenance/Troubleshooting VFD</div>
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Prepared by: Lokesh Kumar Gautam

Approved by: Bikas Bhardwaj

Reviewed by: Sudhansu Ranjan

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Work start-up and issue permit to work	1. Unauthorized work 2. Invalid permit 3. Lack of competency 4. Lack or poor communication	1. Obtain an electrical isolation permit before starting the job. 2. Ensure all the PPEs available to workman at site. 3. Area in charge must ensure that all work activities are carried out by competent personnel 4. Conduct Toolbox meeting and Job safety analysis to all workman involved in the work activities. 5. Responsible person will conduct inspection, monitor the work activities considering all safety aspect	Section Incharge
2	Blowring and Cleaning	1. Dust pollution. 2. Flying object/eye injuries	1. Proper isolation of system. 2. Ensure no loose connections and naked wire present inside the panel. 3. Ensure the proper use of guards 4. Proper PPE (Gloves + Mask). 5. Only experienced personnel to use the equipment.	Section Engineer



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance/Troubleshooting VFD

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
3	Troubleshooting	<ol style="list-style-type: none">1. Electric Shock2. Burns.3. Lack of competency4. Damage of Equipment's & Tools	<ol style="list-style-type: none">1. Proper isolation of system.2. Deployment of Experienced personnel.3. Maintenance Should be start only after DC Bus voltage discharged4. Proper PPE's.5. Use of Proper & Certified tools for specific job.6. Proper earthing of panel must be checked7. Correct Fire Extinguisher to be available at site.	Section Engineer



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance Packer & Packer Panel

Prepared by: Lokesh Kumar Gautam

Approved by: Bikas Bhardwaj

Reviewed by: Sudhansu Ranjan

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Work start-up and issue permit to work	<ol style="list-style-type: none">1. Unauthorized work2. Invalid permit3. Lack of competency4. Lack or poor communication	<ol style="list-style-type: none">1. Obtain a electrical isolation permit before starting the job.2. Ensure all the PPEs available to workman at site.3. Area in charge must ensure that all work activities are carried out by competent personnel4. Conduct Toolbox meeting and Job safety analysis to all workman involved in the work activities.5. Responsible person will conduct inspection, monitor the work activities considering all safety aspect	Section Incharge
2	Bowering and Cleaning	<ol style="list-style-type: none">1. Dust pollution.2. Flying object/eye injuries	<ol style="list-style-type: none">1. Proper isolation of system.2. Ensure no loose connections and naked wire present inside the panel.3. Ensure the proper use of guards4. Proper PPE (Gloves + Mask).5. Only experienced personnel to use the equipment.	Section Engineer



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance Packer & Packer Panel

Step No.	Description of Task Step	Hazard	Control Measures/ Preventive Measures	Responsible Person
3	Maintenance	<ol style="list-style-type: none">1. Electric Shock2. Burns.3. Lack of competency4. Injury5. Damage of Equipment's & Tools	<ol style="list-style-type: none">1. Proper isolation of system.2. Deployment of Experienced personnel.3. Maintenance Should be start only after DC Bus voltage discharged4. Ensure Air Line valve is closed before working on solenoid valves of packer spouts.5. Avoid any activities near packer while packer is in running condition.6. Ensure no air leakages to avoid pollution.7. Ensure Proper PPE's.8. Use of Proper & Certified tools for specific job.9. Proper earthing of panel must be checked10. Correct Fire Extinguisher to be available at site.	Section Engineer



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance of Electrical Equipment

Prepared by: Ram Pyre Sharma

Approved by: Brajesh Kumar
Sharma

Reviewed by: Bandhu Khadhe

Step No.	Hazard	Control Measures/ Preventive Measures	Responsible Person
1	Maintenance of 132KV Switchyard and Line	<ol style="list-style-type: none">1. Electrical Shock2. Falling from height <ol style="list-style-type: none">1. Insure isolation of HT Line from Grid.2. Insure the incoming isolator open and earth switch closed.3. Discharge the line/equipment terminal with grounded wire.4. Take permit to work at height for working on Gantry and Tower.5. Insure that all the people present at the site are using Proper PPE's.6. Give a brief training to workers about the job and related safety measures.7. Site Supervisor must have HT supervisory licence.	Site Supervisor & area In- Charge
2	Maintenance of HT motor	<ol style="list-style-type: none">1. Electrical Shock2. heat burn <ol style="list-style-type: none">1. Take the shutdown & ensure the breaker racked out and PTW Paper placed on feeder.2. Ensure space heater is 'switched off'.3. Allow sufficient cooling time of motor before entering in the slip ring chamber.4. Discharge the HT terminal with Ground wire.5. Use suitable PPE's.6. Before packing up the slip ring chamber or motor terminal, ensure all the carbon brush in correct	Site Supervisor and workers



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance of Electrical Equipment

Step No.	Hazard	Control Measures/ Preventive Measures	Responsible Person
		position and no foreign material left inside.	
3	Maintenance of LT motor	1. Electrical Shock	Supervisors and workers
4	Maintenance of Power / Distribution transformer	1. Electrical shock 2. Falling from height	Supervisors and workers
5	Highmast / Lighting Tower Maintenance	1. Electrical Shock 2. Falling from height	Supervisors and workers
6	Measurement of Temp and vibration	1. Electrical Shock 2. Potential threat from moving parts.	workers
7	electrical connection & disconnection of halogen/welding machine, chipping machine	1. Electrical Shock 2. Disconnect power supply before connection/disconnection of machine. 3. Use test lamp to check the availability of power & not tester. 4. Inspect cable for any damage which is being used. 5. Give connection only through MCB/RCCB connected Power Socket. 6. Provide proper insulation tape on cable joints.	workers



SHREE CEMENT LIMITED

JOB SAFETY ANALYSIS

Maintenance of Electrical Equipment

Step No.	Hazard	Control Measures/ Preventive Measures	Responsible Person
8	MCC feeder Checking	1. Use Suitable PPE's. 2. Use only insulated tools.	Supervisors and workers


Page 2 of 2

Shree Jharkhand Cement Plant (A unit of Shree Cement Limited)

Ambient Sound Level Monitoring Data Leq. in dB(A)								
Locations	Plant boundary near logistic building		Plant boundary near Rain water harvesting pond		Plant boundary near railway siding		Plant boundary near wagon tippler	
Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
Norms	75	70	75	70	75	70	75	70
Apr-20	Couldn't perform monitoring due to COVID-19 pandemic							
May-20	69.7	54.1	66.4	50.2	67.9	54.7	70.1	58.3
June-20	69.8	54.6	68.1	52.4	69.4	56.7	71.5	60.1
July-20	68.5	53.7	65.6	50.2	68.1	57.4	70.9	58.0
Aug-20	69.1	53.4	64.2	48.5	67.8	56.4	69.6	57.3
Sept-20	67.4	52.5	62.8	49.1	65.6	54.9	69.8	56.1

SHREE JHARKHAND CEMENT PLANT														
(A UNIT OF SHREE CEMENT LIMITED)														
P. O BURUDIH, HANSDA, DIST.SERAIKELA-KHARSAWAN(JHARKHAND)														
FORM-16 (JHARKHAND FACTORY ACT-1950)														
HEALTH REGISTER (FORM-16)														
(IN RESPECT OF PERSONS EMPLOYED IN OCCUPATIONS DECLARED TO BE DANGEROUS OPERATION UNDER SECTION 87)														
Sl. No	Department	Name of Worker	Sex	Age (at last birth day)	Date of employment on present work	Date of leaving or transfer to other work-with reason for discharge	Nature of job or occupation	Raw material or by products likely to be exposed to	Dates of medical examination and the		If declared unfit for work, state period of suspension with	Whether certificate of unfitness issued to the worker	Re-certified fit to resume duty on	Signature of certifying surgeon with date
									Dates	Results				
1	P&A	Ankur Upadhyay	Male	47 Years	10-May-00	--	P & A	Office Work	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
2	LOGISTICS	Babu Lal Mishra	Male	48 Years	01-Oct-05	--	Manager	Office Work	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
3	EFFICIENCY & DEVELOPMENT	Manish Kumar Chaturvedi	Male	34 Years	07-Dec-09	--	Office Work With site Supervision	Nil	21-Feb-19	Fit	NA	NA	NA	Dr. R.G. Sharma, 21-Feb-2019
4	INSTRUMENTATION	Sudhanshu Ranjan	Male	29 Years	01-Jul-13	--	assistant manager	process equipments	21-Jan-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 21-Jan-2019
5	MECHANICAL	Amit Gautam	Male	38 Years	27-Nov-13	--	--	Office Work	13-Feb-18	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 13-02-2018
6	PROCESS	Avinash Bahadur Singh	Male	32 Years	24-Jul-14	--	senior engineer	process Operation	18-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 18-02-2019
7	LOGISTICS	Savendra Kumar Tiwari	Male	27 Years	08-Aug-14	--	JUNIOR OFFICER	office work	01-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 01-02-2019
8	RMP	Mukesh Kumar Dwivedi	Male	35 Years	25-Aug-14	--	JUNIOR OFFICER	office work	25-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 25-02-2019
9	QUALITY	Talewar Singh	Male	56 Years	16-Jan-10	--	qc	NIL	26-Jul-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 26-Jul-2018
10	PROCESS	Ashok Kumar	Male	36 Years	29-Jun-15	--	AGM	NIL	13-Mar-19	Fit	NA	NA	NA	Dr. S.N. Pandey, 13-Mar-2019
11	ELECTRICAL	khade bandu natthuji	Male	43 Years	04-Aug-16	--	--	Electrical	30-Jan-18	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 30-Jan-2018
12	TAXATION	RUPESH KUMAR	Male	30 Years	01-Aug-16	--	OFFICER	office work	30-Jan-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 30-Jan-2019
13	ELECTRICAL	DEEPANSHU CHAUHAN	Male	27 Years	15-Dec-16	--	get	NA	12-Apr-18	Fit	NA	NA	NA	Dr. S.N. Pandey, 12-Apr-2018
14	MECHANICAL	Akash Singh	Male	32 Years	17-Feb-14	--	assistant manager	Official work and Erection site work	17-Jan-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 17-Jan-2019
15	PACKING PLANT	Dhananjay Srivastava	Male	42 Years	27-Apr-15	--	Technician mechanical	NA	05-Aug-19	Fit	NA	NA	NA	Dr. S.N. Pandey, 05-Aug-2019
16	MECHANICAL	Prince Kr. Upadhyay	Male	31 Years	27-Apr-15	--	Technician mechanical	NA	03-Aug-19	Fit	NA	NA	NA	Dr. S.N. Pandey, 03-Aug-2019
17	LAND ACQUISITION	BRIJENDRA KUMAR TRIPATHI	Male	53 Years	28-Aug-17	--	--	--	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
18	GENERAL	Susanta Kumar Ghosal	Male	45 Years	04-Jan-18	--	--	--	09-Jul-19	Fit	NA	NA	NA	Dr. S.N. Pandey, 09-Jul-2019
19	LOGISTICS	naveen kumar	Male	30 Years	01-Jun-17	--	assistant	office work	01-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 01-02-2019
20	INFORMATION TECHNOLOGY	Yogesh Sharma	Male	26 Years	18-Jan-18	--	--	Site work	18-Jan-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 18-Jan-2018
21	P&A	Rama Kant Singh	Male	52 Years	26-Apr-18	--	DEPUTY GENERAL MANAGER	NA	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
22	ELECTRICAL	Abhimanyu Mutha	Female	25 Years	17-May-18	--	NA	NA	17-May-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 17-May-2018
23	ACCOUNTS	Arnab Das	Male	30 Years	31-May-18	--	NA	NA	31-May-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 31-May-2018

24	HR	Yashwant Kumar	Male	27 Years	11-Jun-18	--	NA	NA	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
25	QUALITY	abhishek raj purohit	Male	24 Years	25-Jun-18	--	--	--	14-Jan-20	Fit	NA	NA	NA	Dr. Rakesh Sharma, 14-Jan-2020
26	MECHANICAL	manoj singh rajawat	Male	24 Years	02-Jul-18	--	--	--	02-Jul-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 02-Jul-2018
27	QUALITY	Shibam Chakraborty	Male	27 Years	16-Jul-18	--	NA	NA	16-Jul-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 16-Jul-2018
28	INFORMATION TECHNOLOGY	Shokat Ali	Male	31 Years	23-Jul-18	--	senior assistant	NA	23-Jul-18	Fit	NA	NA	NA	Dr. S.N. Pandey, 23-Jul-2018
29	LOGISTICS	Ashish Sevada	Male	29 Years	06-Aug-18	--	NA	NA	06-Aug-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 06-Aug-2018
30	CIVIL	Kapildev Biswas	Male	32 Years	01-Sep-18	--	NA	NA	01-Sep-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 01-Sep-2018
31	QUALITY	Chandra Shekhar	Male	28 Years	03-Sep-18	--	NA	NA	03-Sep-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 03-Sep-2018
32	CIVIL	Sunil Golani	Male	52 Years	03-Apr-09	--	NA	NA	04-Feb-19	Fit	NA	NA	NA	Dr. Rakesh Sharma, 04-Feb-2019
33	MECHANICAL	Sanjay Kumar Sharma	Male	37 Years	24-Mar-14	--	NA	NA	03-Jan-19	Fit	NA	NA	NA	Dr. Rakesh Sharma, 03-Jan-2019
34	ACCOUNTS	Hemant	Male	36 Years	22-Oct-18	--	NA	NA	22-Oct-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 22-Oct-2018
35	QUALITY	Suresh Chandra Mali	Male	28 Years	22-Oct-18	--	NA	NA	22-Oct-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 22-Oct-2018
36	PROCESS	Bhavesv Vyas	Male	24 Years	26-Oct-18	--	NA	NA	26-Oct-18	Fit	NA	NA	NA	Dr. R.G. Sharma, 26-Oct-2018
37	LOGISTICS	DIWAKAR SINGH BAGHEL	Male	37 Years	19-Nov-18	--	OFFICER	office work	01-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 01-02-2019
38	LOGISTICS	PRATIPAL SINGH SARANG DEVOTE	Male	32 Years	23-Apr-18	--	ASSISTANT OFFICER	office work	01-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 01-02-2019
39	LOGISTICS	KISHOR KUMAR RAY	Male	34 Years	22-Aug-18	--	assistant officer	office work	01-Feb-19	Fit	NA	NA	NA	Dr. SANTOSH KUMAR, 01-02-2019
40	P&A	Badri Nath Dey	Male	30 Years	03-Sep-18	--	Office work	--	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
41	PACKING PLANT	BINOD CHAUDHARY-LOADER	Male	37 Years	01-Jul-19	--	PACKING	cement	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
42	PACKING PLANT	SIKANDAR KUMAR-LOADER	Male	34 Years	01-Jun-19	--	PACKING	cement	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
43	PACKING PLANT	PINKU KUMAR RAY	Male	35 Years	01-Oct-19	--	PACKING	cement	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020
44	PACKING PLANT	BABULAL SAH	Male	45 Years	14-Nov-19	--	PACKING	cement	04-Aug-20	Fit	NA	NA	NA	Dr. R.G. Sharma, 04-Aug-2020


Dr. R. G. SHARMA
 Add. G. M. (Health Services)
 MBBS, CIH, MBA, MSc. IH, Safety & Environment
 SHREE CEMENT LIMITED, BEAWAR

Resident at :- bhopal -district,madhya Pradesh

and that he/she Fit for employment in factory as
as an adult/child

**Hls/Her descriptive marks are
BM OVER LT HAND**

(1). Refusal of certificate

(2). Certificate of being revoked

initial of certifying surgeon

Dr. G. M. (Maurice) Strydom

WE CEMENT WANTO, BEAVAL

Initial of certifying surgeon

התאחדות המורים והתלמידים

THE CEMENT TRUST, BIAWA

NOTE :- Exact details of cause of physical disability should be clear stated.

Patient Name	: MR. BRIJENDRA KUMAR TRIPATHI (15532)	Patient ID / Billing ID	: 112327 / 132599
Age / Sex	: 52 Yrs 12 M / Male	Specimen Collected at	: Shree cement
Ref. Doctor	: Dr. MD	Sample Collected On	: 27/01/2020 13:06
Ref. Client Name	: Shree cement	Billed On	: 27/01/2020 12:43
Sample ID	: 2001002894S	Reported On	: 27/01/2020 19:19

SHREE CEMENT LTD - EMPLOYEES

PATHOLOGY REPORT

Test Description	Value(s)	Unit	Reference Range
<u>COMPLETE BLOOD COUNT</u>			
Hb (Haemoglobin)	15.3	gm/dl	Male : 13.0-18.0 Female : 12-16.5 Infant : 13.5-19.5 Children : 12.0-14.5
RBC Count	4.92	millions/cumm	4.5 - 6.5
TLC (Total Leucocyte Count)	7500	/cumm	4000 - 11000
<u>DIFFERENTIAL COUNT</u>			
Neutrophils	65	%	40 - 65
Lymphocytes	30	%	20 - 45
Monocytes	01	%	2 - 10
Eosinophils	04	%	1 - 6
Basophils	0	%	0 - 1
Band Cells			
Platelet Count	1.65	Lakhs/cumm	1.50 - 4.5
PCV (Packed Cell Volume)	44.7	%	35 - 54
MCV (Mean Corpuscular Volume)	90.85	f	76 - 96
MCHC (Mean Corpuscular Hb Concentration)	34.23	gm/dl	32 - 35
MCH (Mean Corpuscular Haemoglobin)	31.1	pg	27 - 32

ESR (ERYTHROCYTE SEDIMENTATION RATE)

ESR	08	mm after 1 hour	0 - 20
Method	Westergren's		

BLOOD GLUCOSE LEVEL (FASTING)

Glucose Fasting	84	mg/dl	70 - 110
Method	GOD POD		

URINE ROUTINE EXAMINATION REPORT

PHYSICAL EXAMINATION

Volume	20	ml
Colour	Colourless	
Appearance	Clear	

Patient Name : **MR. BRIJENDRA KUMAR TRIPATHI (16532)**
 Age / Sex : **52 Yrs 12 M / Male**
 Ref. Doctor : **Dr. MO**
 Ref. Client Name : **Shree cement**
 Sample ID : **2001002894S**

Patient ID / Billing ID : **112327 / 132599**
 Specimen Collected at : **Shree cement**
 Sample Collected On : **27/01/2020 13:06**
 Billed On : **27/01/2020 12:43**
 Reported On : **27/01/2020 19:19**

Specific Gravity : **1.010** **1.010 - 1.030**
 Reaction (PH) : **6.5** **4.8 - 7.6**

CHEMICAL EXAMINATION

Protein	Absent	Absent
Glucose	Absent	Absent
Ketones	Absent	Absent
Nitrite	Negative	Negative
Urobilinogen	Normal	Normal

MICROSCOPIC EXAMINATION

Pus Cells	1 - 2	/hpf
RBC	Absent	/hpf
Epithelial Cells	1 - 2	/hpf
Casts	Absent	/LPP
Crystals	Absent	

LIPID PROFILE

S.Cholesterol	201	mg/dl	Desirable : < 200 Borderline high : 200 - 239 Undesirable : > 240
S.Triglycerides	163	mg/dl	Desirable : < 150 Borderline high : 150 - 199 High : 200 - 499 Very High : > 500
S. HDL	49	mg/dl	Desirable : < 40>br />
S. LDL	119.4	mg/dl	Desirable : < 130 Borderline : 130-159 Undesirable : > 160
S. VLDL	32.6	mg/dl	5 - 51
LDL/HDL Ratio	2.44		0 - 3.6
S.Cholesterol/HDL Ratio	4.1		0-5.0

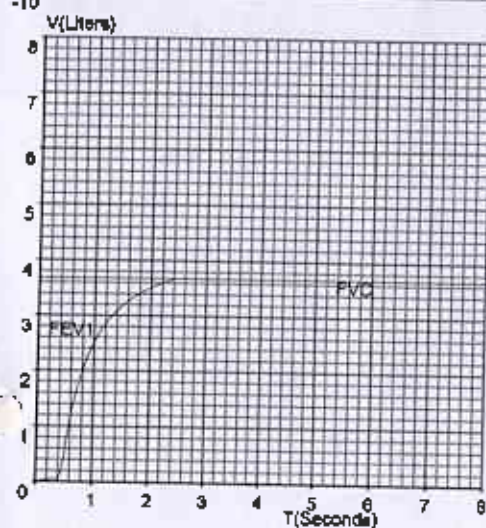
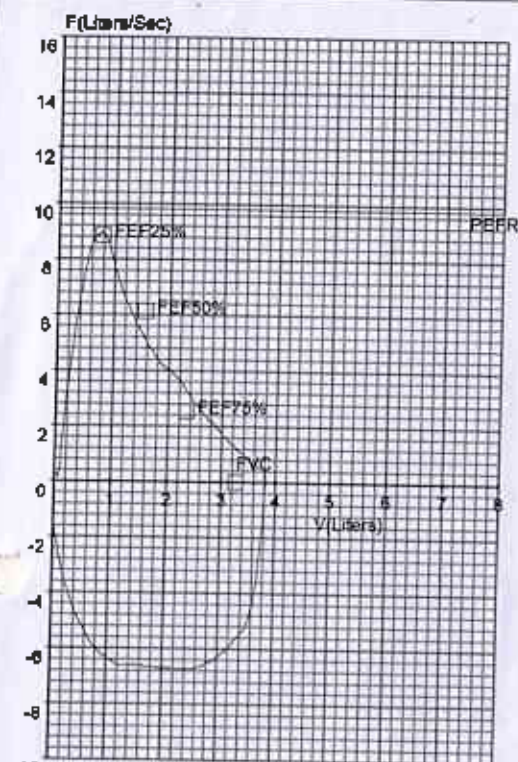
****END OF REPORT****

B. Baita
Dr Budhan Baita
 (MBBS MD Path)
 Consultant Pathologist

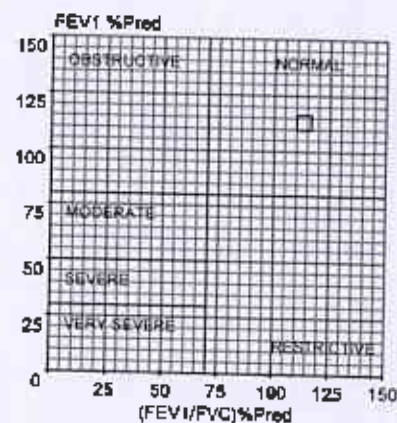
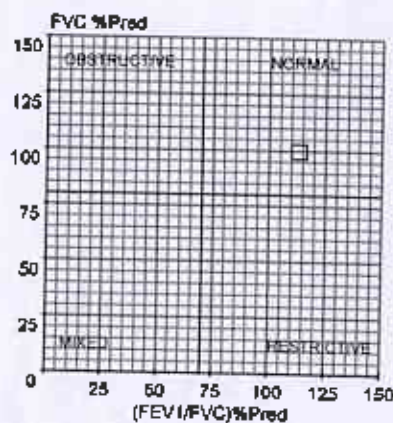
179 - BRIJENDRA KUMAR TRIPATHI
53 Years / Male / Ht 170 Cms / 80 Kgs / Non-Smoker

FVC TEST
Date: 20-01-2020 (T4)

Pred Eqn : CLARITY Eth.Corr : 100 Temp : 0°C
Ref By : NONE



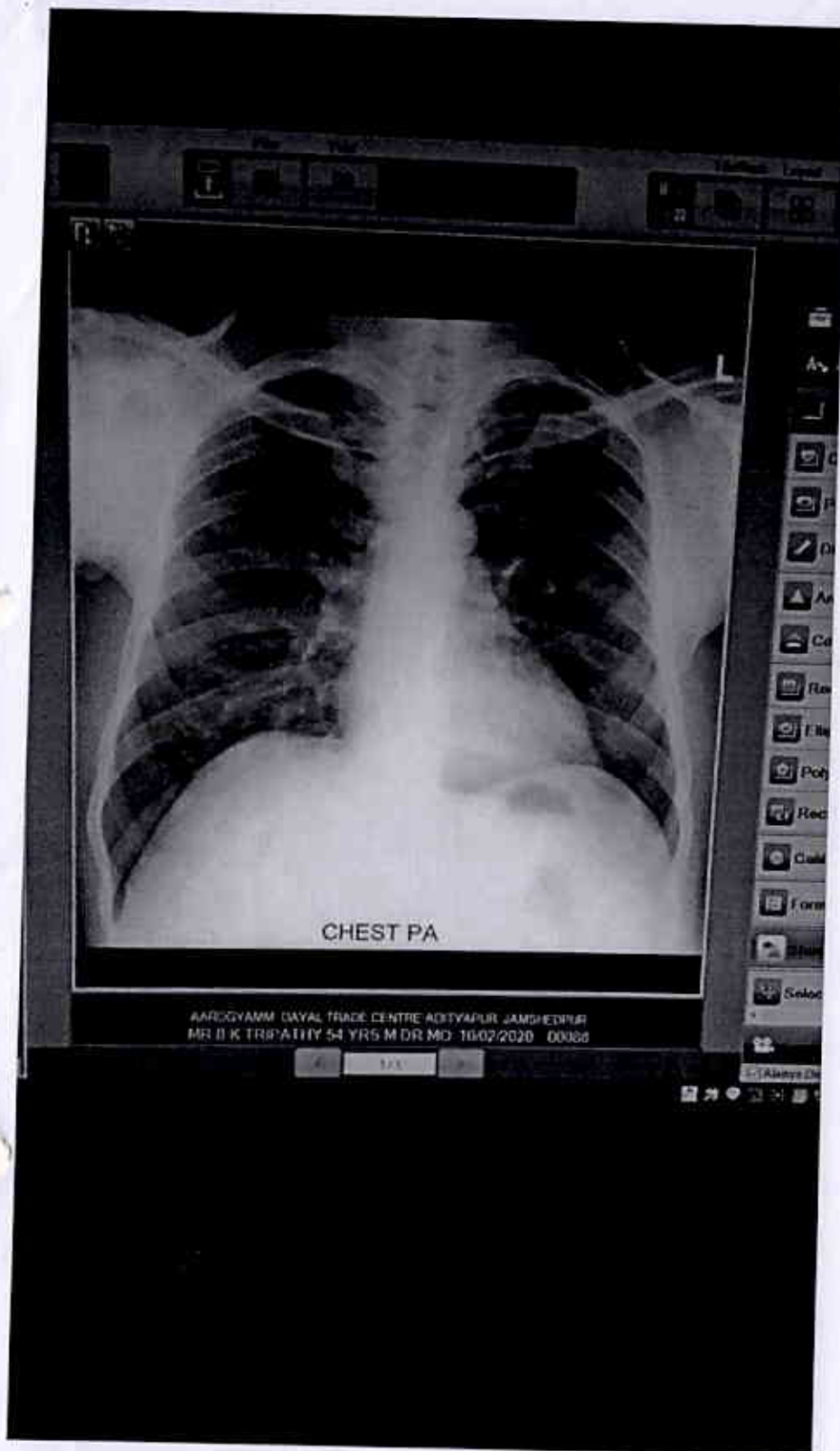
Parameter	Pred	Pre	Pre%	Post	Post%	Imp%
FVC	[L]	3.27	3.26	100	--	--
FEV1	[L]	2.56	2.89	113	--	--
FEV.5	[L]	--	2.23	--	--	--
FEV3	[L]	3.17	--	--	--	--
FEV6	[L]	--	--	--	--	--
PEFR	[L/s]	8.40	7.71	92	--	--
FEF25-75	[L/s]	3.36	3.87	115	--	--
FEF75-85	[L/s]	--	1.46	--	--	--
FEF.2-1.2	[L/s]	6.01	6.15	102	--	--
FEF25%	[L/s]	7.62	7.45	98	--	--
FEF50%	[L/s]	5.23	3.84	73	--	--
FEF75%	[L/s]	2.19	1.77	81	--	--
FEV.5/FVC	[%]	--	68.46	--	--	--
FEV1/FVC	[%]	78.24	88.55	113	--	--
FEV3/FVC	[%]	97.00	--	--	--	--
FEV6/FVC	[%]	--	--	--	--	--
FEV1/FEV6	[%]	--	--	--	--	--
FET	[S]	--	1.69	--	--	--
ExpTime	[S]	--	0.47	--	--	--
LungAge	[Y]	53.00	46.00	87	--	--
FIVC	[L]	--	3.35	--	--	--
PIFR	[L/s]	--	5.78	--	--	--
FIF25%	[L/s]	--	8.18	--	--	--
FIF50%	[L/s]	--	4.07	--	--	--
FIF75%	[L/s]	--	2.12	--	--	--
FIV.5	[L]	--	2.33	--	--	--
FIV1	[L]	--	--	--	--	--
FIV3	[L]	--	--	--	--	--
FIV.5/FIVC	[%]	--	69.69	--	--	--
FIV1/FIVC	[%]	--	--	--	--	--
FIV3/FIVC	[%]	--	--	--	--	--



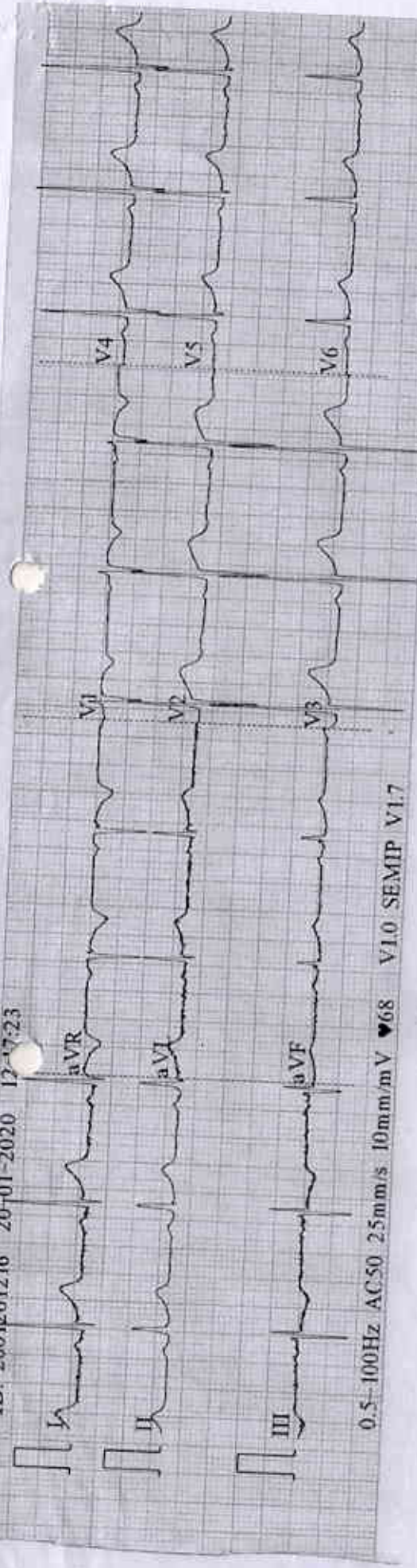
- Pre Medication Report :
Spirometry within Normal range as FVC% \geq 60 And FEV1/FVC% $>$ 70

- Pre COPD Severity Report:
COPD Severity within Normal range

- Doctor's Comments :



ID: 2001201216 20-01-2020 12:17:23



0.5-100Hz AC50 25mm/s 10mm/mV 68 V10 SEMIP V1.7

ID: 2001201216
Male B. K. T. P. K.
Years (/ /)
cm kg
mmHg

Diagnosis Information:
Sinus Rhythm
Normal ECG

HR	67	bpm
P	111	ms
PR	159	ms
QRS	79	ms
QT/QTc	385/408	ms
PQRST	43.17/10	°
RV5SV1	1.16/0.523	mV

Report Confirmed by:

A small black mole on left hand forearm

Initial of certifying surgeon

Deanna
Dr. R. G. SHARMA
Addl. G.M. (Health Services)
MC, 104, M.L. M. Jyoti & Company
SHRI CHANDRANATHJI BHOJA

NOTE :- Exact details of cause of physical disability should be clear stated.

Patient Name : **MR. PINKU KUMAR RAY**
 Age / Sex : **33 years / Male**
 Ref. Doctor : **Dr. MO**
 Ref. Client Name : **Shree cement**
 Sample ID : **2002001397**

Patient ID / Billing ID : **114060 / 134740**
 Specimen Collected at : **Shree cement**
 Sample Collected On : **10/02/2020 16:43**
 Billed On : **10/02/2020 16:21**
 Reported On : **11/02/2020 19:06**

SHREE CEMENT BLOOD GROUP

PATHOLOGY REPORT			
Test Description	Value(s)	Unit	Reference Range
<u>BLOOD GROUP</u>			
ABO Grouping	B		
Rh Grouping	POSITIVE		

****END OF REPORT****

B. Baitha
Dr Budhan Baitha
(MBBS MD Path)
Consultant Pathologist

SHREE JHARKHAND CEMENT PLANT(SHREE CEMENT LIMITED)

SERAIKELA-KHARSAWAN(JHARKHAND)

569 - PINKU KUMAR RAY

31 Years / Male / Ht 184 Cms / 55 Kgs / Non-Smoker

FVC TEST

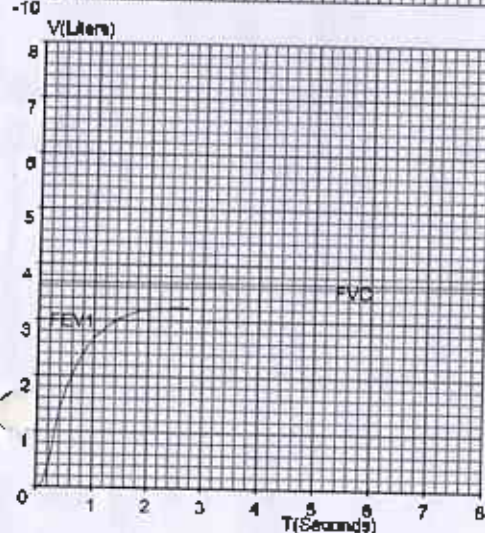
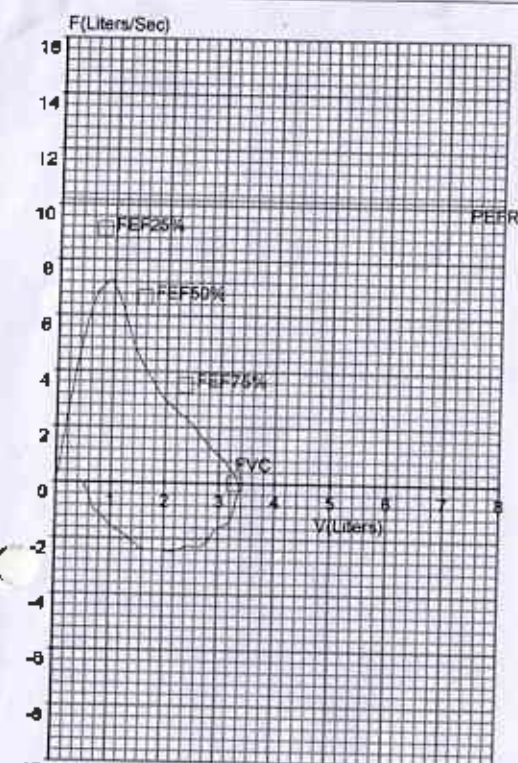
Date: 27-02-2020 (T1)

Pred Eqn : CLARITY

Eth.Corr : 100

Temp : 0°C

Ref By : NONE



Parameter		Pred	Pre	Pre%	Post	Post%	Imp%
FVC	[L]	3.28	2.87	88	--	--	--
FEV1	[L]	2.78	2.60	94	--	--	--
FEV.5	[L]	--	2.01	--	--	--	--
FEV3	[L]	3.18	--	--	--	--	--
FEV6	[L]	--	--	--	--	--	--
PEFR	[L/s]	8.74	6.26	72	--	--	--
FEF25-75	[L/s]	4.23	3.70	87	--	--	--
FEF75-85	[L/s]	--	1.45	--	--	--	--
FEF2-1.2	[L/s]	7.20	5.03	70	--	--	--
FEF25%	[L/s]	7.85	7.14	91	--	--	--
FEF50%	[L/s]	5.73	3.48	61	--	--	--
FEF75%	[L/s]	3.01	1.80	60	--	--	--
FEV.5/FVC	[%]	--	69.98	--	--	--	--
FEV1/FVC	[%]	84.83	90.75	107	--	--	--
FEV3/FVC	[%]	97.00	--	--	--	--	--
FEV6/FVC	[%]	--	--	--	--	--	--
FEV1/FEV6	[%]	--	--	--	--	--	--
FET	[S]	--	2.32	--	--	--	--
ExpTime	[S]	--	0.26	--	--	--	--
LungAge	[Y]	31.00	33.00	106	--	--	--
FIVC	[L]	--	2.45	--	--	--	--
PIFR	[L/s]	--	2.11	--	--	--	--
FIF25%	[L/s]	--	6.85	--	--	--	--
FIF50%	[L/s]	--	4.76	--	--	--	--
FIF75%	[L/s]	--	2.68	--	--	--	--
FIV.5	[L]	--	0.02	--	--	--	--
FIV1	[L]	--	0.38	--	--	--	--
FIV3	[L]	--	--	--	--	--	--
FIV.5/FIVC	[%]	--	0.64	--	--	--	--
FIV1/FIVC	[%]	--	15.31	--	--	--	--
FIV3/FIVC	[%]	--	--	--	--	--	--

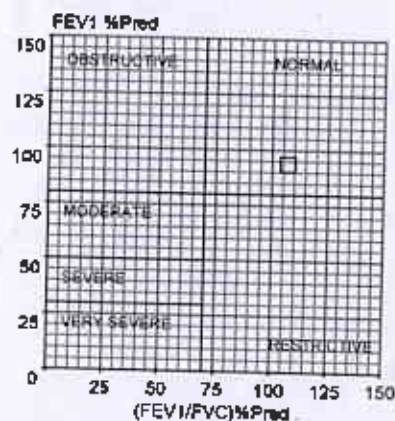
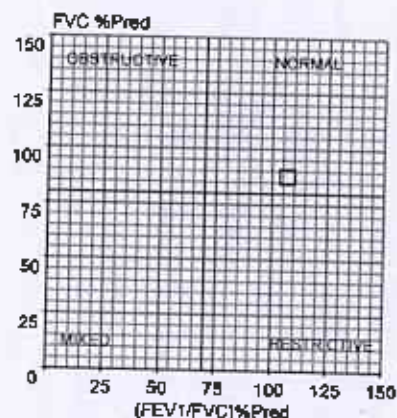
- Pre Medication Report :

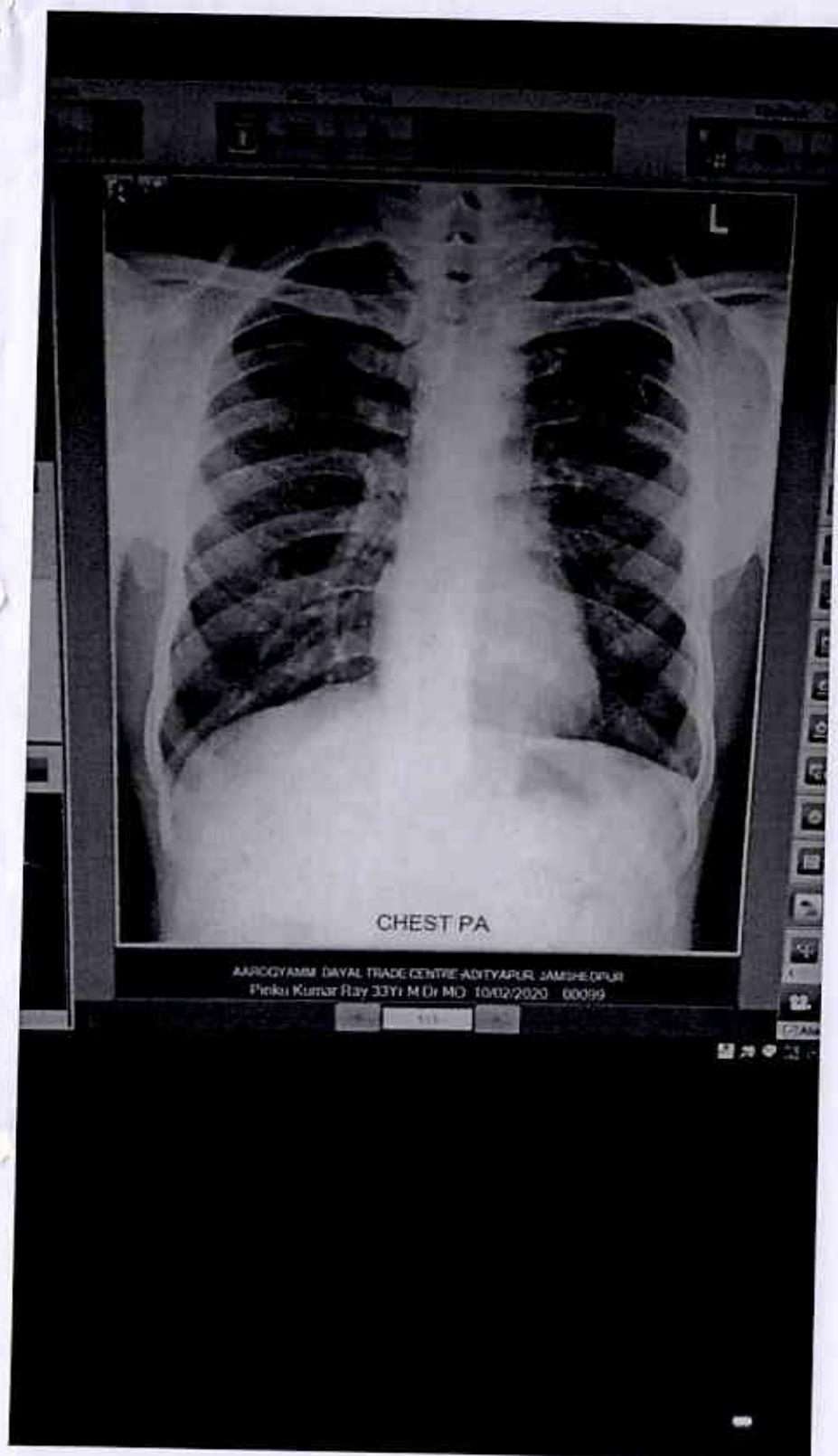
Spirometry within Normal range as FVC% \geq 80 And FEV1/FVC% $>$ 70

- Pre COPD Severity Report:

COPD Severity within Normal range

- Doctor's Comments :





Form No. 5

Bihar Factory Rule 1950

1. Serial number :- 38438

2. Date :- 2020-08-04

3. Sex :- Male

4. Residence :-

**VILL-BADAHARI, PO+PS-KHARARI,
DIST-ROHTAS, BIHAR**

5. Date of Birth if available &/or certificate age
01-Jan-1983

5. Physical Fitness :- Fit

7. Descriptive marks :- Large cut mark on left hand elbow joint

Serial number :-

38438

Date :-

2020-08-04

I Certify that I have recently examined

(Name) :- BINOD CHAUDHARY-LOADER

Date :-

2020-08-04

Son of :-

PATIL RAM CHAUDHARY

Resident at :-

VILL-BADAHARI, PO+PS-KHARARI,
DIST-ROHTAS, BIHAR

who is desirous of being employed in a factory & that his/her age as nearly as can be ascertained from my examination is **37** years

and that he/she **Fit** for employment in factory as
as an **adult**/child

His/Her descriptive marks are

Large cut mark on left hand elbow joint

Thumb Impression
Blind call
initial of certifying surgeon

Dr. R. G. SHARMA
Add. G. M. (Health Services)
10011 Old York Rd. Jolly & Lorraine
SUNBELT CEMENT LIMITED, BEANVA

Thumb impression

Initial of certifying surgeon

Dr. R. G. SHARMA
Add. G. M. (Health Services)
Unit on HSA, MRC PL Unit & Department
THREE CENT LIMITED KAWAI

NOTE :- Exact details of cause of physical disability should be clear stated.

Patient Name : MR. BINOD CHOWDHARY
 Age / Sex : 37 years / Male
 Ref. Doctor : Dr. MO
 Ref. Client Name : Shree cement
 Sample ID : 2002001389

Patient ID / Billing ID : 114052 / 134732
 Specimen Collected at : Shree cement
 Sample Collected On : 10/02/2020 16:16
 Billed On : 10/02/2020 16:10
 Reported On : 11/02/2020 19:03

SHREE CEMENT BLOOD GROUP

<u>PATHOLOGY REPORT</u>			
Test Description	Value(s)	Unit	Reference Range
<u>BLOOD GROUP</u>			
ABO Grouping	O		
Rh Grouping	POSITIVE		

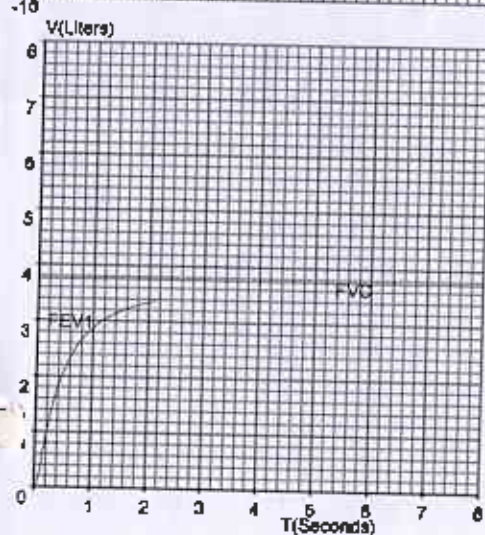
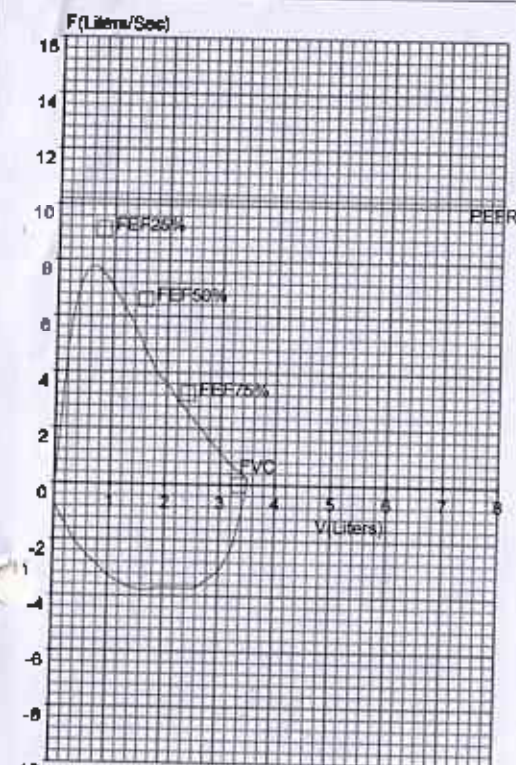
END OF REPORT

B. Balha
 Dr Budhan Balha
 (MBBS MD Path)
 Consultant Pathologist

417 - BINOD CHAUDHARY
37 Years / Male / Ht 167 Cms / 83 Kgs / Non-Smoker

FVC TEST
Date: 18-02-2020 (T1)

Pred Eqn : CLARITY Eth.Corr : 100 Temp : 0°C
Ref By : NONE

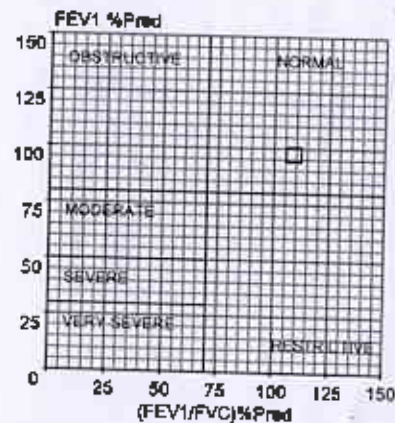
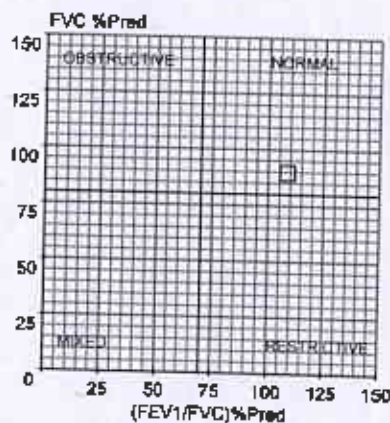


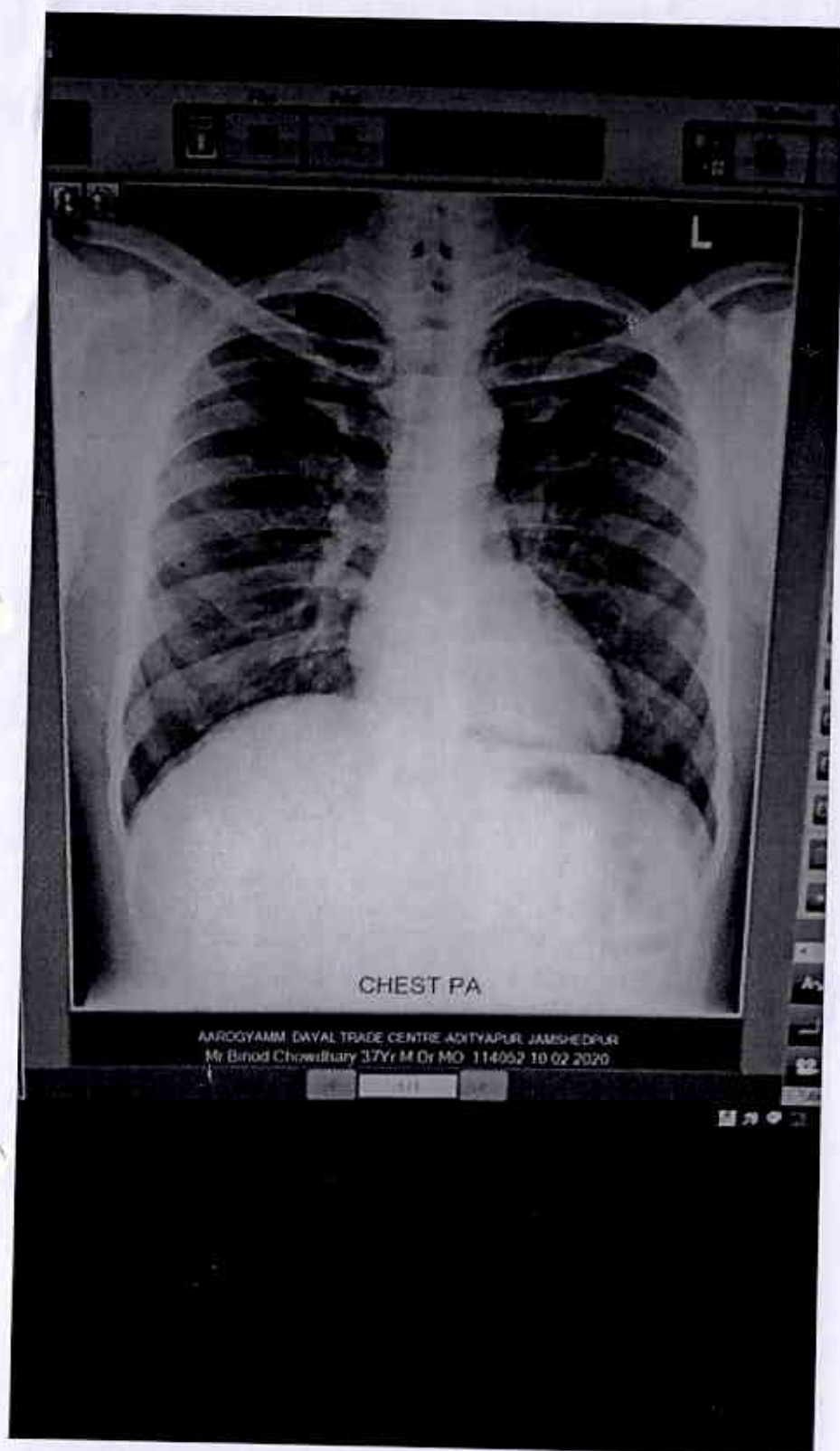
Parameter	Pred	Pre	Pre%	Post	Post%	Imp%
FVC	[L] 3.34	2.99	90	--	--	--
FEV1	[L] 2.77	2.70	97	--	--	--
FEV.5	[L] --	2.12	--	--	--	--
FEV3	[L] 3.24	2.70	83	--	--	--
FEV6	[L] --	--	--	--	--	--
PEFR	[L/s] 8.74	6.71	77	--	--	--
FEF25-75	[L/s] 4.02	3.93	98	--	--	--
FEF75-85	[L/s] --	1.45	--	--	--	--
FEF.2-1.2	[L/s] 6.94	5.74	83	--	--	--
FEF25%	[L/s] 7.84	7.08	90	--	--	--
FEF50%	[L/s] 5.63	4.05	72	--	--	--
FEF75%	[L/s] 2.80	1.77	63	--	--	--
FEV.5/FVC	[%] --	70.68	--	--	--	--
FEV1/FVC	[%] 82.97	90.09	109	--	--	--
FEV3/FVC	[%] 97.00	90.09	93	--	--	--
FEV6/FVC	[%] --	--	--	--	--	--
FEV1/FEV6	[%] --	--	--	--	--	--
FET	[S] --	4.58	--	--	--	--
Exp/Time	[S] --	0.12	--	--	--	--
LungAge	[Y] 37.00	38.00	103	--	--	--
FIVC	[L] --	3.07	--	--	--	--
PIFR	[L/s] --	3.27	--	--	--	--
FIF25%	[L/s] --	7.39	--	--	--	--
FIF50%	[L/s] --	4.50	--	--	--	--
FIF75%	[L/s] --	2.05	--	--	--	--
FIV.5	[L] --	0.82	--	--	--	--
FIV1	[L] --	2.35	--	--	--	--
FIV3	[L] --	--	--	--	--	--
FIV.5/FIVC	[%] --	26.84	--	--	--	--
FIV1/FIVC	[%] --	76.68	--	--	--	--
FIV3/FIVC	[%] --	--	--	--	--	--

- Pre Medication Report :
Spirometry within Normal range as FVC% \geq 80 And FEV1/FVC% $>$ 70

- Pre COPD Severity Report:
COPD Severity within Normal range

- Doctor's Comments :





Shree Jharkhand Cement Plant (A Unit of Shree Cement Limited)	
EIA/EMP Implementation Matrix	

S. No	Parameters	EIA/ EMP Implementation	Status
1	Air Pollution Control	1.1. Installation of Bag House at Cement Mill	Implemented
		1.2. Installation of 57 numbers of Bag filters at all material transfer point	Implemented
		1.3. Storage of Materials in cover shed	Implemented
		1.4. Installation of water sprinklers to control fugitive dust nuisance	Implemented
		1.5. Periodical monitoring of air parameters by NABL certified environmental lab	Implemented
		1.6. Installation of continues stack monitoring system and same is connected with SPCB and CPCB servers	Implemented
		1.7. Installation of 04 nos continues Ambient Air Quality monitoring stations and same is connected with SPCB and CPCB servers	Implemented
2	Water Pollution Control	2.1. Installation of piezometer (Automatic Ground water level recorder with telemetry) for ground water level monitoring	Implemented
		2.2. Installation of digital water flow meter for ground water abstraction	Implemented
		2.3. Installation of STP for treatment of domestic waste water	Implemented
		2.4. Implementation of rain water harvesting cum ground water recharge structure	Implemented
		2.5. Periodical monitoring of water parameters by NABL certified environmental lab	Implemented
3	Waste management	3.1. Storage of used oil under proper shed as per CPCB guideline	Implemented
		3.2. Disposal of used oil by CPCB registered recycler	Implemented
		3.3. Dust collected from the dust collectors (Bag Filters) recycled back to the process	Implemented
		3.4. Utilization of STP Sludge as manure for greenbelt development / plantation	Implemented
		3.5. Selling of Lead acid battery to CPCB authorised recycler	Implemented
		3.6. Selling E-waste to CPCB authorised recycler	Implemented
		3.7. Enhance regular hose keeping by vacuum sweeping machine	Implemented
4	Noise Pollution Control	4.1. Maintained machinery with proper maintenance, oiling and greasing at regular intervals	Implemented
		4.2. Provision of adequate silencers for all diesel engines	Implemented
		4.3. Periodical monitoring of noise level by NABL certified lab	Implemented
		4.4. Provision for earmuffs to all operators and employees working near the machinery	Implemented

Shree Jharkhand Cement Plant (A Unit of Shree Cement Limited)
EIA/EMP Implementation Matrix

5	Green Belt Development	5.1. Development of green belt in 36.3 acre (33%) of the total plant area	Implemented
		5.2. Plantation of local plant species	Implemented
		5.3. Post plantation activities for its survival	Implemented



F. No. J-11011/692/2008-IA-II(I)
 Government of India
 Ministry of Environment, Forest and Climate Change
 (Impact Assessment Division)

Indira Paryavaran Bhawan
 Jor Bagh Road, Aligarj,
 New Delhi - 110003
 E-mail: sharath.kn@gov.in
 Tel: 011-24695319

Dated: 21st February, 2018

To

✓ M/s Shree Cement Limited
 Village Hansda, PO Burudih,
 Dist. Saraikela-Kharsawan, Jharkhand
 e-mail: shreebwn@shreecementltd.com
 Tel No.: 01462 228101-6

Subject: Expansion cum change in product mix from Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA to Clinker Grinding Unit of capacity 4.0 Million TPA cement along with proposed Power Plant 20 MW and captive railway siding near Village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand by M/s Shree Cement Limited-Expansion cum Product Mix under the provision of Section 7(ii) of EIA Notification 2006 regarding.

Sir,

This has reference to your online application vide **proposal no. IA/JH/IND/71306/2017** dated **29th November 2017** seeking environmental clearance for change in product mix under the provisions of Clause 7(ii) of the EIA Notification, 2006, 3(b) Cement Plants under Category "A" EIA Notification, 2006 and the proposal is appraised at Central level.

2.0 Environment Clearance for the proposed Integrated Cement Plant, Capacity Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA and Power Plant: 20 MW along with captive railway siding near village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand was transferred from M/s Jupiter Cement Industries (unit of SKI Coke Industries Ltd.) to M/s Shree Cement Ltd vide letter no. J-11011/692/2008-IA-II(I) dated 31/07/2017. Further validity of EC was extended up to 29/10/2020 vide letter dated 18/10/2017.

1.0 It was reported that no physical installation has been carried by the company and not intended to install the clinker manufacturing unit.

To

Subject: Expansion cum change in product mix from Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA to Clinker Grinding Unit of capacity 4.0 Million TPA cement along with proposed Power Plant 20 MW and captive railway siding near Village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand by M/s Shree Cement Limited-Expansion cum Product Mix under the provision of Section 7(ii) of EIA Notification 2006 regarding.

This has reference to your online application vide **proposal no. IA/JH/IND/71306/2017** dated **29th November 2017** seeking environmental clearance for change in product mix under the provisions of Clause 7(ii) of the EIA Notification, 2006. 3(b) Cement Plants under Category "A" EIA Notification, 2006 and the proposal is appraised at Central level.

2.0 Environment Clearance for the proposed integrated Cement Plant, Capacity Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA and Power Plant: 20 MW along with captive railway siding near village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand was transferred from M/s Jupiter Cement Industries (unit of SKJ Coke Industries Ltd.) to M/s Shree Cement Ltd vide letter no. J 11011/692/2008-IA.II(I) dated 31/07/2017. Further validity of EC was extended up to 29/10/2020 vide letter dated 18/10/2017.

3.0 It was reported that no physical installation has been carried by the company and not intended to install the clinker manufacturing unit.

It was reported
company and not in

F. No. J-11011/692/2008-IA-II(I)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj,
New Delhi - 110003
E-mail: sharath.kr@gov.in
Tel: 011-24695319

Dated: 21st February, 2018

To

M/s Shree Cement Limited
Village Hansda, PO Burudih,
Dist. Saraikela-Kharsawan, Jharkhand
e-mail: shreebwr@shreecementltd.com
Tel No.: 01462 228101-5

Subject: Expansion cum change in product mix from Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA to Clinker Grinding Unit of capacity 4.0 Million TPA cement along with proposed Power Plant 20 MW and captive railway siding near Village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand by M/s Shree Cement Limited-Expansion cum Product Mix under the provision of Section 7(ii) of EIA Notification 2006 regarding.

Sir

This has reference to your online application vide proposal no. IA/JH/IND/71306/2017 dated 29th November 2017 seeking environmental clearance for change in product mix under the provisions of Clause 7(ii) of the EIA Notification, 2006. 3(b) Cement Plants under Category 'A' EIA Notification, 2006 and the proposal is appraised at Central level.

2.0 Environment Clearance for the proposed Integrated Cement Plant, Capacity Clinker: 540000 TPA, Portland Slag Cement: 937500 TPA, Portland Pozzolana Cement: 180000 TPA and Power Plant 20 MW along with captive railway siding near village Hansda, PO Burudih, Dist. Saraikela-Kharsawan, Jharkhand was transferred from M/s Jupiter Cement Industries (unit of SKJ Coke Industries Ltd.) to M/s Shree Cement Ltd vide letter no. J-11011/692/2008-IA-II(I) dated 31/07/2017. Further validity of EC was extended up to 29/10/2020 vide letter dated 18/10/2017.

3.0 - It was reported that no physical installation has been carried by the company and not intended to install the clinker manufacturing unit.

Received
Hansda
14/03/18
प्रमाणित
जिला सरायकेला-खारसावाँ



SHREE CEMENT LTD.

An ISO 9001, 14001, 45001 & 50001 Certified Company

Regd. Office:

BANGUR NAGAR, POST BOX NO.33, BEAWAR 305901, RAJASTHAN, INDIA

TO WHOM SO EVER IT MAY CONCERN

It is to certify that I/we have verified books of accounts of Shree Jharkhand Cement Plant (A unit of Shree Cement Ltd) with capacity of 2.5 Million TPA Cement and captive railway siding near village Hansda, PO. Burudih, Dist. Saraikela-Kharsawan, Jharkhand as per details specified below:

SN	Item	Expenditure as on 01.06.2019 (Rs. in Cr.)
1.	Land & Site development	6.9
2.	Building & other civil structures	179.6
3.	Plant & Machinery	231.5
4.	Miscellaneous Fixed Assets (including railway siding)	119.7
Total		537.8

We hereby certified that we have checked the above statement with the books of the accounts, invoices and other records as produced before us and found the same to be true and in accordance with the records.

We also certified that above investments have been made between the periods 11.03.2016 up to 01.06.2019 in respect to the project at Shree Jharkhand Cement Plant (A unit of Shree Cement Ltd).

For M/s Shree Jharkhand Cement Plant (A unit of Shree Cement Ltd)

Dr. Anil Kumar Trivedi

Senior GM (Environment)

UDIN - 20014228AAAAEE9538



Gopal Agarwal & Co.
 Chartered Accountants
 (ICAI FRN 000383C)

(G.C. Agarwal)
 F.C.A. Proprietor
 M.No. 014228