



SAFETY IN COAL MINES



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Coal India Limited (CIL)

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. CIL has framed a well-defined "Health & Safety Policy" to ensure safety and occupational health in all mines and its establishments. CIL has already established a multi-disciplinary Internal Safety Organization (ISO) in all subsidiaries for the implementation of CIL the said Policy. All operations, systems and processes of CIL are meticulously designed and planned with due regard to safety, conservation, sustainable development and clean environment. Workplace hazards and associated risks of mining operations are identified and a Safety Management Plan is prepared for each mine. CIL always encourages employees' participation in safety management so as to promote a proactive safety culture and improve safety awareness amongst all employees. Several initiatives are being taken to achieve "Zero Harm Potential (ZHP)" in mines.

1. Occupational Health and Safety Policy of CIL:

Coal India Limited is committed to ensure the health and safety of 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:

- a) Planning and designing of mine with adequate provision for Occupational Health and Safety.
- b) Hazard Identification and Risk Assessment based Safety Management System in mines.
- c) Adoption of suitable technology for improvement in Occupational Health and Safety (OHS) system in work places.
- d) Provision of adequate resources for effective execution of Occupational Health and Safety (OHS) system in work places.
- e) Engage the safety personnel exclusively for improving safety standards and safety cultures of mines.
- f) 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;

- g) 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;
- h) Periodically auditing of the procedures and practices related to Occupational Health and Safety (OHS) System;
- i) Institute continuous education, training, and retraining all employees with the accent placed on development of safety-oriented skills;
- j) Continuous efforts to improve the occupational health standards, workplace ambience and health conditions of the employees.

2. Statutory Framework for Coal Mine Safety:

Coal mining, world over, is a highly regulated industry due to the presence of many inherent, operational and Occupational Hazards. Coal Mine Safety Legislation in India is one of the most comprehensive and extensive statutory frameworks for ensuring Occupational Health and Safety (OHS). Compliance of these safety statutes is mandatory. Some of the important statutes related to coal mine safety are as follows:

Sl. No.	Statute
1	The Mines Act- 1952 (to be replaced by Occupational Safety, Health and Working Conditions (OSHW) Code, 2020 shortly)
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

Sl. No.	Statute
7	The Mines Vocational Training Rules -1966
8	The Mines Crèche Rules -1966
9	The Indian Explosive Act, 1884
10	The Explosive Rules - 2008
11	The Indian Boiler Act, 1923
12	The Mines Maternity Benefit Act & Rules -1963
13	The Workmen Compensation Act - 2010
14	The Factories Act - 1948 Chapter -III & IV

3. Major Activities for Safety & Rescue Division of CIL:

- ◆ Inspection of mines to review safety status of mine & follow up action thereof to improve safety standard of mines.
- ◆ Fact finding enquiry into fatal accidents and major incidents.
- ◆ Maintenance of accidents / major incidents database.
- ◆ Analysis of mine Accident Statistics in order to find an action plan.
- ◆ Monitoring Mine Safety Audit.
- ◆ Imparting specialized training by SIMTARS accredited trainers to unit level and Area level executives, mine officials and members of Safety Committee.
- ◆ Framing of internal Technical Circulars / Management Guidelines / Advisory related to safety issues and monitoring implementation thereof.
- ◆ Monitoring safety related R&D activities in CIL.
- ◆ Organizing a meeting of the CIL Safety Board and monitoring recommendations / suggestions made during the meeting.
- ◆ Monitoring mine rescue preparedness at different mine rescue establishments.



- ◆ Publication of Safety Bulletin for disseminating and sharing of knowledge in order to promote safety awareness and inculcate better safety culture.
- ◆ Actively participated in organizing the meeting of the Standing Committee on safety in coal mines and monitoring recommendations/suggestions made during the meeting.
- ◆ Liaisoning with various agencies on the matter of mine safety and ISOs of various subsidiaries.
- ◆ Monitoring of CIL Safety Information System (CSIS) database and ensuring timely updation.
- ◆ Response to parliamentary questions related to mine safety including queries raised by different standing committees such as Standing Committee on Steel & Coal and 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)- 2005.

4. Measures for improvement Mine Safety Standards:

CIL has pursued several measures in the year 2023 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:

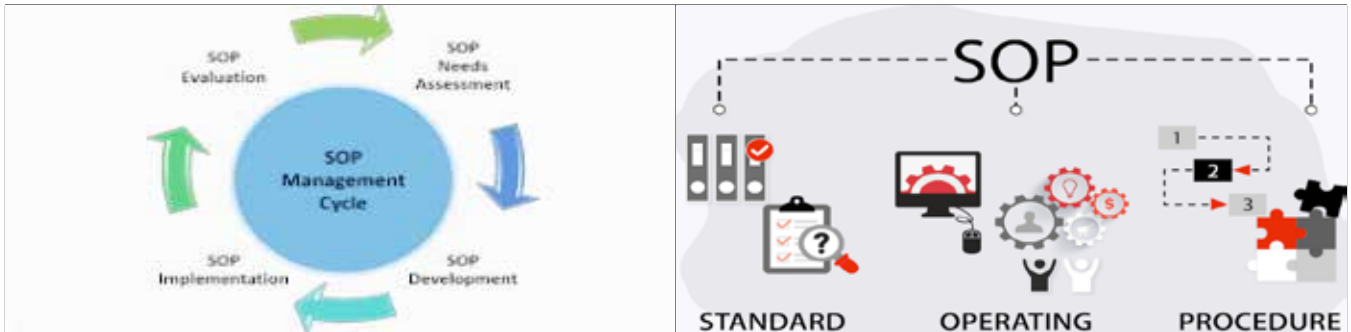
- Safety Management Plans (SMPs)** – Site-specific risk assessment based SMPs have been prepared for each mine of CIL by involving mine officials and workmen. SMPs are reviewed on a regular basis. Implementation of SMPs are monitored through the Internal Safety Organization (ISO) of each subsidiary. The Safety Management in mines is being reviewed regularly for further improvement of safety standards in mines.



- 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. **Conducting Safety Audit:** Safety Audit of all producing mines of CIL has been completed for FY 2023-24. E-Safety Audit format developed by Corporate Safety Division of CIL to facilitate the entire process. Safety Audits of mines have been uploaded in CSIS portal for effectively monitoring the whole process.



- v. **Special Safety Drives 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 and sensitivities towards safety amongst all 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. Suraksha Mitra Mandali / Informal Safety

Circle: Concept of Suraksha Mitra Mandali / Informal Safety Circle has been introduced to inculcate best-in-class safety culture amongst employees. All employees have been distributed in groups of Mitra Mandali and these Mandalis are operated in all mines.

ix. Implementation of recommendations of high-power committee:

A high-power committee was constituted to enhance safety standards in HoE operation. A Model Standard Operating Procedures (SOPs) for operators of HoE patches has been formulated and circulated for compliance.

x. Constitution of Competency Board at Mine:

This year a competency board to assess competency of all operators has been constituted and competency of operators are being assessed regularly and compulsorily assessed for new operators and operators involved in incidences.

xi. Regular coordination with ISOs:

Several meetings were held under the Chairmanship of the Director (Technical), CIL for assessing the safety status of mines and other establishments for enhancing safety.

xii. 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.

xiii. 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.

xiv. 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:

i. Emphasis on adoption of the state-of-the art technology in suitable geo-mining locales:

- a. Adoption of Mass Production Technology (MPT) in more UG mines.
- b. Deployment of more nos. of Surface Miners to eliminate blasting operation in OCPs for safe and eco-friendly operation.
- c. Deployment of relatively higher capacity HEMM in more OCPs.
- d. Introduction of Highwall mining technology.
- e. Mechanization of UG drilling operation for roof bolting.
- f. Man Riding System for easing UG travel.

ii. Adoption of the state-of-the art mechanism for Strata Management:

- a. Scientifically determined Rock Mass Rating (RMR) based Strata Support System.
- b. Mechanized Drilling for Roof bolting purpose.
- c. Need based application of Resin Capsules in place of Cement capsules.
- d. Use of modern Strata Monitoring Instruments as per requirement.
- e. Strata Control Cell for monitoring efficacy of strata support system. An in-house Rock



Testing Laboratory established in Nagpur, WCL for determination of Rock Mass Rating (RMR) of strata was accredited with NABL certificate.

- f. Imparting quality training to support crews & front-line mine officials, supervisors & grass root level workmen.

iii. 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.

iv. 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.

v. 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. Installed a '**Universal Equipment 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.



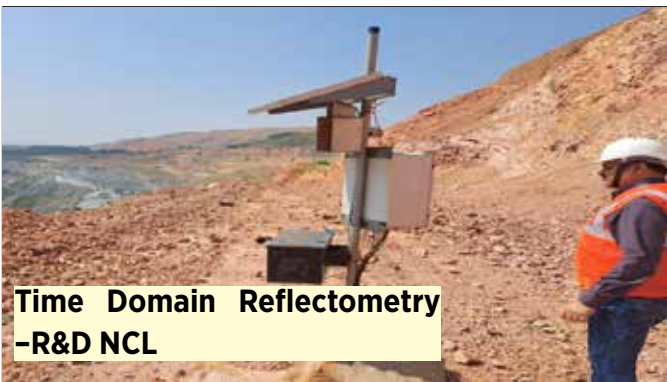
g. Dumpers fitted with Proximity Warning Devices, Rear view mirrors and 360° view camera, Audio-Visual Alarm (AVA), Automatic Fire Detection & Suppression System (AFDSS), Anti-Collision Device etc.





Anti-collision Device

- 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.



**Time Domain Reflectometry
-R&D NCL**



Slope Stability Radar

- 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) in large OCPs for tracking movement of HEMMs inside OC mine. An E-surveillance unit has been installed in mines for monitoring operations 24X7 in real time by using GPS/GPRS-based vehicle tracking, and geo-fencing system.
- l. Integrated command & control centre (ICCC) e-surveillance system has introduced in WCL for efficient monitoring mining activities including safety.

State of art Video Wall having size 16 ft X 6.75 ft with multiple layouts

Round the clock Operation & monitoring of mining activities through Live feed of 500 CCTVs

Deployment of 8 operators for 24X7 continuous monitoring

Recording of video footage of 500 Cameras for 15 days with 74 TB storage



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



vi. **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.



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



Mobile water sprinkler tanker



Vertical Greenery/ Wind Barrier



Fixed type Mist sprinkler



Truck Mounted Mist Sprinkler





Fog Cannon



Road Sweeping Machine



Wheel washing system



ix. Other steps for enhancing Safety awareness:

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

- Continuous Ambient Air Quality Measurement System (CAAQMS)

viii. Training on Mine Safety:

- Initial and Refresher training & On-the-Job Training as per statute.
- Training on Simulators to HEMM operators.
- Skill up-gradation of frontline mine officials on continual basis on various topics.
- Sensitization of all employees including Members of Safety Committees and contractual workmen on a regular basis.
- Experienced electrical supervisors of the Area are being engaged for imparting training to electricians and electrical helpers in VTCs.
- 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.
- Virtual Reality Training module has been introduced.

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.



**x. 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.

xi. Mine Emergency Response System:

- a. Emergency Response and Evacuation Plan prepared as per statute for each mine.
- b. Mock Rehearsals for examining the efficacy of the Emergency Action Plan. Sometimes NDRF and SDRF also participated in mock rehearsals.



- c. Demarcating Emergency Escape Routes in belowground.
- d. Check list prepared for dealing with an emergency in mine.
- e. Flow Chart prepared for transmission of information.

xii. Rescue Services for Emergency Response System in CIL:

- a. CIL is maintaining a well establishment Rescue Organization comprising of 6 Mine Rescue Stations (MRS), 12 Rescue Rooms-with-Refresher Training facilities (RRRT) and 16 Rescue Rooms (RR).
- b. 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.
- c. 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.
- d. CIL employs Permanent Brigade Members and RTPs for 24x7 on call. The Mine Rescue Station and Rescue Rooms are established at strategic locations. The details are as under:

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

Company	Rescue establishment presently operating		
	Mine Rescue Station (MRS)	Rescue room with Refreshers Training (RRRT)	Rescue Room (RR)
ECL	Sitarampur	Kenda	Jhanjra , Mugma
BCCL	Dhansar		Moonidih, Madhuband, Sudamdih
CCL	Ramgarh	Kathara & Churi	Dhori, Kedla & Urimari
SECL	Manindragarh	Sohagpur, Kusmunda, Johilla, Bisrampur, Baikunthpur	Chirimiri, Raigarh, Bhatgaon, Jamuna & Kotma, Korba
WCL	Nagpur	Parasia, Pathakhera, Tadali	Mathani, Majri, Sasti
MCL	Brajraj Nagar	Talcher	
Total	6	12	16

5. Analysis of Accident Statistics in CIL

Accidents statistics is the relative indicator for safety status in mines. Over the years the safety performance of CIL in terms of accident has improved significantly. This improvement in safety is attributed to the following contributing factors:

- Shared commitment and synergetic collaboration.
- Usage of appropriate technology and system.
- Continuous progression in knowledge, skill and awareness of workforce.
- Continuous progression in knowledge, skill and awareness of workforce.

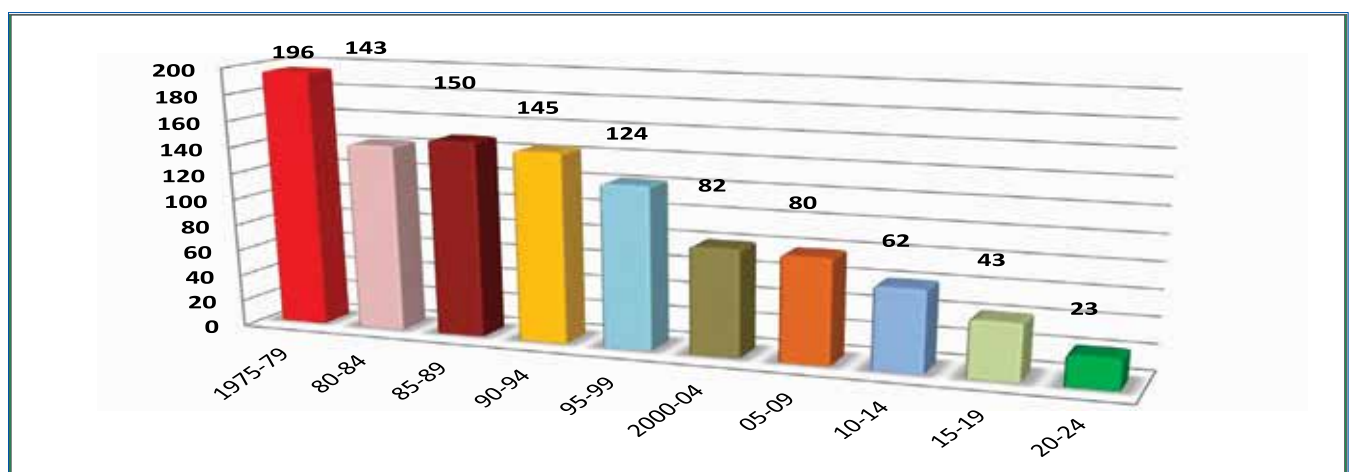
Salient features of continuous and sustained improvement in CIL's safety performance:

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

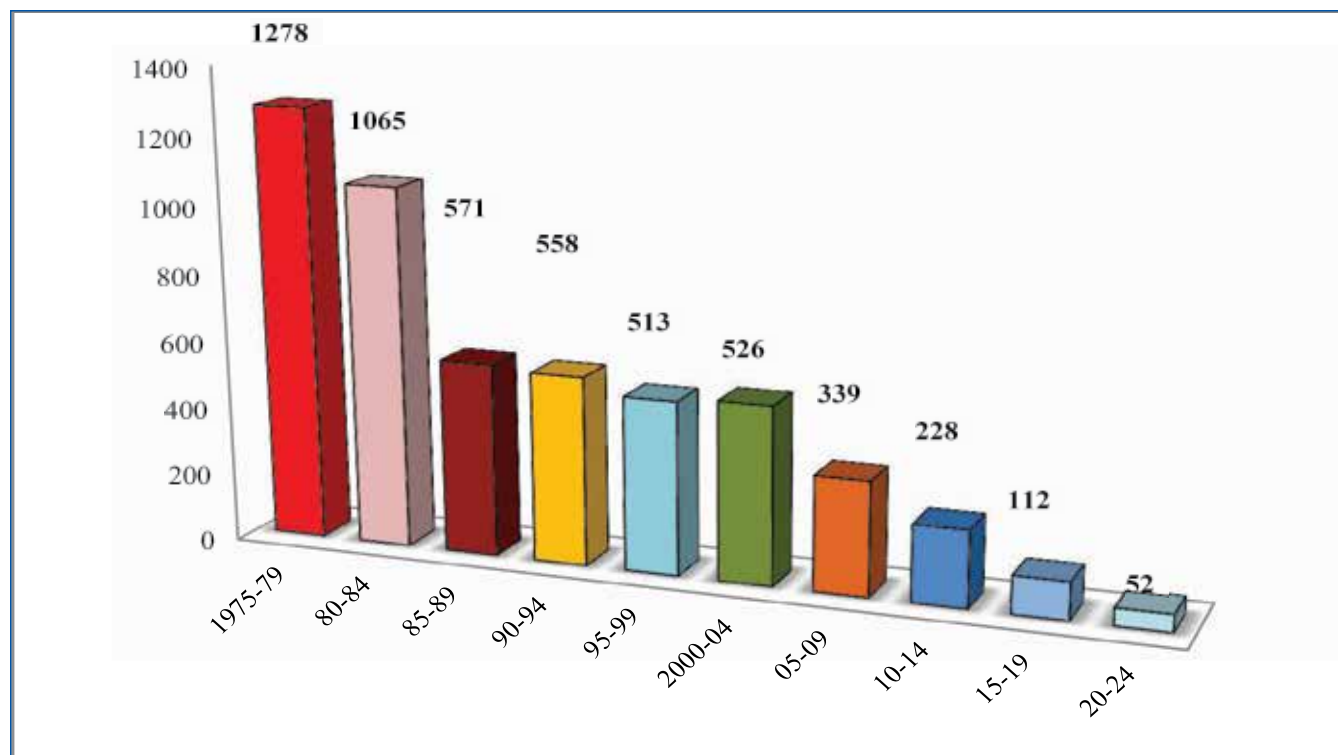
Time frame	Av. Fatal Accidents		Av. Serious Accidents		Av. Fatality Rate		Av. Serious Injury Rate	
	FA	FTY	SA	SI	Per Mill. Te	Per 3 Lac Manshifts	Per Mill. Te	Per 3 Lac Manshifts
1975-79	157	196	1224	1278	2.18	0.44	14.24	2.89
1980-84	122	143	1018	1065	1.29	0.30	9.75	2.26
1985-89	133	150	550	571	0.98	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	21	23	47	52	0.04	0.11	0.08	0.25

Note: Subject to reconciliation with DGMS & Accident Statistics are maintained calendar year-wise in conformity with DGMS practice. 2020-24 figure is upto March, 2024.

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



Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS and 2020-24 figure is up to March, 2024.

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 and 2020-24 figure is upto March, 2024.

Table – 2: Overall Accident Statistics in 2023 vis-a-vis 2022 & 2024 (upto March) in CIL

Sl. No.	Parameters	2024 (upto March)	2023	2022
1	Number of fatal accidents	4	26	18
2	Number of fatalities	4	29	20
3	Number of serious Accidents	8	34	61
4	Number of serious injuries	9	45	65
5	Fatality Rate per Mte. of coal production	0.02	0.04	0.03
6	Fatality Rate per 3 lakhs manshift deployed	0.08	0.13	0.08
7	Serious injury Rate per Mte. of coal production	0.04	0.06	0.09
8	Serious injury Rate per 3 lakhs man-shift deployed	0.18	0.21	0.26

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 2023

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	4	3	6	0.10	0.10	0.15	0.15
BCCL	5	6	4	4	0.15	0.24	0.10	0.16
CCL	4	4	0	0	0.05	0.17	0.00	0.00
NCL	2	2	12	16	0.02	0.08	0.12	0.67
WCL	2	2	3	3	0.03	0.04	0.04	0.06
SECL	3	3	11	12	0.02	0.10	0.07	0.41
MCL	6	8	1	4	0.04	0.25	0.02	0.12
NEC	0	0	0	0	0.00	0.00	0.00	0.00
CIL	26	29	34	45	0.04	0.13	0.06	0.21

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

Table -3A: Company-wise Accident Statistics of CIL for the year 2024 (upto March)

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	0	0	1	1	0.00	0.00	0.06	0.10
BCCL	0	0	2	3	0.00	0.00	0.27	0.55
CCL	0	0	0	0	0.00	0.00	0.00	0.00
NCL	1	1	0	0	0.03	0.15	0.00	0.00
WCL	0	0	1	1	0.00	0.00	0.04	0.14
SECL	3	3	4	4	0.05	0.44	0.06	0.58
MCL	0	0	0	0	0.00	0.00	0.00	0.00
NEC	0	0	0	0	0.00	0.00	0.00	0.00
CIL	4	4	8	9	0.02	0.08	0.04	0.18

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 March)

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	0	8	2	4	0	10	9	3	1	11	9	6	1
BCCL	2	4	5	0	3	5	6	0	6	2	4	2	7	3	4	3
CCL	1	2	4	0	1	2	4	0	3	3	0	0	4	3	0	0
NCL	3	1	2	1	3	1	2	1	9	8	12	0	9	8	16	0
WCL	6	1	2	0	6	2	2	0	6	10	3	1	7	12	3	1
SECL	7	8	3	3	7	8	3	3	21	25	11	4	21	26	12	4
MCL	1	0	6	0	1	0	8	0	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	4	29	20	29	4	57	61	34	8	61	65	45	9

Note: Accident Statistics are maintained calendar year wise in conformity with DGMS practice & figures subject to reconciliation with DGMS and figures for 2024 is upto March.

Table - 5: Company-wise Fatality & Serious Injury Rate during period 2021 to 2024 (upto March)

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	0.00	0.19	0.05	0.10	0.00	0.30	0.26	0.15	0.06	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	0.27	0.27	0.10	0.16	0.55
CCL	0.02	0.03	0.05	0.00	0.04	0.08	0.17	0.00	0.06	0.04	0.00	0.00	0.17	0.12	0.00	0.00
NCL	0.03	0.01	0.02	0.03	0.14	0.04	0.08	0.15	0.08	0.06	0.12	0.00	0.41	0.34	0.67	0.00
WCL	0.11	0.03	0.03	0.00	0.11	0.03	0.04	0.00	0.13	0.19	0.04	0.04	0.13	0.18	0.06	0.14
SECL	0.05	0.05	0.02	0.05	0.20	0.25	0.10	0.44	0.14	0.17	0.07	0.06	0.59	0.80	0.41	0.58
MCL	0.01	0.00	0.04	0.00	0.07	0.00	0.25	0.00	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	0.02	0.13	0.08	0.13	0.08	0.10	0.09	0.06	0.04	0.27	0.26	0.21	0.18

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 March)	2023	2022
1	Reportable Injury	3	54	69
2	Minor Injury	0	9	17
3	Near Miss incidence	4	72	38
4	Dangerous Occurrence	5	26	24

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

Adoption of Star Rating of mines:

For encouraging the best practices in mines including safety practices, the Star Rating System has been adopted. A total of 289 coal mines of CIL have participated in the star rating assessment process conducted by CCO for the performance base year 2022-23. CIL has broken its previous record in number of 5 Star and 4 Star rated mines as its 29 mines have been rated as 5 star mines and 64

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 Apr, 2024).

Year	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
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
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	2	2	22	22	0.08	0.14	0.85	1.52

mines as 4 Star mines. These figures were 10 and 53 respectively in the previous assessed year 2021-22.

II. 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.

Safety Measures in SCCL:

- a) Manual loading has been completely phased out by introducing semi mechanization with LHDs, SDLs and mechanized technologies such as Longwall, Continuous Miner to reduce human drudgery and reduction of persons at active working places to reduce the risk of accidents and disasters.
- b) Top priority is accorded for ensuring safety of the workers exposed to the roof fall dangers. Mechanized roof bolting systems are introduced in all the UG mines.
- c) All UG mines are provided with man riding/winding systems to avoid risky walking along steep gradients.
- d) Below ground communication and tracking system with WI-FI is proposed in 10 UG mines.
- e) 2 Nos. of training simulators for 6 types of HEMM are procured at a cost of ₹ 4 crores for technical training centre (TTC, RG-1) for providing training on HEMM to operators of OC mines
- f) 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.
- g) Tube bundle system (ALP Mine) and Telemonitoring (GDK 11) are provided for monitoring of harmful gases.
- h) Light weight cap lamps have been procured for all the UG mines.
- i) Involvement of representatives of workmen in Bipartite and Tripartite meetings, Regional Safety Committee meetings, Pit Safety Committee meetings inviting their

suggestions regarding safety related activities and implementation of their suggestions.

- j) Regular safety awareness audits and programmes are being conducted every month to create safety awareness among employees and enhance safety.
- k) Nine Nos. of Nevis CD-60 Model, type mounted (DFDS - Dry Fog Dust Suppression) for dust suppression machines are provided at CHPs for dust suppression
- l) SCCL has 1 Main hospital, 6 Area hospitals and 12 Occupational Health Centers (OHS) managed by 27 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.

SIMTARS:

- 10 officers have been trained by SCCL at **Safety in Mines Testing and Research Station (SIMTARS)**, Australia in Risk Management.
- SCCL has established two state of art "Safety Management Training Centers" at Ramagundam and Mandamarri at the standards of SIMTARS, Australia.
- Training on "Development and Implementation of Safety Management Plan (SMP)" is being imparted to the Safety Management Teams of the concerned mines by the SIMTARS accredited trainers under the program of "Train the Trainers".
- Safety Management Plans of all operating mines were prepared under the guidance of SIMTARS accredited trainers and submitted to DGMS.



Rescue Services in SCCL:

- A Central monitoring mechanism with Department of Rescue headed by a General Manager has been established at Ramagundam. In addition to this, three Rescue Room for Refresher Training (RRRT) centers were established at Kothagudem, Mandamari and Bhoopalapalli Areas.
- Rescue services in SCCL were modernized in the year in 2002 to be the best in India and on par with those in developed countries meeting International Standards.
- 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.
- SCCL Rescue Team led by Directors and

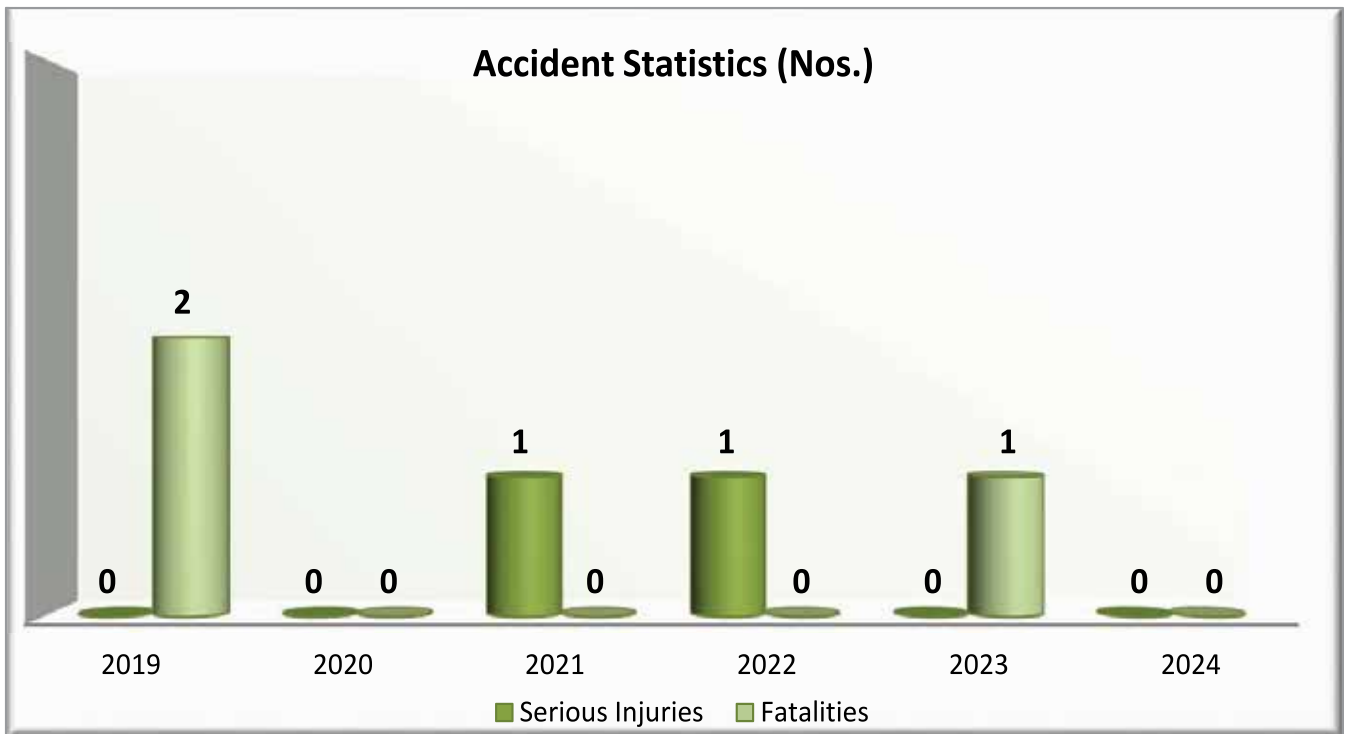
GMs attended International Mines Rescue Conference four times and participated Six times in International Mines Rescue Competitions conducted once in two years.

- The Rescue services of SCCL is also extending help in case civil calamities, such as road/train accidents, vehicle collisions, fire incidents in villages, and fire accidents in thermal power plants.

III. NLCIL

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

Year	Fatalities	Serious Injuries
2019	2	0
2020	0	0
2021	0	1
2022	0	1
2023	1	0
2024	0	0



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.
- 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.
- 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.

Safety and R&D Initiatives:

- a) **Usage of Drones:** Mines at Neyveli (Mine I, Mine IA & Mine II) use drones for survey measurement works and this avoids surveyor and his team members to go to hazardous and

difficult to access unsafe places and renders survey measurement work safe compared to conventional type of measurement.

- b) **Electronification of Ground Water Control and Conveyor System:** Electronification of Ground Water Control and Conveyor System in Mines was taken up as an R&D project by the Centre for Applied Research (CARD), NLCIL and was completed.

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.

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 NLCIL General 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.

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 Tamilnadu Mines Safety Association to create awareness on Safety among the workforce in NLCIL.



