SAFETY IN COAL MINES

SAFETY IN COAL MINES

1. National Coal Mines Safety Report Portal

Hon'ble Minister of Coal and Mines Shri G. Kishan Reddy has launched the National Coal Mines Safety Report Portal on 17.12.2024 at the 49th Standing Committee on Safety in Coal Mines.

The National Coal Mines Safety Report Portal, developed by Ministry of Coal, under the guidance of the High-Level Expert Committee on Safety in Coal Mines, represents a significant advancement in coal mine safety management. The portal monitors actions based on recommendations from various inquiries, aiming to reduce accidents and improve safety practices across the industry.

It features two key modules: the Accident Module, which facilitates near-time reporting and management of incidents, and the Safety Audit Module, which strengthens safety protocols.

Objective of the portal:

- To improve **Safety Management practices** within the coal industry
- **Monitor Actions:** Ensure coal companies act on recommendations from inquiries
- Reduce Incidents: Aim for a significant decrease in accidents and incidents
- Enhance Accountability: Foster responsibility among coal mining companies
- Foster Safety Culture: Promote a proactive culture of safety within the industry

The portal supports the Ministry of Coal's commitment to a "Culture of Mine Safety" by leveraging technology and risk assessment to enhance safety, productivity, and employee well-being in the coal mining sector.

49th meeting of the Standing Committee on Safety in Coal Mines

The 49th meeting of the Standing Committee on Safety in Coal Mines was held on 17.12.2024 under the chairmanship of Hon'ble Minister of Coal and Mines, Shri G. Kishan Reddy. The Standing Committee is the highest tripartite body at the national level, tasked with reviewing coal mine safety and evaluating existing safety measures through cooperation and idea-sharing.

Over 20 coal companies participated in the meeting, which highlighted 11% increase in coal production in FY 2023-24, reaching a record 997.23 million tons (MT). Further, production in FY 2024-25 had increased by 6.01% by October 2024.

Hon'ble Minister emphasized that while production is growing, safety remains the top priority. He urged companies to prioritize safety protocols, strengthen safety management systems, and align with both national and global safety standards. To further enhance safety, the Hon'ble Minister launched the National Coal Mines Safety Report Portal, for real-time monitoring and transparency in safety performance across coal mines. The portal also includes safety audit module to improve auditing processes.

1.1. Coal India Limited:

Safety is always the utmost priority of CIL. Safety is ingrained in the mission statement of CIL and is one of the most important components in overall business strategy. To uphold this commitment, CIL has established a comprehensive "Occupational

Health & Safety Policy" aimed at ensuring safety and occupational health across all its mines and establishments. Each subsidiary of CIL is supported by a multidisciplinary Internal Safety Organization (ISO) dedicated to implementing this policy effectively.

All operations, systems, and processes are meticulously designed with a focus on safety, resource conservation, sustainable development, and environmental protection. Workplace hazards and associated risks with mining operations are systematically identified, and a site-specific Safety Management Plan is developed for every mine.

CIL actively promotes employee participation in safety management, fostering a proactive safety culture and enhancing safety awareness across its workforce. Through these efforts and numerous initiatives, CIL is steadfast in its goal of achieving "Zero Harm Potential (ZHP)" in its mining operations.

1.2. Statutory Framework for Coal Mine Safety:

Coal mining is a highly regulated industry worldwide due to its inherent operational and occupational hazards. In India, coal mine safety legislation is among the most comprehensive and extensive statutory frameworks designed to ensure occupational health and safety (OHS). Compliance with these safety statutes is mandatory. Key statutes governing coal mine safety include:

Sl. No.	Statute
1	The Mines Act- 1952
2	The Mines Rules -1955
3	The Coal Mines Regulations -2017
4	The Mines Rescue Rules -1985
5	The Electricity Act- 2003
6	The Central Electricity Authority (measures related to safety & supply) Reg. - 2023
7	The Mines Vocational Training Rules -1966
8	The Indian Explosive Act, 1884
9	The Explosive Rules - 2008
10	The Indian Boiler Act, 1923
11	The Workmen Compensation Act – 1923 (Principal Act amended as on date)
12	The Factories Act - 1948 Chapter -III & IV

1.3. Occupational Health and Safety Policy of CIL:

We, at Coal India Limited, are committed to ensure the health and safety of our employees. CIL believes that accidents are preventable and industrial health hazards are controllable with foresight, relevant training, purposeful attitude and appropriate equipment.

CIL is committed to:

A. Carry out all mining and associated activities in such a manner as to avoid harm to employees, neighboring communities & environment.

B. Comply all relevant statutes for occupational health and safety.

C. Continuously promote and improve safe practices in all its operations in a planned manner along with its monitoring and feedback.

D. Develop a culture of progressive improvement in practices and systems related to Occupational Health and Safety (OHS) at work places.

CIL will achieve these objectives by:

i. Planning and designing of mine with adequate provision for Occupational Health and Safety.

ii. Hazard Identification and Risk Assessment based Safety Management System in mines.

iii. Adoption of suitable technology for improvement in Occupational Health and Safety (OHS) system in work places.

iv. Provision of adequate resources for effective execution of Occupational Health and Safety (OHS) system in work places.

v. Engage the safety personnel exclusively for improving safety standards and safety cultures of mines.

vi. Organize appropriate forums with employees' representatives for joint consultations on occupational health and safety matters to promote motivation and commitment of employees in occupational health and safety system;

vii. Multi-level monitoring of the implementation of the Occupational Health and Safety (OHS) system in mines through Internal Safety Organization (ISO) at the company headquarters and Area Safety Officers at area level;

viii. Periodically auditing of the procedures and practices related to Occupational Health and Safety (OHS) System;

ix. Institute continuous education, training and retraining all employees with the accent placed on development of safety oriented skills;

x. Continuous efforts to improve the occupational health standards, workplace ambience and health conditions of the employees.

To implement the Occupational Health & Safety Policy effectively, the following measures are ensured:

i. **Allocation of Adequate Funds:** Sufficient financial resources are earmarked to enhance and maintain mine safety.

ii. **Deployment of Skilled Workforce:** An adequate number of trained personnel is deployed to ensure the safe execution of mining operations.

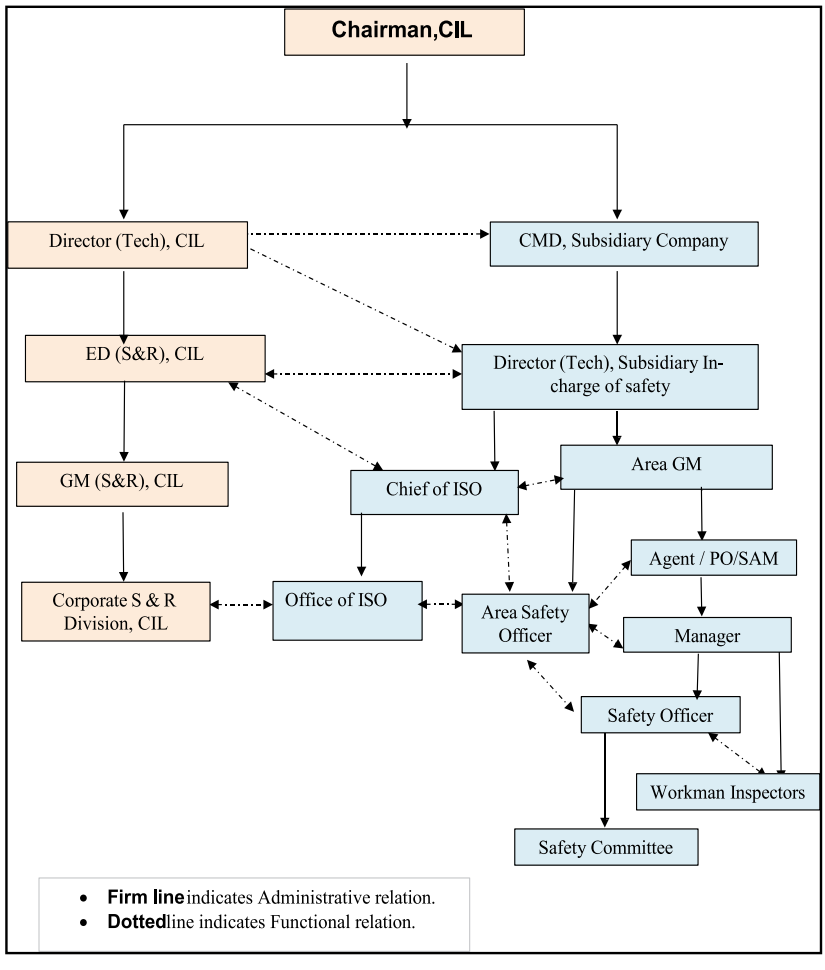
iii. **Establishment of Internal Safety Organization (ISO):** A well-structured, multidisciplinary ISO is established to oversee and monitor the implementation of CIL's Safety Policy across all subsidiaries.

iv. **Technological Advancements:** Continuous improvement and adoption of advanced technologies to enhance the safety and efficiency of mining operations.

v. **Scientific Studies and R&Ds**: Leveraging in-house expertise from CMPDIL and collaborating with scientific agencies and technical institutions for robust design, planning, and research initiatives.

vi. **Employee Participation:** Ensuring workers' active involvement in all forums dedicated to monitoring and improving the mine safety.

1.4. Organizational Structure for Safety in Coal India Ltd:



1.5. Functions of Internal Safety Organization (ISO) (Abridged):

CIL has established a structured multi-disciplinary Internal Safety Organization (ISO) to assist the line management at various levels in matters related to mine safety. The major functions of ISO are as under:

- Functions of ISO is multi-disciplinary in nature.
- Functions of the ISO are both audit and advisory in nature.
- ISO examine mine plans and schemes of every mine at least once a year.
- Make one inspection in each mine at every three months.
- Dangerous conditions observed during inspection are rectified through line management.
- Review the safety performance:
    - o Once in every quarter by CMD.
    - o At least once in every month by Director (Technical).
- All applications sought for permission for opening/reopening of a district are independently checked by the ISO.

1.6. Major Activities for Corporate Safety & Rescue Division (ISO) of CIL:

- **Mine Inspections:** Conducting regular inspections to assess safety conditions in mines and implementing follow-up actions to improve safety standards.
- **Accident Investigations:** Performing preliminary fact-finding inquiries into fatal accidents and major incidents/dangerous occurrences using Root Cause Analysis (RCA) techniques.
- **Accident Database Management:** Maintaining a comprehensive database of accidents and major incidents for documentation and analysis.
- **Accident Analysis:** Analyzing mine accident statistics to develop and implement actionable safety improvement plans.
- **Annual Mine Safety Audits:** Monitoring the process of annual mine safety audits to ensure compliance and continual improvement.
- **Specialized Safety Training:** Delivering expert mine safety training by SIMTARS- accredited trainers to executives, mine officials, and Safety Committee members at unit and area levels.
- **Technical Guidelines / Internal Technical Circulars:** Preparing Internal Technical Circulars, Management Guidelines, and Safety Advisories on key safety issues and overseeing their effective implementation.
- **R&D Projects on Mine Safety:** Monitoring and facilitating safety-related research and development initiatives within CIL.
- **Organizing Safety Meetings:** Organizing meetings of the CIL Safety Board & National Dust Prevention Committee (NDPC) and ensuring the implementation of recommendations thereof.
- **Training Programs:** Establishing subject criteria for mine safety training and conducting relevant training sessions at subsidiaries level.
- **Mine Rescue Preparedness:** Monitoring preparedness levels across various mine rescue establishments to ensure swift and effective responses.
- **Standing Committee on safety in coal mines:** Actively participating in meetings of the Standing Committee on Safety in Coal Mines and ensuring the implementation of recommendations and suggestions.

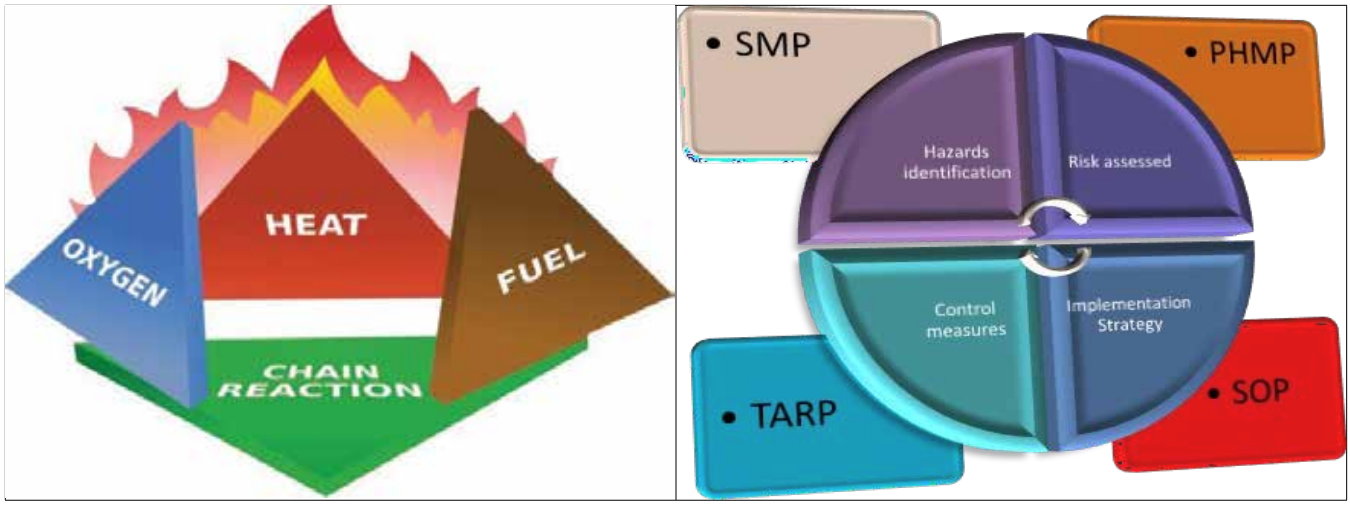
- **Agency Coordination:** Collaborating with various agencies and Internal Safety Organizations (ISOs) of CIL subsidiaries on mine safety matters.
- **Safety Information System:** Managing the CIL Safety Information System (CSIS) database and ensuring timely updates for accuracy and reliability.
- **Parliamentary Queries:** Responding to parliamentary questions on mine safety, including those raised by Standing Committees on Steel & Coal, Labour & Employment, COPU, MOC, CA&G, VIPs, and under RTI-2005.
- **National Portal Maintenance:** Serving as the nodal agency for maintaining the National Coal Mine Accidents Reporting Portal.
- **Regulatory Liaison:** Engaging with safety forums and regulatory agencies such as DGMS to address and promote mine safety standards.
- **BIS Representation:** Representing CIL in various BIS committees to contribute to the development of safety standards.
- **Safety Bulletin Publication:** Publishing a Safety Bulletin to share knowledge, enhance safety awareness, and cultivate a stronger safety culture.
- **Parliamentary matters:** Response to the parliamentary questions related to mine safety including queries raised by different standing committees such as standing committee on Steel & Coal, standing committee on labour, as well as questions raised by COPU, MOC, CA&G and VIPs and information sought under the Right to Information (RTI) Act- 2005.

1.7. Measures for improvement Mine Safety Standard

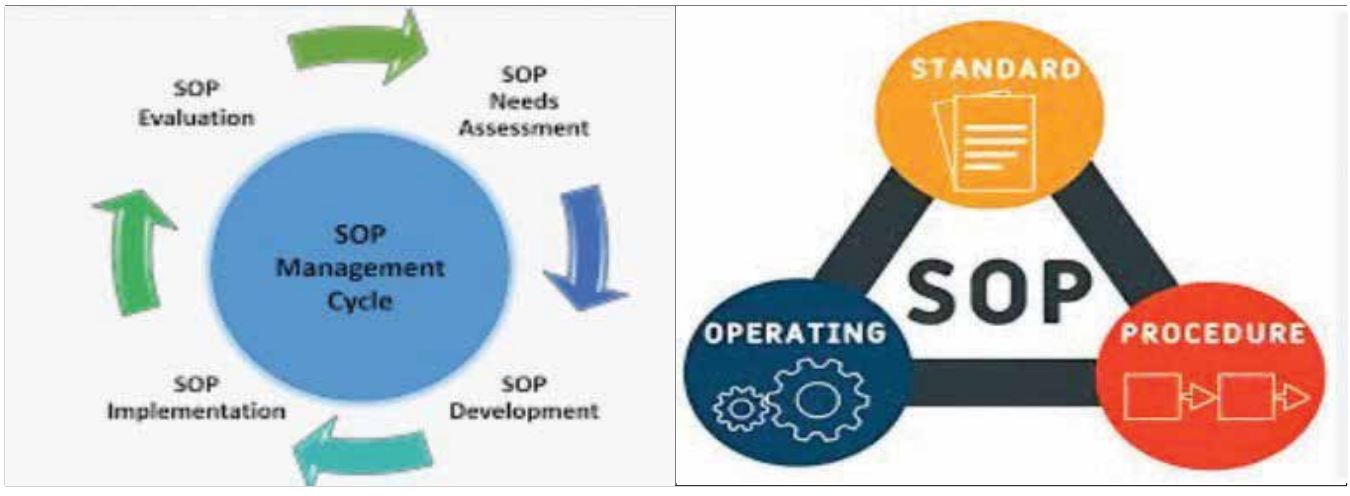
CIL has pursued several measures in the year 2024 along with the on-going safety related initiatives, apart from compliance of statutory requirements for enhancing safety standard in mines of CIL and its Subsidiaries, which are given below:

i. **Review of Safety Management Plans (SMPs) –** Site-specific risk assessment based SMPs prepared for mines are reviewed. Implementation of SMPs is monitored through the Internal Safety Organization (ISO) of each subsidiary as well as by senior officials.

ii. **Review of Principal Hazards Management Plans (PHMPs):** Principal Hazards Management Plans (PHMP) formulated as a part of Safety Management Plan (SMP) to prevent any mine disaster or major mine accident are reviewed and appropriate correction done. Trigger Action Response Plans (TARP) prepared to deal with emergency situations effectively are also reviewed and updated.



iii. Up gradation of Standard Operating Procedures (SOPs): Site-specific, Risk Assessment based Standard Operating Procedures (SOPs) for all Mining and Allied operations framed are reviewed and update as required to cater to the changing mine conditions and introduction of new machines and methodology.



iv. Mine Safety Audit: Safety Audit of all producing mines of CIL has been started for the FY 2024-25 as per guidelines of MOC. Details of mine safety audit including compliance report thereof will be uploaded in CSIS and NCMAR portal.

v. **Special Safety Drives on different Safety Issues:** Dedicated safety drives addressing various safety issues, along with workshops, were conducted to enhance mine safety standards and foster greater safety awareness and sensitivity amongst all employees.

vi. **Pre-shift Safety Briefings & Toolbox Safety Talk:** Pre-shift safety briefings and Tool Box Safety talk before staring of any operation. Supervisors or experts related to the jobs give safety talk and informal risk management is done during the process.

vii. **Development of the National Coal Mines Safety Report Portal:** The National Coal Mines Safety Report Portal represents a major leap forward in safety management within the coal mining sector. The Accident Module facilitates near-real-time accident reporting, enabling swift responses and comprehensive analyses. Additionally, the Safety Audit Module streamlines the auditing process, reinforcing adherence to safety protocols and best practices across the industry. By integrating these advanced modules, the portal effectively addresses critical safety challenges, establishing new benchmarks for proactive and efficient safety management.

viii. **Lead Auditor Training:** Executive with requisite qualifications have been trained and certified as Lead Auditors at IIT-ISM, Dhanbad for conducting safety audits based on ISO standards.

ix. **Strengthening Informal Safety Circles:** Informal Safety Circles at the mine and area levels have been reinforced to facilitate the sharing of safety-related information, key messages, and best practices, promoting a strong safety culture among employees.

x. **Personal Safety Counseling & Employee Assistant Program:** Employees are consulted by the mine officials to understand the ability of the employee in terms of safety attitude and understanding.

xi. **Competency Assessment for Operators:** A competency board at mine has been established to evaluate the skills and qualifications of all operators. Regular assessments are conducted, with mandatory evaluations for new operators and those involved in incidents.

xii. **Safety Review Meetings:** Multiple meetings, chaired by the Director (Technical), CIL, were conducted to assess the safety status of mines and other establishments and to identify measures for enhancing safety.

xiii. **Monsoon Preparation Plan:** Micro and macro level plan has been prepared for monsoon preparation and these are implemented and monitored regularly. The Monsoon period has passed without any major safety issues.

xiv. **Preparation and sharing of Video Clips or Animation films:** Video Clips / Animation Films on various Mine Safety Procedures, Dos & Don'ts related to operation and Accident Analysis are being prepared for mutually sharing amongst all employees. These video clips or Animation films are being used widely during training programmes organized at different VTCs and other establishments also. This endeavor is expected to enhance safety awareness amongst all employees and to develop the best safety cultures at grass root level.

xv. **Adoption of Star Rating of mines:** For encouraging the best practices in mines including safety practices, the Star Rating System has been adopted.

Apart from the above specific actions, the following measures are continued for improving safety standards:

1. Emphasis on adoption of the state-of-the art technology in suitable Geo-Mining Conditions:

a. Mass Production Technology (MPT): Expanding the use of Continuous Miners in more numbers of underground (UG) mines to enhance productivity and safety.

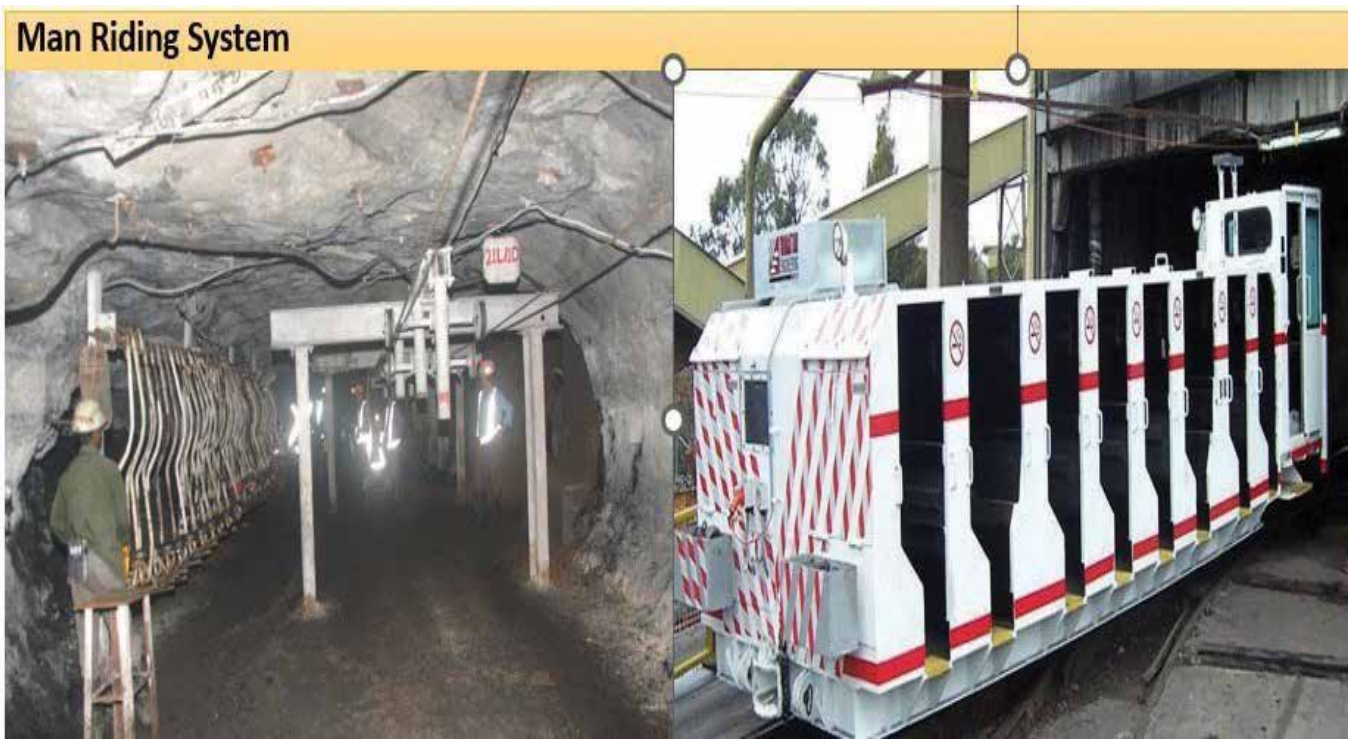
b. Surface Miners: Increasing the deployment of Surface Miners in opencast projects (OCPs) to eliminate blasting operations, ensuring safer and more eco- friendly mining practices.

c. Higher-Capacity HEMM: Utilizing higher-capacity Heavy Earth Moving Machinery (HEMM) in more OCPs to improve operational efficiency and safety.

d. Highwall Mining Technology: Introducing highwall mining technology for effective extraction in appropriate mining locations.

e. Mechanized Roof Bolting: Mechanizing underground drilling operations to enhance the efficiency and safety of roof bolting processes.

f. Man Riding Systems: Implementing man riding systems in underground mines to facilitate safer and more convenient travel for personnel.



2. Adoption of the state-of-the art mechanism for Strata Management

a. Strata Control and Management Plan: Developing and implementing a scientifically-based Strata Control and Management Plan, including a Rock Mass Rating (RMR)-based strata support system.

b. Mechanized Drilling: Adopting mechanized drilling methods for roof bolting to enhance efficiency and safety.

c. Resin Capsules: Utilizing resin capsules in place of cement capsules where required, based on operational needs.

d. Modern Monitoring Instruments: Deploying advanced strata monitoring instruments as per operational requirements.

e. Strata Control Cell: Establishing a dedicated Strata Control Cell to monitor the effectiveness of the strata support system.

f. Quality Training: Providing comprehensive training programs for support crews, frontline mine officials, supervisors, and grassroots-level workers to ensure proficiency in strata management and support operations.

3. Mechanism for monitoring of Mine Environment:

a. Detection of mine gasses by Multi-gas detector, Methanometer, CO-detector etc.

b. Continuous monitoring of the mine environment by installing Environmental Tele-Monitoring System (ETMS) & Local Methane Detectors (LMD) etc.

c. Regular Mine Air Sampling and Analysis by using Gas Chromatograph.

d. Personal Dust Sampler (PDS) for detecting dust concentration.

e. Use of Continuous Ambient Air Quality Monitoring System (CAAQMS) in large OCPs to assess the ambient dust concentration.

4. Strengthening Water Danger Management:

a. Preparation and maintenance of seam-wise Water Danger Plan.

b. Preparation and implementation of Monsoon Action Plan.

c. Adequate Pumping Facilities with adequate capacity of Sumps.

d. Liaison with the State Meteorological Dept. & Dam Authorities.

e. Construction of Embankments against water bodies.

f. Inter-mine joint survey between adjoining mines to prove inter-mine barriers.

g. Conducting Check Survey & Joint Survey to eliminate errors in mine survey.

5. Steps for prevention accidents in OCPs:

a. Formulation and Implementation of Mine-specific Traffic Rules.

b. Code of Practice for HEMM Operators, Maintenance staff & others.

c. Sensitization training of Contractor's Workmen involved in contractual jobs.

d. Training Simulator to impart simulation training to Dumper, Dragline, Shovel and Dozer Operators to hone operational skills.

e. Adequate Lighting arrangements are provided for enhancement of standard of illumination.

f. Eco-friendly Surface Miners for blast free extraction of coal and vertical ripper for extraction of OB and avoidance of associated risks.

g. Dumpers fitted with Proximity Warning Devices, Rear view mirrors and 3600 view camera, Audio-Visual Alarm (AVA), Automatic Fire Detection & Suppression System (AFDSS), Anti-Collision Device etc.

h. Ergonomically designed seats & AC Cabins for operators' comfort.

i. Total Station, 3D laser Scanner, Time Deflection Reflectometry & Slope Stability Radar for monitoring OB bench and OB Dump stability.

j. Separate road for light motor vehicle (LMV), Safety flags for LMV, Cautions/ Danger Board, road dividers etc.

k. GPS-Based Operator Independent Truck Dispatch System (OITDS): Deployed in large opencast projects (OCPs) to track and optimize the movement of Heavy Earth Moving Machinery (HEMM) within the mines. Additionally, e-surveillance units equipped with GPS/GPRS-based vehicle tracking and geo-fencing systems have been installed, enabling real-time, 24x7 monitoring of mining operations.

l. Integrated command & control centre (ICCC) e-surveillance system in WCL for efficient monitoring mining activities including safety.

Integrate Command and Control Center (ICCC) at WCL HQ for e-Surveillance.

m. Artificial Intelligent (AI) enabled Boom Barrier & Traffic Control System in OC mines.

6. Electrical Safety: For enhancing safety during use, repairing and maintenance:

a. LOTO based shut-down procedures.

b. Hydraulic ladders are being used

c. Non-contact type live conductor device

d. Engaged skilled and trained electricians and supervisors.

Fixed type Mist sprinkler

7. Steps for control of dust in mines: Following are provided:

Mobile water sprinkler tanker

Fog Cannon

Road Sweeping Machine

Wheel washing system

- Continuous Ambient Air Quality Measurement System (CAAQMS)

8. Training on Mine Safety:

a. Initial and Refresher training & On-the-Job Training as per statute.

b. Training on Simulators to HEMM operators.

c. Skill up-gradation of frontline mine officials on continual basis on various topics.

d. Sensitization of all employees including Members of Safety Committees and contractual workmen on a regular basis.

e. Experienced electrical supervisors of the Area are being engaged for imparting training to electricians and electrical helpers in VTCs.

f. Domain knowledge of experienced Agent, Mine Managers, E&M & Excavation Engineers and other senior level executives are being used in imparting training to enhance the quality of training.

g. Virtual Reality (VR)Training module has been introduced

Virtual Reality (VR) training for safety and emergency rescue

9. Other steps for enhancing Safety awareness:

a. Publicity propaganda / Safety campaign through involving family members.

b. Display of safety information in fluorescence sign board / warning board.

c. Distribution of Safety pamphlets in workers.

d. SOPs distribution and Pre-shift Safety Talk to workers.

10. Mine Safety Inspection:

a. Round-the-clock Supervision of all mining operations by adequate number of competent & statutory Supervisors and mine Officials.

b. Regular Inspection by Workmen Inspectors appointed in each mine.

c. Surprise back shift mine Inspections by mine and area level officials.

d. Regular mine Inspection by officials of the Internal Safety Organization of respective subsidiaries and CIL.

e. Periodic mine Inspections by senior officials of CIL & Subsidiaries, Trade union representatives and officials of MOC.

11. Mine Emergency Response System:

o Emergency Response and Evacuation Plan prepared as per statute for each mine.

o Mock Rehearsals for examining the efficacy of Emergency Action Plan. Sometimes NDRF and SDRF are also participated in mock rehearsals.

o Demarcating Emergency Escape Routes in belowground.

o Check list prepared for dealing with an emergency in mine.

o Flow Chart prepared for transmission of information.

Rescue Services for Emergency Response System in CIL:

- o CIL is maintaining a well establishment Rescue Organization comprising of Mine Rescue Stations (MRS), Rescue Rooms-with-Refresher Training facilities (RRRT) and Rescue Rooms (RR).
- o All Rescue Stations / Rescue Rooms are fully equipped with adequate numbers of rescue apparatus and staffed by adequate numbers of Rescue Trained Personnel (RTP) as per the MRR-1985.
- o All RTP are being periodically re-trained to conduct rescue operations in hot, humid and irrespirable atmospheres in modern training galleries as well as in mines.
- o CIL employs Permanent Brigade Members and RTPs for 24x7 on call. The Mine Rescue Station and Rescue Rooms are established at strategic locations.
- The WCL team achieved a commendable second position overall in the International Mine Rescue Competition 2024 (IMRC-2024), held from September 12 to 20, 2024, in Columbia, **USA.** Representing Coal India Limited, the WCL rescue team showcased their exceptional skills and professionalism on the global stage.
- The team comprised 10 personnel from various areas of WCL, under the leadership of the General Manager (Rescue). A total of 21 teams from 8 countries participated in this prestigious competition. In addition to the overall achievement, the WCL team also secured a second position in the First Aid category, further highlighting their expertise in mine rescue operations.

12. Safety Monitoring of CIL: Safety in mines are being monitored at various levels by the following agencies:

(CIL- at Corporate level),
1. Board of Director meeting.
2. Risk Management Committee
3. CIL Safety Board
4. CMDs meeting
5. S&R Division, CIL

(at Subsidiary HQ level),
1. Tri-partite Safety Committee
2. Internal Safety Organisation (ISO)

(at Area level)
1. Tri-partite Safety Committee
2. Area Safety Officer (ASO)

(at Mine level)
1. Workman Inspectors (Mining / Mechanical / Electrical)
2. Safety Committee
3. Safety Officer
4. Other Competent Mine Officials

1.8. Accident Statistics: A Key Indicator of Safety in Mines - Accident statistics serve as a critical measure of safety performance in mines. Over the years, Coal India Limited (CIL) has achieved remarkable improvements in safety, reflected in a significant reduction in accidents. This progress can be attributed to the following key factors:

- **Shared Commitment and Collaboration:** A unified approach and synergistic efforts among all stakeholders.
- **Adoption of Advanced Technology and Systems:** Leveraging modern tools and methodologies to enhance safety.
- **Persistent Vigilance and Supervision:** Round-the-clock monitoring and proactive support from all concerned parties.

- **Continuous Skill Development and Awareness:** Ongoing initiatives to improve the knowledge, skills, and safety consciousness of the workforce.

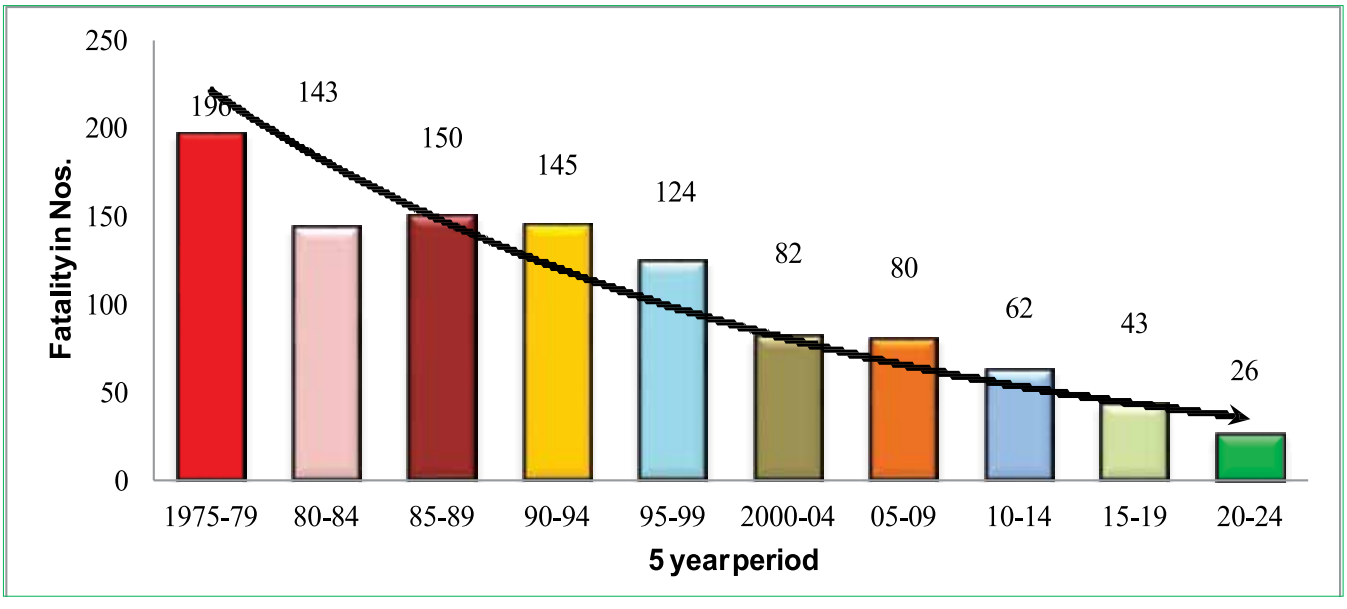
Salient features of continuous and sustained improvement in CIL's safety performance:

Table: 1 - Comparative Accidents Statistics of CIL of 5 Yearly Average since 1975

Time frame	Av. Fatal Accidents		Av. Serious Accidents		Av. Fatality Rate		Av. Serious Injury Rate	
	FA	FTY	SA	SI	Per Mill. Te	Per 3 Lac Manshifts	Per Mill. Te	Per 3 Lac Manshifts
1975-79	157	196	1224	1278	2.18	0.44	14.24	2.89
1980-84	122	143	1018	1065	1.29	0.30	9.75	2.26
1985-89	133	150	550	571	0.98	0.30	3.70	1.15
1990-94	120	145	525	558	0.694	0.30	2.70	1.19
1995-99	98	124	481	513	0.50	0.29	2.06	1.14
2000-04	68	82	499	526	0.28	0.22	1.80	1.47
2005-09	60	80	328	339	0.22	0.25	0.92	1.04
2010-14	56	62	219	228	0.138	0.23	0.49	0.80
2015-19	33	43	107	112	0.08	0.18	0.19	0.47
2020-24 up to Nov	24	26	51	57	0.04	0.13	0.09	0.27

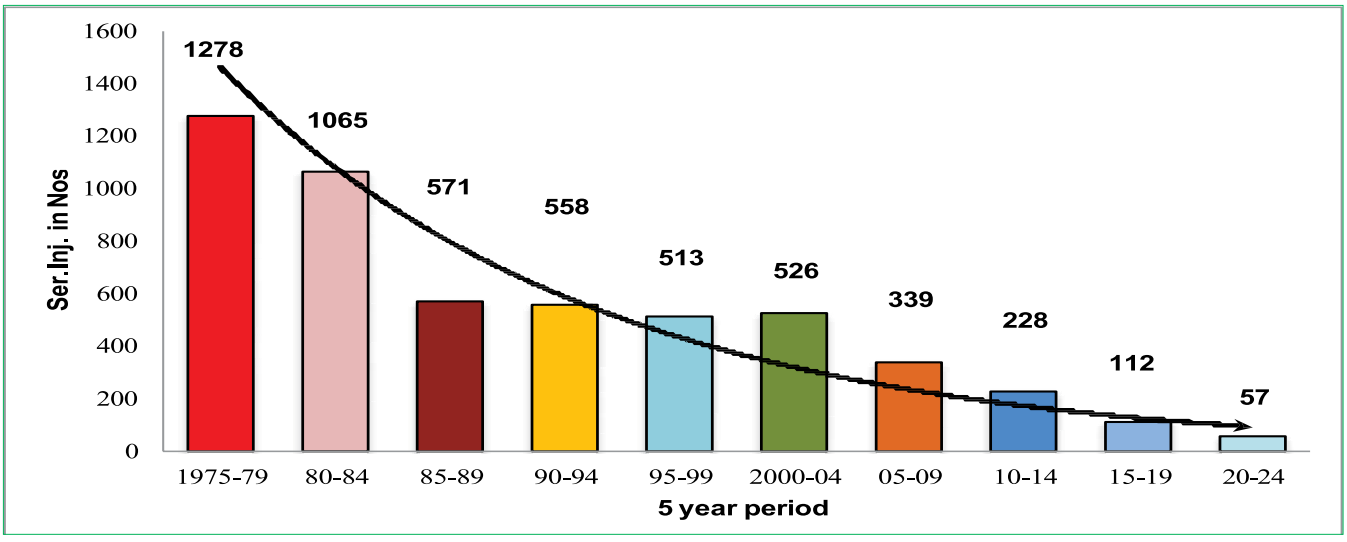
Note: Note: Subject to reconciliation with DGMS & Accident Statistics are maintained calendar year-wise in conformity with DGMS practice

Graph -1 Trend of 5 Yearly Average Fatalities in CIL since 1975



Note: Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

Graph: 2 Trend of 5 Yearly Average of Serious Injuries since 1975



Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

Table – 2: Overall Accident Statistics in 2024 (up to November) vis-a-vis 2023 in CIL

Sl. No.	Parameters	2024	2023
1	Number of fatal accidents	22	26
2	Number of fatalities	24	29
3	Number of serious Accidents	28	34
4	Number of serious injuries	34	45
5	Fatality Rate per Mte. of coal production	0.04	0.04
6	Fatality Rate per 3 lakhs manshift deployed	0.14	0.13
7	Serious injury Rate per Mte. of coal production	0.06	0.06
8	Serious injury Rate per 3 lakhs man-shift deployed	0.22	0.21

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS.

Table -3: Company-wise Accident Statistics of CIL for the year 2024 (Upto November)

Com-pany	Fatal Accidents	Fatalities	Serious Accidents	Serious Injuries	Fatality Rate		Serious Injury Rate	
					Per Mill. Te	Per 3 lac manshifts	Per Mill. Te	Per 3 lac manshifts
ECL	4	5	3	3	0.13	0.17	0.08	0.10
BCCL	0	0	3	4	0.00	0.00	0.13	0.26
CCL	1	1	1	1	0.02	0.06	0.02	0.06
NCL	5	6	3	8	0.06	0.31	0.08	0.41

Com-pany	Fatal Accidents	Fatalities	Serious Accidents	Serious Injuries	Fatality Rate		Serious Injury Rate	
					Per Mill. Te	Per 3 lac manshifts	Per Mill. Te	Per 3 lac manshifts
WCL	1	1	5	5	0.02	0.05	0.10	0.25
SECL	4	4	11	11	0.03	0.29	0.08	0.80
MCL	2	2	0	0	0.01	0.08	0.00	0.00
NEC	0	0	0	0	0.00	0.00	0.00	0.00
CIL	**17**	**19**	**26**	**32**	**0.04**	**0.14**	**0.06**	**0.22**

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

Table - 4: Company-wise Accident Statistics during the period 2021 to 2024 (Upto November)

Com-pany	Fatal Accidents				Fatalities				Serious Accidents				Serious injuries			
	21	22	23	24	21	22	23	24	21	22	23	24	21	22	23	24
ECL	7	2	4	4	8	2	4	5	10	9	3	3	11	9	6	3
BCCL	2	4	5	0	3	5	6	0	6	2	4	3	7	3	4	4
CCL	1	2	4	3	1	2	4	3	3	3	0	1	4	3	0	1
NCL	3	1	2	5	3	1	2	6	9	8	12	4	9	8	16	9
WCL	6	1	2	1	6	2	2	1	6	10	3	5	7	12	3	5
SECL	7	8	3	6	7	8	3	6	21	25	11	12	21	26	12	12
MCL	1	0	6	3	1	0	8	3	2	4	1	0	2	4	4	0
NEC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CIL	**27**	**18**	**26**	**22**	**29**	**20**	**29**	**24**	**57**	**61**	**34**	**28**	**61**	**65**	**45**	**34**

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

Table – 5: Company-wise Fatality & Serious Injury Rate during period 2021 to 2024 (Upto Nov)

Com-pany	Fatality Rate Per MT of coal production				Fatality Rate Per 3 lac man shifts				Serious Injury Rate Per MT of coal production				Serious Injury per Rate 3 lac man shifts			
	21	22	23	24	21	22	23	24	21	22	23	24	21	22	23	24
ECL	0.22	0.06	0.10	0.13	0.19	0.05	0.10	0.17	0.30	0.26	0.15	0.08	0.26	0.22	0.15	0.10
BCCL	0.11	0.14	0.15	0.00	0.12	0.18	0.24	0.00	0.26	0.08	0.10	0.13	0.27	0.10	0.16	0.26
CCL	0.02	0.03	0.05	0.02	0.04	0.08	0.17	0.06	0.06	0.04	0.00	0.02	0.17	0.12	0.00	0.06
NCL	0.03	0.01	0.02	0.06	0.14	0.04	0.08	0.31	0.08	0.06	0.12	0.08	0.41	0.34	0.67	0.41
WCL	0.11	0.03	0.03	0.02	0.11	0.03	0.04	0.05	0.13	0.19	0.04	0.10	0.13	0.18	0.06	0.25

Com-pany	Fatality Rate Per MT of coal production				Fatality Rate Per 3 lac man shifts				Serious Injury Rate Per MT of coal production				Serious Injury per Rate 3 lac man shifts			
	21	22	23	24	21	22	23	24	21	22	23	24	21	22	23	24
SECL	0.05	0.05	0.02	0.03	0.20	0.25	0.10	0.29	0.14	0.17	0.07	0.08	0.59	0.80	0.41	0.80
MCL	0.01	0.00	0.04	0.01	0.07	0.00	0.25	0.08	0.01	0.02	0.02	0.00	0.13	0.13	0.12	0.00
NEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CIL	**0.05**	**0.03**	**0.04**	**0.04**	**0.13**	**0.08**	**0.13**	**0.14**	**0.10**	**0.09**	**0.06**	**0.06**	**0.27**	**0.26**	**0.21**	**0.22**

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

Table – 6: Other type of Accidents / Incidents in mines of CIL

SN	Other Incidents	2024 (Upto Nov)	2023
1	Reportable Injury	34	54
2	Minor Injury	4	9
3	Near Miss incidence	15	72
4	Dangerous Occurrence	19	26

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS

2. Singareni Collieries Company Limited (SCCL)

SCCL has a planned and systematic approach to implement the safety policy of the organization through an effective safety management system. SCCL has prepared Safety Management Plans (SMPs) for all UG & OC mines and regular review of these plans is being conducted to improve the work place safety.

SCCL aims -

- To minimise risks, based on Risk Assessment methods to determine priorities and set objectives for eliminating hazards and reducing risks.
- To bring greater awareness of safety among the employees.
- For reduced absenteeism.
- To motivate all the employees for putting best efforts to achieve zero harm mining.

2.1. Accident Statistics of SCCL:

Details of fatal and serious accidents and rate of fatality and serious injury during 2015 to 2024 is given in the table below (up to 30th Nov, 2024).

Year	Fatal Accidents	Fatalities	Serious Accidents	Serious Injuries	Fatality Rate		Serious Injury Rate	
					Per MT	Per 3 lakh man-shifts	Per MT	Per 3 lakh man-shifts
2015	7	7	245	245	0.12	0.14	4.05	4.98
2016	10	12	215	218	0.2	0.25	3.66	4.54
2017	11	12	213	219	0.2	0.24	3.6	4.39
2018	7	7	190	191	0.11	0.15	2.91	4.03

Year	Fatal Accidents	Fatalities	Serious Accidents	Serious Injuries	Fatality Rate		Serious Injury Rate	
					Per MT	Per 3 lakh man-shifts	Per MT	Per 3 lakh man-shifts
2019	8	8	138	138	0.12	0.19	2.1	3.28
2020	9	12	97	102	0.24	0.3	2.04	2.55
2021	7	13	120	122	0.2	0.32	1.89	2.97
2022	3	5	91	96	0.08	0.12	1.4	2.28
2023	5	5	68	68	0.07	0.11	0.98	1.51
2024	4	5	83	83	0.08	0.14	1.37	2.31

2.2. Steps taken by SCCL to avoid the accidents:

i. Safety Management Plans (SMPs) –

a. The effective management of risk is a key issue for ensuring safety in mines. The Coal Mining Regulations, i.e., CMR 2017 (Reg. 104) made it mandatory for the Owners, Agents and Managers of all mines to adopt Risk assessment based Safety Management Plan for effective risk control.

b. SCCL has imparted training to its 10 Executives in June 2017at SIMTARS, Australia on SAFETY MANAGEMENT SYSTEM on the concept of train the trainer concept for providing further training to the company employee's.

c. SCCL has established "Safety Management Training Centres" at Ramagundam Area for imparting SMP based training to the core group Risk Management Teams by SIMTARS Accredited Trainers (SATs).

d. Safety Management Plan (SMP) has been prepared for all the mines and submitted to Regional Inspectors of DGMS for implementation and at few mines version 3 are being implemented.

e. Training on implementation of SMP at Safety Management Training Centers to the entire mine SMP Teams focusing on Hazard Identification & Risk Assessment (HI & RA) has also been completed in SCCL as first step towards ensuring safe operations in a controlled work environment.

f. Accordingly, awareness week on Safety Management System and SMP was conducted and preliminary audit of mine SMPs with a check list developed in accordance with the DGMS Circular 3 of 2019 was also carried out by the respective ISO teams.

g. Risk assessment based SOPs were prepared for implementation. Training Need Analysis (TNA) for SCCL strategic manpower and imparted training to critical category employees at SMTCs with suitable training modules from the year 2021 in achieving the goal of zero harm in mining activities.

h. Principal Hazard Management Plans (PHMPs) prepared as part of SMPs..

i. Evaluation on implementation of SMP in mines and departments is being done by an internal committee.

j. Awareness on SOPs in mines and departments by employees concerned in all the three shifts is being done

k. Training to the executives on Root Cause Analysis (RCA) is being conducted.

I. All operating mines have prepared and implemented site-specific risk assessment based SMPs-1st Version in compliance of Regulation 104 of CMR 2017. Implementation of SMPs is monitored through the Internal Safety Organization (ISO).

However, SMP document is dynamic in nature. Mine authorities have been up-dating the HI-RA considering the omissions & changes of the mine working system. Accordingly SMP version-3 are under submission for implementation.

It is required to do audit and evaluate the present SMP document comprehensively in view of modifications made earlier SMP version-2

ii. **Principal Hazards Management Plans (PHMPs):** Principal Hazards Management Plans (PHMP) are formulated as a part of Safety Management Plan (SMP) to avert any mine disaster or major mine accident. Trigger Action Response Plans (TARP) are also prepared to deal with emergency situations effectively.

iii. **Standard Operating Procedures (SOPs):** Site-specific, Risk Assessment based Standard Operating Procedures (SOPs) for all Mining and Allied operations are framed and implemented. The SOPs are being updated on a regular basis to cater to the changing mine conditions.

iv. **Safety Audit:** Safety Audits at all operating mines of SCCL are being conducted every month by taking different context through multi-disciplinary Inter-Area Safety Audit teams for assessing safety status of mines and suggesting improvement areas. Deficiencies pointed out during the said mine safety audits are being rectified with appropriate corrective actions within stipulated time

v. **Special Safety Drives & workshops on different Safety Issues:** Special Safety drives on various safety issues & Risk review workshops were organized to improve standard of mines safety and enhance safety awareness amongst employees.

vi. **Toolbox Safety Talk:** In this year Tool Box Safety talk has been introduced for effective assessment of safety related hazards before start of operation. Before work, supervisors or experts related to the jobs give safety talk and informal risk management is done during the process.

vii. **Personal Safety Counseling & Employee Assistant Program:** Every employee is being personally consulted by Safety Officer to understand the ability of the employee in terms of safety attitude and understanding; any personal problems or habits needs immediate attention. Accordingly, the assistant program is extended through a welfare officer or medical officer or person of influence.

viii. **Medical Examination of employees above 45 years:** All Employees having more than 45 years and working in active mining areas are medically examined once in every 2 1/2 year to assess his health condition.

ix. **Constitution of 'Board' for Evaluation of Competency of HEMM Operators:** 'Board' for Evaluation of Competency of HEMM Operators has been constituted and competency of operators are being assessed regularly and compulsorily assessed for new operators and operators involved in incidences.

x. **Pre-Monsoon Audit:** Every year Pre-Monson audit for all mines is being done to check the status of preparedness for preventing Inundation Hazard.

xi. **Star Rating of mines:** For encouraging the best practices in mines including safety practices,

the Star Rating System has been adopted

3. UNDERGROUND MINES:

i. STRATA CONTROL:

- Services of Scientific Institutions like NIRM, CIMFR, NITs etc. are being taken up for scientific studies in different mines on strata management and recommendation of scientific institutions are being implemented.
- Roof bolting as primary support with resin capsules, pneumatic roof bolters are provided to all underground mines to fix roof and side support by bolting with ease.
- Induced blasting long holes with 2.7 mtrs are being done in all caving panels to bring down the roof strategically in goaf to ensure safe workings.
- Quad bolters and Twin bolters are provided in Continuous Miner working areas to meet requisite support demand to match the machine progress as per extraction requirement.
- Strata monitoring is being done with Tel-Tales, multi point bore hole extensometers, Load cells, vibrating wire, Stress cells, Rotary tell tales etc as per the SCAMP recommendations.
- Replaced manual/basket loading with SDLs and LHDs.
- Where ever geology permits, bord and pillar method of mining by deploying continuous Miners and Long wall method of mining with combination of PRS.

ii. HAULAGE:

To improve safety in mines, in addition to provisions of Reg. 92 of CMR:

a. 52 Man riding systems are provided in all underground mines to reduce arduous travel conditions.2 Man winding shafts were provided in 2 underground mines.

b. Replacing haulages with belt conveyors for coal evacuation, wherever possible.

iii. GAS MONITORING:

a. Tube bundle gas monitoring has been established at Adriyala Long wall Project with the help of SIMTARS, Australia. Presently, four gases Oxygen, Nitrogen, Methane and Carbon Monoxide are being monitored.

b. All supervisors provided state of art gas measuring equipment for Oxygen, Carbon monoxide, Methane and carbon di-oxide gases etc.

iv. GENERAL:

a. Below ground communication and tracking system with wi-fi is proposed in 10 UG mines.

b. Whenever the workers are exposed to higher temperatures and humid conditions in underground mines (ALP mine), air Chilling Plants are provided to create comfortable conditions and to reduce the risk to the workers.

c. Light weight LED lamps are provided to all underground employees.

4. OPEN CAST MINES:

i. Bench formations and dump designs are being made as per the recommendation of scientific institutions.

ii. CSIRO (Commonwealth Scientific and Industrial Research Organisation), Australia is an internationally reputed scientific institution in the field of mining since 2010.

iii. 2 Nos of Simulators for 6 types of HEMM are at technical training centre (TTC, RG-1 Area) for specific training to HEMM operators.

iv. Provision of high standard of illumination in

opencast mines to work in dark hours as per statute.

v. Provision of effective communication with wireless sets.

vi. High capacity dumpers are being deployed both by the company and the contractor to optimize the movement of the fleet.

vii. NONELS are being used to reduce the ground vibrations and fly rock in all OCPs and electronic detonators are being used in few mines where the habitation is quite nearer than 100 m.

As most of the opencast mines are converted from underground mines, separate safety teams have been formed to monitor and obviate

5. OVERBURDEN MANAGEMENT:

Following precautions are also being followed for the stability of OB dumps:

i. Design of benches with de-coupling benches at 100m interval.

ii. The safe distance of about 200 meters between dump toe and coal bench is being maintained.

iii. Proper rain water management is adopted by making deck drains and garland drains to drain the water for better dump stability. Plantation is being done to maintain dump stability.

iv. At present, Pit slopes and dump slopes are being monitored with Total Station instruments. LIDAR has been procured for continuous monitoring of dump slopes, high-wall slopes on experimental basis.

v. Technical collaboration with CSIRO for dump design and stability. Measures recommended by CSIRO after conducting advanced soil tests are being implemented. CSIRO carried out studies at MOCP, SRP OCP, RG OCP-II and PK OCP. The recommendations being followed are

- Removal of the topsoil layer before dumping as per the geo technical engineering approach for the stability of external dump.
- Internal dump associated deck angles are being kept at less than the natural angle of repose (preferably) at around 30^{O}.
- Bottom most de-coaled floor roughening by blasting with channeling for the increased frictional offer for the internal dumps stability.
- Daily visual monitoring and recording of all aspects of the dump geometry.
- SPT (Soil Penetration Test) and laboratory soil strength tests including PLT (plate load tests) are being conducted for dump design.
- In the quarry, decoupling bench of wider width for every 100m vertical depth are being maintained for the stability of final high walls.
- All inaccessible final high wall benches are provided with prisms grouted permanently to track the X, Y and Z co-ordinates either daily/weekly/fortnightly and monthly basis as required to know the displacement from its formation.

6. ELECTRICAL & MECHANICAL:

i. Implementing Shut down procedure in Electrical maintenance and also following (LOTO) LOCK OUT and TAG OUT

ii. Ensuring 50mA – 750mA EL tripping arrangements in all electrical equipments also providing over load and No-volt relays to each

electrical equipment

iii. Provided Nitrogen Injection Fire Prevention and extinguishing system at transformers in all 132 KV sub-stations

iv. Additional new safety provisions in respect of Man Riding Car such as Emergency Hydraulic Valve, Automatic speed indicator, Slow banking are being incorporated in all chair car systems in operation

v. Zone priority system is being implemented in AFDSS (Automatic Fire Detection and Suppression System) on all Shovels

vi. Secondary brake system on the failure of power is being introduced on UG haulers.

7. DUST SUPPRESSION MEASURES:

The following measures are taken for controlling dust propagation

a. 102 Nos. of 10/12 KL, 66 nos. of 28 KL and 3 nos. of 80 KL mobile water sprinklers are deployed for effective dust suppression in all Open cast projects on haul roads and at working places.

b. Dust suppression systems including dust extraction arrangements were being commissioned at OC3 CHP, RG2, SRP OC CHP, Goleti CHP and KCHP MNG.

c. 60 nos. of mobile dust suppression systems have been commissioned at CHPs.

d. 03 nos. of Pre Weigh Bin Truck loading Systems were commissioned with built in integrated dust suppression systems at Kistaram OC (01 nos), IK OC (01no) and PK OC.

e. 14 nos. of 500 TPH feeder breakers were ordered with built in integrated dust suppression systems. Out of which 06 nos. were commissioned with integrated dust suppression system at Kistaram OC, JVR OC, RG OC3 (6 CHP & Phase II) and IK OC.

f. Coal transport trucks are covered with tarpaulin sheets during coal transportation for prevention of spillage and resultant dust pollution.

g. One hired water tankers are arranged in each CHPs premises including approach roads for dust suppression purpose.

h. Dry Mist spraying system is provided at transfer points of belts and all crushing points of CHPs. Water spraying lines are laid along the conveyor belts. Crusher houses are enclosed to the extent possible. Conveyors and screens are provided with covers to avoid fugitive dust generation during their operation.

i. Plantation was raised in and around the premises of CHPs to control the air born dust settle.

j. Effective water spraying arrangements are made at coal loading bunkers at pithead on surface and at coal transfer points in the mines and coal handling plants.

k. Sensor activated water spraying plungers were fixed in unloading points to conserve the water and to make the system fool proof mechanism.

l. Solenoid controlled water spraying arrangements were made on the belt conveyors so as to activate the water spraying plunger only when the belt is running with load.

m. All the roads connecting mines, CHPs, workshops and colonies have been black topped in the SCCL mining areas to prevent dust from becoming airborne.

n. Periodical maintenance of vehicles is carried out as per manufacturer's standards.

o. Wet drilling methods are adopted in OC Mines.

p. Dust generation from the OB dump due to wind are controlled significantly by planting grasses on slopes and plants on dump top soon after their formation.

q. Avenue plantation is raised along roads for dust control. Plantation is done around the quarry and OB dumps, which serves as a barrier to prevent the dispersion of air borne dust.

r. In underground Pneumatic/Hydraulic Bolters with wet drilling are being used for roof bolting.

s. All the OC Mines of the company are provided with Continuous Ambient Air Quality Monitoring Systems (CAAQMS).

t. At all the CHPs, silos, conveyors and railway sidings water spraying, mist spraying guns are provided.

u. Dust suppression activities being implemented at all Area level CHPs and Pit Head CHPs, on "ECO" friendly concept, Green belt is being developed in CHP surroundings.

v. Before dumping the coal into crusher hopper for crushing, coal being wetted by the sprinklers.

w. In pit Crushers & Conveyor system were commissioned at SRP OC CHP to avoid transportation of coal from quarry to surface by Dumpers.

x. A major CHP to handle 10 MTPA of Coal has been commissioned with integrated dust suppression system at the biggest opencast of the Company

8. RESCUE SERVICES

i. SCCL has established and is maintaining four rescue service points namely

- Mines Rescue Station, Ramagundam,
- Rescue Room with Refresher Training (RRRT) at Mandamarri, Bhupalpalli and Kothagudem areas. Rescue services are headed by a General Manager. These rescue stations are telephonically connected with the respective mines.

ii. The facilities existing in the Rescue Station are-

- The rescue stations are provided with well trained Brigade members in accordance with mines rescue rules, 1985.
- SCCL has become the first privileged member of International Mines Rescue Board (IMRB) from India.
- Imparting initial and refresher training in mines rescue and recovery work.
- To minimize the response time and to improve reliability, new emergency rescue vehicles fully equipped with latest generation equipment are being used.
- Spot detection of mine gases is enabled with latest Digital Toximeters, Oxymeters, Personal Micro Gas Detectors, Methanometers and Multigas-Detectors. Faster Chemical Analysis of Gases is achieved with Gas Chromatography.
- Apart from the basic rescue equipment required as per the statute, SCCL has procured state of the art Hydraulic Rescue Tools consisting of Hydraulic Cutters, Spreaders, Combi-Tools, Rescue Rams and Lifting Jacks. Pneumatic High Pressure Lifting bags, Concrete Cutters and Wood Cutters to deal with various types of disasters.

9. SAFETY, HEALTH AND BASIC FACILITIES FOR CONTRACTUAL WORKMEN

a. SCCL is providing medical facilities to all contractual workmen as inpatient /outpatient.

b. Training is being given to all contractual workers before deployment in mines and departments.

c. Right from the stage of preparation of NIT, offloading contractors are obligated to adhere to statutory provisions of applicable laws, including mining laws in their operations.

d. Safety Audits are conducted on Contractual workmen safety and regular interaction and communication is established for implementation of safety standards. SOPs and COPs have been are prepared, issued & and are being implemented in contractual works.

e. Special drives taken up by organizing safety awareness campaign week in contractual working areas to promote safe culture and facilities.

f. Conducted internal safety audit on contractual employees working areas for the assessment of SMP implementation status and advised to make arrangements for achieving the objectivity of the audit for the SMP/SOP implementation in true spirit.

g. Responsibilities of contractor under Regulations 39 of CMR 2017 are invariably mentioned in the purchase orders. IME/PME is being conducted to all contractual workmen and necessary training is imparted to the contractual workmen.

h. Safety awareness programs are conducted to inculcate safety culture among the contractual workmen.

i. During Annual Safety Fortnight, the contractual areas are also assessed by a team headed by experienced and senior multi disciplinary team.

j. "Safety awareness campaign week in contractual working areas" was organized to promote safe working practices in contractual works. During the campaign, awareness was inculcated to all the workmen through safety pledges, safety slogans, Dos & Don'ts in safety, safety procedures, use of safety tools etc.

k. Representatives of contractual workmen are part of the pit safety committee members and they are actively participating in it to promote safety and doing safety campaign in the contractual workmen camp area.

l. The contractual workmen are made to read SOPs prior to their work allotment. Use of PPE by the contract workmen is ensured.

10. MEDICAL & HEALTH

SCCL has established 1 Main hospital, 6 Area hospitals and 12 Occupational Health Centers (OHS) managed by 21 OHS trained doctors to carry out all the tests and medical examinations required as per the statute and recommendations of National Safety Conferences. Hospitals are equipped with sophisticated equipment like CT scan, 2D Echo and Dialysis Centers.

Outpatient services - Rendered both at the dispensaries and at the hospitals.

In - patient services - Provided at all the hospitals especially for the Maternity cases.

Specialty services - All the hospitals have a provision for the common medical specialties towards Secondary Medical Care viz., General medicine, General surgery, Orthopaedics, Gynaecology & Obstetrics, Anaesthesiology, Paediatrics, Psychiatry, Ophthalmology, ENT, Dermatology, Radiology,

Dentistry, Pathology and Social & Preventive medicine (Health Services).

Diagnostic services: - These include the Haematology, Microbiology, Histopathology, Biochemistry, Radiography, Sonology, Computerized Tomography Imaging facilities etc.

Super Specialists like Cardiologist, Nephrologists, Neurologist, and Urologist from Corporate Hospitals are visiting Main Hospital, Kothagudem & Area Hospital, Ramagundam & Area Hospital, and Ramakrishnapur every month.

Further, SCCL has been proposing to establish one Cath Lab center for the golden hour treatment to all SCCL employees.

Referral services - Super Speciality or the specialist services which are not available at our hospitals are arranged with the referral services to the empanelled corporate hospitals.

Health Screening Services -

Mobile Super Specialty Camps for early detection of lifestyle diseases.

Mega Health Camps are held in the surrounding villages of SCCL mines.

Mobile Health Screening camps for Breast & Cervical Cancer for Women Employees and Dependents of the Employees is conducted.

Health Education to the Employees and Dependents.

Mobile Health Camps to Surrounding Villages and Project affected Villages.

Emergency Preparedness - Doctors and Staff are trained in all emergency cases and Rescue Services. Regularly they are retrained at institutes like NIIMS, Care Hospital etc.

Doctors and Staff attend the natural calamities that occur in and around the State.

Operation Theatre facilities: All the hospitals are provided with fully equipped operation theatres.

Emergency and Elective **surgeries of all the specialties** are taken up at any time of the day and night depending upon the need.

Emergency services are provided round the clock at the casualties at all the Hospitals. In addition to the above, all the 'A 'type dispensaries also have the provision for rendering medical care round the clock.

Medicines are being procured from **standard pharmaceutical manufacturing companies** which are within ORG (Operational Research Group) 150 Ranking. Drug Inspectors are regularly inspecting and collecting samples from company medical stores to ensure quality of medicines. Medicines prescribed by super specialty hospitals are being purchased locally.

Company empanelled **super specialty hospitals** to provide super specialty medical and health services.

Occupational Health Services (OHS) are integral part of the medical & health services headed by Chief Medical Officer. SCCL is an 134 year old organization and has established medical services long ago and expanded them to 7 Hospitals (820 bed Strength), 22 Dispensaries spread over the mining areas of the organization serving about 2.5 lakh persons. 12 OHS centres were established at 11 production areas of the company working exclusively for statutory occupational health monitoring of all employees of the company including contract labor.

OHS include {Initial Medical Examination (IME) and Periodical Medical Examination (PME)} 5 years PME for less than 45 Years, 2 1/2 years PME for more than 45 Years, Pre-placement medical examination, Contract Workmen IME/PME, Food Handlers medical examination, Refraction Test for HEMM Operator for every 01 Year, medical examination

Before Retirement (MEBR), Monitoring of chronic diseases like HTN, DM. Twenty five doctors Trained in AFIH (Affiliated Fellow in Industrial Health) at Central Labour Institute, Mumbai have been designated as "Occupational Health physician to look after the OHS Centers. Thirty four Staff Nurses were trained in OHS. Standard Reporting system of all occupational services is in place.

ODB (Occupational Disease Board) exists since 2006. Organized fitness evaluation system is in place for mine accident cases.

OHS Centers have trained staff nurses and supportive staff for conducting

1. Audiometry,
2. Spirometry, and
3. ECG.

Laboratory & Diagnostic facilities at OHS Centers are:

i. Fully equipped Laboratory facility,

ii. ECG Machine,

iii. Audiometry

iv. Spirometry

v. Anthropometric measuring equipment

vi. Equipment for visual equity measurement

vii. Equipment to measure BFI and BMI.

SCCL has provided 62 ambulances including 10 ALS Ambulances equipped with defibrillators, pulse Oxymeter, all emergency drugs, Ventilators, fully automated Ophthalmology equipments available. Eight ambulances are provided for mines which are far away from dispensaries/hospitals.

11. GENERAL SAFETY

i. Continuous improvement is an essential part of building a safety culture. SCCL strives continuously to improve the safety culture in the organization. SCCL has taken several measures to improve safety culture in the mines and allied activities of the organization. Some of them are -

ii. In every mine, Daily Safety Pledge and SOPs reading wearing PPE is being administered by all workmen by the concerned implementer and Monitors of the activity at the beginning of each shift.

iii. SMP and Subject wise awareness programs such as Illumination compliance fortnight, Haul road maintenance and implementation of traffic rules. Fortnight, Men, material (coal) transport systems for UG mines fortnight, Safety awareness campaign week in Contractual works – Audit of SMP Electrical Safety Awareness – LOTO and Shutdown Procedures etc. were organized

iv. Tripartite meeting (Area level/ Regional level and Company level) are being organized for every six months.

v. Annual Safety Week/Fortnight is observed every year

vi. Online safety suggestions on website, safety suggestion boxes, Trade tests are some of the efforts to instill best behavior. Suggestions are invited from the employees and during the Annual Safety Week, spot prizes are distributed to those workmen who give instant answers to safety related matters.

vii. Attitude towards safety is also considered in identification of Best Workmen, Best Supervisor and Best Officers every year.

viii. Interaction with the workmen by safety and other officers of the mines

ix. Display of safety slogans

x. Display of pictures showing dos and don'ts of an activity

xi. Honoring the workmen giving the best safety suggestion during the Annual Safety Week inspections

xii. Training and Re-training of all workmen including supervisors are being taken up.

xiii. Continuous ambient air quality monitoring systems have been established in SCCL areas for continuous monitoring.

xiv. Air conditioning systems have been established in one underground mine for good working place environment.

xv. Nevis CD-60 Model, type mounted (DFDS - Dry Fog Dust Suppression) for dust suppression machines are provided at CHPs for dust suppression

xvi. The Coal Handling plants are provided with a continuous pipe line along the plant. Fixed outlet connections are made as per the requirement, i.e at discharge points of conveyors with fixed nozzles of mist spray type for dust suppression.

xvii. Miner shoes are being procured as per standards of IS: 3976-2003 and IS:15298-2002. Sufficient shoes are being provided. Quality and Durability of Shoes are ensured with-

a. Pre-dispatch testing in the FDDI approved Laboratories

b. Post-dispatch testing by FDDI, Chennai/ Noida

c. Replacement of shoes on free of cost in case of any damage within six months.

xviii. Rate contracts have been reassessed regularly for supply of personal protective equipment (PPE), such as hand gloves, ear plugs, and dust respirators etc. Recently PPE fortnight has been conducted to sensitize all concerned as accidents due to fall of persons increased.

12. STEPS TAKEN FOR CAPACITY BUILDING AND IMPROVING SAFETY

Skill development & capacity building in SCCL

i. **Nargundkar Institute of Management (NIM):** State of art training centre for specialized training to officers with external & internal faculty. Ever year training is arranged as per the predefined calendar year training program to all level executives on safety and management development system.

ii. **SMTC (Safety Management Training Centre):** SIMTARS (Australia) accredited trainers (10 members) are training as per the train the trainer concept on development, implementation and review of Safety Management Plan in mines and departments. As part of the above, Two SMTC (Safety Management Training Centers) were established one at MMR Area and other at RG II Area) for arranging special training to the core teams of the mines on identification of risk, assessment of risk and its mitigation system formulation as per the compliance of Regulation -104 of CMR-2017

Further, training on Root Cause Analysis (RCA) is also conducting and upgrading the officers in finding the root cause for any incident/ accident and it helps in improving the safety standards.

iii. **UMTI (Underground Mechanization Training Institute) at RG II Area:** Special training centre to meet the present underground mechanization requirements. The employees working on special works in underground mines skill development has been taken up in UMTI

iv. **TTC (Technical Training Centre) at RG 1 Area:** Special training centre to meet the present OCP requirements. The employees working on all types of HEMM in OCPs are given training

for skill development at TTC.

Two SIMULATORS are effectively working on six modules of HEMM training at TTC for the skill development of HEMM operators.

v. **First Aid Training Centre at NIM premises:** A First Aid Training Centre recognized by DGMS has been established in NIM Premises for imparting training to the statutory personnel and persons appearing for statutory examinations.

vi. **Mines Vocational Training Centers (MVTC):** Ten MVTCs are functioning in the mining areas for imparting basic training, Change of job training, refresher training, and specific training including structured training to the front line supervisors.

- Objective oriented training is imparted to Pit Safety Committee members.
- All contractual workmen are imparted training at MVTC.
- As part of CSR activity, the local youth are being given basic training to use them as and when required.
- As part of CSR activity, local youth are provided with the training with VOLVO Company as part of skill development.

13. ONLINE SAFETY MONITORING SYSTEM:

a) Review of accident statistics is being done on web on real time basis as follows -

i. Online Accident data entry-

ii. Generating Mine/Area/Company level Statistical Reports for submission to various authorities.

iii. Uploading of enquiry report and accident plan.

iv. Generating various forms for all incidents for submission to DGMS.

b) Accident Monitoring- IT Integration of Applications i.e., treatment Slip generation, Hospital Accident attendance and online Accident data entry.

c) Spot Violations Entry

d) Monitoring of Gas Samples

e) Underground visits of executives

f) Uploading of Mine Permissions, ISO & DGMS Circulars etc.

g) Data regarding the disciplinary action taken on persons responsible for accidents.

h) Online accident data entry in Web portal (MoC) for Safety summary

i) Appointment and termination of Agents

j) Uploading of issuing of sensitizing letters to the designated Implementers and Monitors for Implementation of Safety Management Plan (SMP) in mines.

k) Area wise contract & department accident summary report.

l) Monitoring of man days lost status for all Serious & Reportable accidents for encouraging factual recording of cases.

m) Monitoring of status of Hospital Continuing cases through online

n) Uploading of Safety suggestions by employees for encouraging the role of employees in safety point of view.

o) Contract Employees Man shifts.

p) Strata Monitoring data of UG mines

q) Slope monitoring data of OC mines

Awareness/ Audit Programs: The following

Awareness/ Audit Programs were conducted in SCCL to address and reduce safety violations reported by DGMS.

2023-2024 (April – March)

Sl. No.	Awareness/Audit Programs	Period
	2023 - 2024	
1.	BPA Regional wise One day workshop on HEMM operational safety under the Aegis of DGMS	May 2023
2.	RG Regional wise One day workshop on HEMM operational safety under the Aegis of DGMS	May 2023
3.	Special Safety Awareness drive for prevention of Fatal Accident in the month of June	June 2023
4.	Safety fortnight drive on Movement of Light Motor Vehicle (LMVs) MUV and others vehicles for conveyance of employees in OC mines	May 2023
5.	Safety Audit on haul roads safety provision of LMV in all OCPs, under Regulation 101 of CMR-2017	June 2023
6.	One day workshop for KGM region on "Operation and Maintenance on Transmission and Distribution of Electricity"	June 2023
7.	One day workshop for BPA region on "Operation and Maintenance on Transmission and Distribution of Electricity"	July 2023
8.	One day workshop for RG region on "Operation and Maintenance on Transmission and Distribution of Electricity"	July 2023
9.	Safety Awareness drive on My safety is my responsibility (My safety is my family safety) and Role of Monitors and implementers to inculcate Safety Culture amongst all employees of SCCL	July 2023
10.	Safety audit on Haulage road ways (including haulers and ropes) and man riding car/chair lift system in UG mines	September 2023
11.	Safety audit on "Handling, use of Explosives & Blasting operation in mines	August 2023
12.	Safety Audit on near miss incidents and status of safety in OCPs - conducting systems audit on safety	September 2023
13.	54th Annual Safety Fortnight 2022	October 2023
14.	Workplace Hazards awareness & HIRA under Reg. 104 SMP of CMR 2017 to employees (below 5 years' experience) in UG mines	December 2023
15.	52nd All India Mines Rescue Competitions 2023	December 2023
16.	No Helmet-No Entry at Hospitals/Dispensaries	December 2023
17.	Prohibition/Ban on mobile phone usage by all the Singareni Hospital Employees	December 2023
18.	Audit on company hired vehicles	January 2024
19.	Pre-monsoon audit	March 2024
20.	Safety audit drive on coal Transportation by Rope Haulage System in UG mines	March 2024

In view of the above measures mentioned about the accidents have come down over a period of time and SCCL is heading towards **'Zero Harm'** goal

14. NLC India Limited (NLCIL)

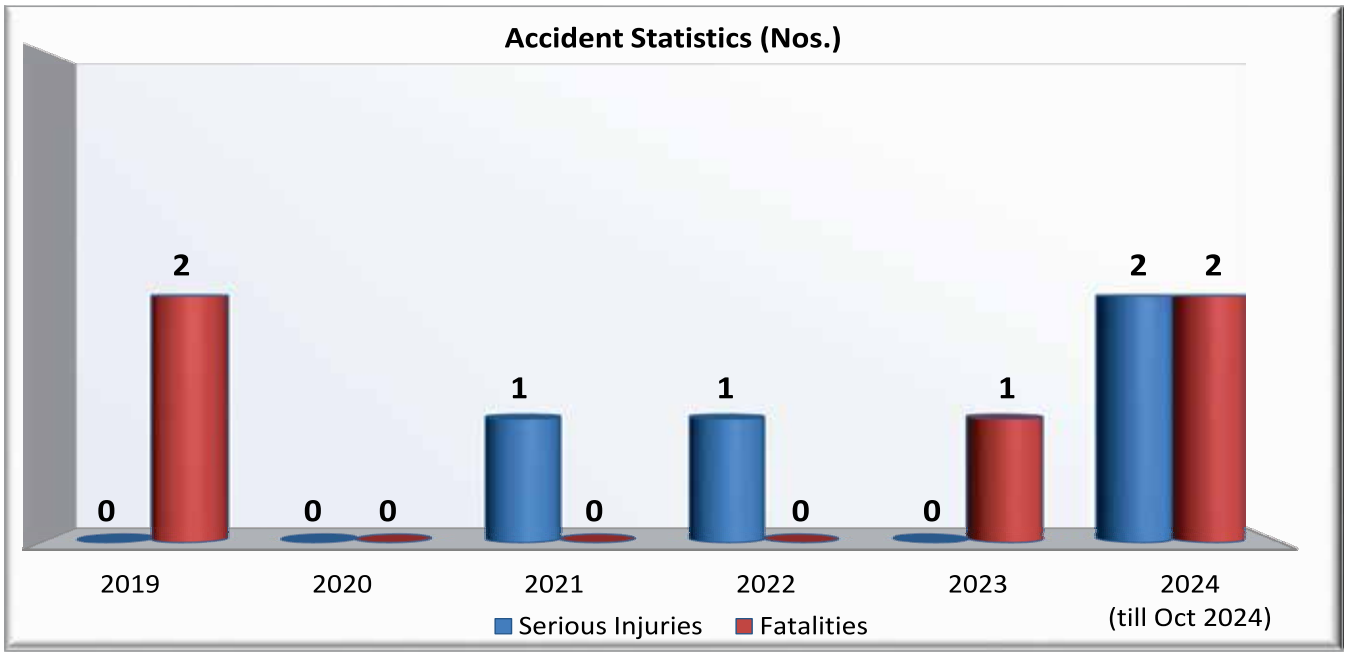
Accident Statistics of NLCIL MINES - (for last five years):

Year	Fatalities	Serious Injuries
2019	2	--
2020	--	--
2021	--	1
2022	--	1
2023	1	--
2024 (till Oct 2024)	2	2

d) Safety Audit of all Mines is carried out as per the check list by multi-disciplinary team once in every year.

e) Each mine is maintaining two fire tenders, being handled by CISF personnel, round the clock.

f) Water danger potentials are studied and well managed by a separate department called ground water control division.



14.1. Safety measures at NLCIL

The following safety measures are being adopted in NLCIL to achieve Zero Accident Potential:

a) Mines at Neyveli (Mine-I, Mine-IA & Mine-II) are being operated with State-of-the-Art Technology i.e. Bucket Wheel Excavators, Spreaders, stackers and series of conveyors having inbuilt safety features.

b) Risk assessment-based Safety Management Plans have been prepared for all the mining activities like Bench operation, SME, Conveyor Zone, GWC, CME etc. and is being practiced.

c) Pit Safety Committee meetings conducted monthly besides special meetings.

g) Illumination, dust, noise and vibration studies are conducted regularly and all the parameters are maintained as per the norms.

h) SIMULATOR from 5DT Technology of South Africa was installed and commissioned at Vocational Training Centre to impart virtual based training to equipment operators to eliminate any accident during actual equipment training.

14.2 Emergency response System

a) Principal Hazards have been identified as a part of Safety Management plan in all the NLCIL mines and Emergency Action Plan is in place. There is also detailed Monsoon Action Plan which comes into force as soon as any weather warning is received by Mine officials

from Meteorological department with regard to high wind velocities and heavy rainfall.

b) In order to enhance the emergency response of system and personnel, mock drills are conducted every month at different locations, different divisions and in different scenarios.

c) List of First Aid trained persons are displayed in all divisions along with their contact numbers to contact them in times of need. Emergency numbers are displayed in all prominent locations.

14.3. Safety Trainings

Training given at GVTC, Neyveli for the period January 2024 to November 2024

GVTC-No of persons Trained During the Calendar Year 2024 (Jan 2024 to Nov 2024)			
Sl. No.	**Type of training**		**Persons trained**
1	Basic/Initial training imparted to employees		04
2	Basic/Initial training imparted to contract workers		2134
3	Basic/Initial training imparted to Apprenticeship Trainees		147
4	Refresher Training	Contract workers	1280
		Regular Employees	688
5	Special Training	Contract workers	426
		Regular Employees	273
6	Other Training (Executives, Supervisors, Graduate & Diploma Apprentices and CISF etc.)		1261
	Total no. of persons trained		**6213**

14.4. Occupational Health services

In the mines of NLC India Limited, the following actions have been taken with regard to OH services:

a) Health facilities are being provided to all mine workers including contract workmen. One number of 355 bed multi-functional general hospital is functioning at Neyveli and one Occupational Health Centre is operational at Barsingsar Mine, Rajasthan.

b) For all the workmen at NLCIL Mines, including contract workmen, Periodical medical examination is conducted once in 3 years at Industrial Medical Centre dedicated for this purpose at NLC India Hospital. Based on the result of PME necessary action is taken.

c) Each mine is provided with BLS (Basic life support) Ambulance for speedy evacuation of injured or sick person to the hospital for better medical treatment.

d) Noise and illumination surveys are regularly conducted and necessary actions are taken based on the result of measurement.

e) Occupational health and safety workshops are regularly conducted to impart health awareness among mine workers.

Type of Medical Examination	Number of persons Jan 2024 to Nov 2024 (Actual)
Initial Medical Examination (IME)	2,032
Periodical Medical Examination (PME)	3,818

f) First Aid Training from January 2024 to November 2024

[Established as per provisions laid down under the Gazette Notification No.G.S.R. 529 (E), dated 4th August 2021, and approved by DGMS, vide No.DGMS/OH(HQ)/First Aid/01/2025/155, Dhanbad dated 18th April 2022.

Year	Internal	External	Total
Jan 2024 to Nov 2024	69	163	232

14.5. Safety Monitoring at NLCIL:

A. Safety Monitoring at Mine Level:

a) Apart from monitoring the Safety status of NLCIL mines by the statutory bodies like DGMS, the mines are being monitored round the clock by the Mining Sirdars, Overman, Second class and First class Assistant managers in all the three shifts and Regular inspections by Safety Officer and Manager of the mine.

b) Monthly Pit Safety committee inspections are conducted and the observations are complied.

c) Mock rehearsals are conducted to create awareness on safety.

d) Inspections by Workmen Inspectors (Mining, Mechanical and Electrical) are regularly made and the observations are complied.

e) Division wise Safety audits are conducted at mines level at regular intervals.

B. Safety Monitoring at Corporate Level:

a) Regular Inspections of the mines are being done by the Multidisciplinary Corporate Safety Team.

b) Monthly Safety Officers meeting is conducted to discuss the safety status of NLCIL mines by the Corporate Safety team.

c) Internal Safety Audit of the mine is done once in a year by the Multidisciplinary Corporate Safety team.

d) Accidents/Near miss accidents are investigated and internal circulars are being issued to create awareness on safety to avoid such accidents in future.

e) Regular Inspections by Corporate council members are conducted and the observations are complied.

f) Bipartite and Tripartite Safety meetings are conducted with DGMS officials, Trade union representatives and the Top management and the observations are complied.

g) Annual Safety Week Inspection of mines is conducted by teams from other mines in Tamil Nadu in consultation with the DGMS and Tamil Nadu Mines Safety Association to create awareness on Safety among the workforce in NLCIL.

15. Crisis Management Plan (CMP) of Ministry of Coal

15.1. Introduction

The Crisis Management Plan (CMP) of the Ministry of Coal (MoC) is designed to address situations where crises occur in coal mines, whether they are underground or opencast mines. A crisis is defined as a situation where the lives of 10 or more people are lost or threatened. Upon such an event:

- The Mine Manager must send the first information report (FIR) to the Chief Managing Director (CMD) of the company and the District Magistrate.

- The District Magistrate/District Collector will notify the Chief Secretary of the State, the CMD/Chief Executive of the company, and the Secretary of the Ministry of Coal (MoC).
- The Secretary (Coal) will then inform the Cabinet Secretariat and the Prime Minister's Office (PMO) about the crisis.

15.2. National Crisis Management Committee (NCMC)

The NCMC is responsible for coordinating the response to a national-level crisis, and its members include:

- **Chairman:** Cabinet Secretary
- **Members:**
  - Secretary/Principal Secretary to the PM
  - Secretary, Ministry of Home Affairs (MHA)
  - Secretary, Ministry of Defence (MOD)
  - Secretary (Security)
  - Secretary (Information & Broadcasting, I&B)
  - Director, Intelligence Bureau (IB)
  - Secretary, Research & Analysis Wing (R&AW)
  - Deputy National Security Advisor (NSA)
  - Secretary, National Disaster Management Authority (NDMA)
  - Foreign Secretary, Ministry of External Affairs (MEA)

The **Joint Secretary (TS Cell),** Cabinet Secretariat, will act as the Convener.

15.3 Roles and Responsibilities

- **Secretary (Coal)** or a senior officer (not below Joint Secretary Level) will coordinate the activities of all supporting Ministries and Departments.
- MoC will provide copies of the CMP to the NCMC and supporting Ministries.
- Periodic assessment of the CMP's efficiency will be conducted through simulation exercises.

15.4. Actions upon Receipt of Crisis Information

Once the information about the crisis is received:

- MoC formed **Crisis Management Group (CMG) and Damage Control Team.**
- CMG will report developments to the **Central Crisis Response (CCR),** Ministry of Home Affairs (MHA), and NCMC.
- **Control Room** in the Ministry of Coal established at room.

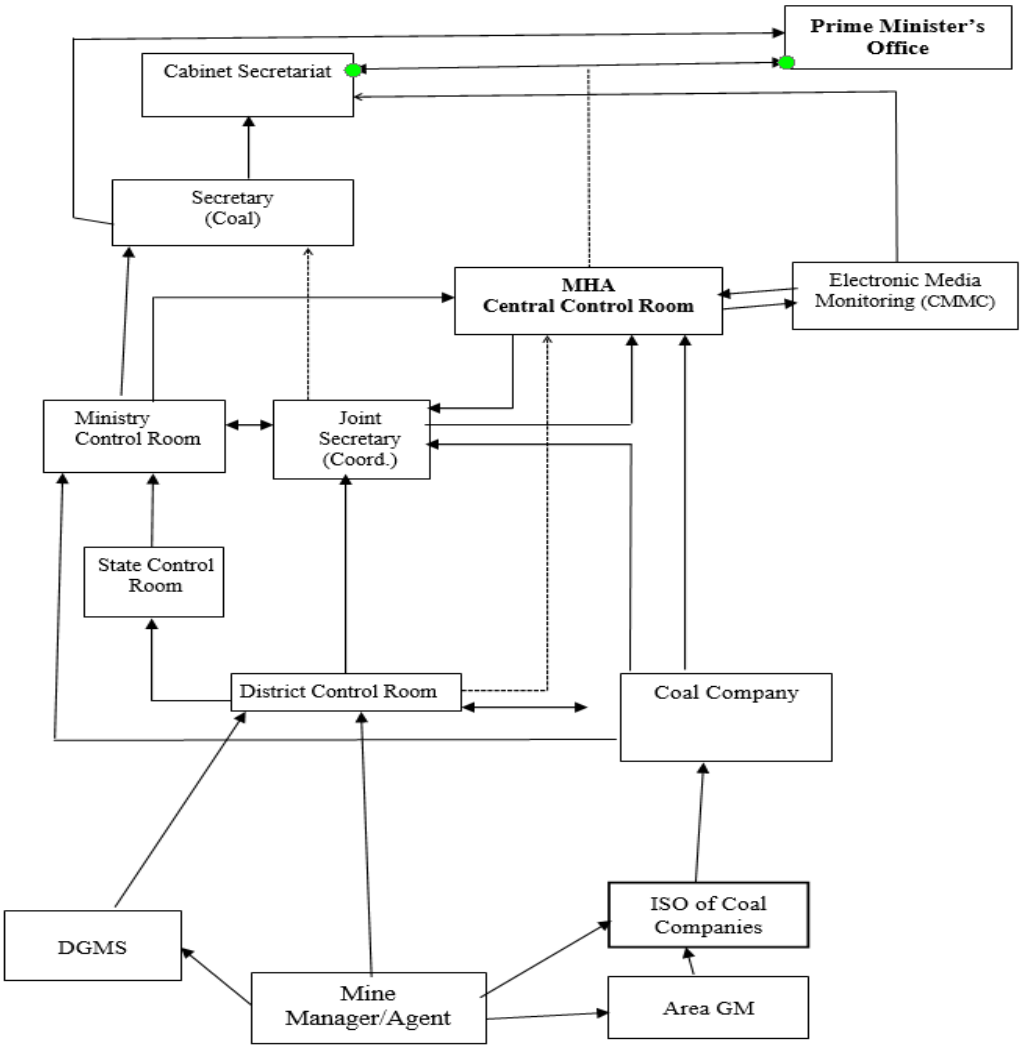
15.5. Damage Control Team

The **Damage Assessment Team** will reach the site within **24 hours** and issue directives. The **Damage Control Team** will be activated within **24 hours** and will handle the situation, reporting developments to NCMC. Its structure is as follows:

- **Chairman:** Secretary (Coal)
- **Members:**
  - Additional Secretary (Coal)
  - Joint Secretary (Coordination) [Nodal Officer]
  - Project Adviser (Spokesperson)
  - Deputy Director General, Directorate General of Mines Safety (DGMS) from the concerned zone
  - Project Adviser/Director (Technical), MoC for coordination
  - CMD, CMPDIL
  - Director (Technical) of the concerned coal company

The Damage Control Team will provide daily reports to the DGMS and MoC, assessing the situation on the ground and informing the Secretary (Coal) about the damage, loss, required assistance, and impact on production.

15.6 Information flow-chart:



15.7. Control Room Infrastructure

Control Room of Ministry of Coal has been equipped with:

- Dedicated fax and telephone lines
- Hot line facilities
- Computer with internet and printing facilities
- Photocopying machine
- Teleconferencing equipment
- Furniture and sitting arrangements

The Control Room has been staffed 24/7 by one officer and a clerk (LDC/UDC). Additionally, two vehicles are immediately available for 24-hour service.

15.8. Crisis Management Plan (CMP) Review and Meetings

A CMP meeting is held annually under the Chairmanship of the Secretary (Security), Cabinet Secretariat to review preparedness for handling crises. The last meeting to review the CMP in relation to the Ministry of Coal was held on 24.12.2024.