



SAFETY IN COAL MINES

ANNUAL REPORT 2018-19

SAFETY IN COAL MINES

Coal India Limited:

Safety is always utmost priority of CIL. Safety is ingrained in mission statement of CIL and is one of the most important components in our overall business strategy. CIL has framed a well-defined safety policy to ensure safety in all mines and establishments. CIL has already established a multi-disciplinary Internal Safety Organization (ISO) in all subsidiaries for the implementation of stated Safety Policy. All operations, systems and processes of CIL are meticulously planned and designed with due regard to safety, conservation, sustainable development and clean environment. CIL has identified work place hazards and associated risks in each mining operation and prepared a Risk Assessment based Safety Management Plan for every mine. CIL always encourages employees' participations at all levels so as to promote a proactive safety culture and improve safety awareness up to grass root level employees. Various initiatives are taken on continual basis at all levels to translate the vision of "Zero Harm Potential (ZHP)" into a reality.

Safety performance of 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.

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 factors:

- Collective commitment and synergetic collaboration of the management and employees.
- Use of state-of-the-art technology in the field of mining methods, machineries and safety monitoring mechanism.
- Continuous improvement in knowledge, skill and awareness of workforce through imparting quality training and relentless safety awareness drives.
- Constant vigil, round the clock supervision and assistances from various quarters.

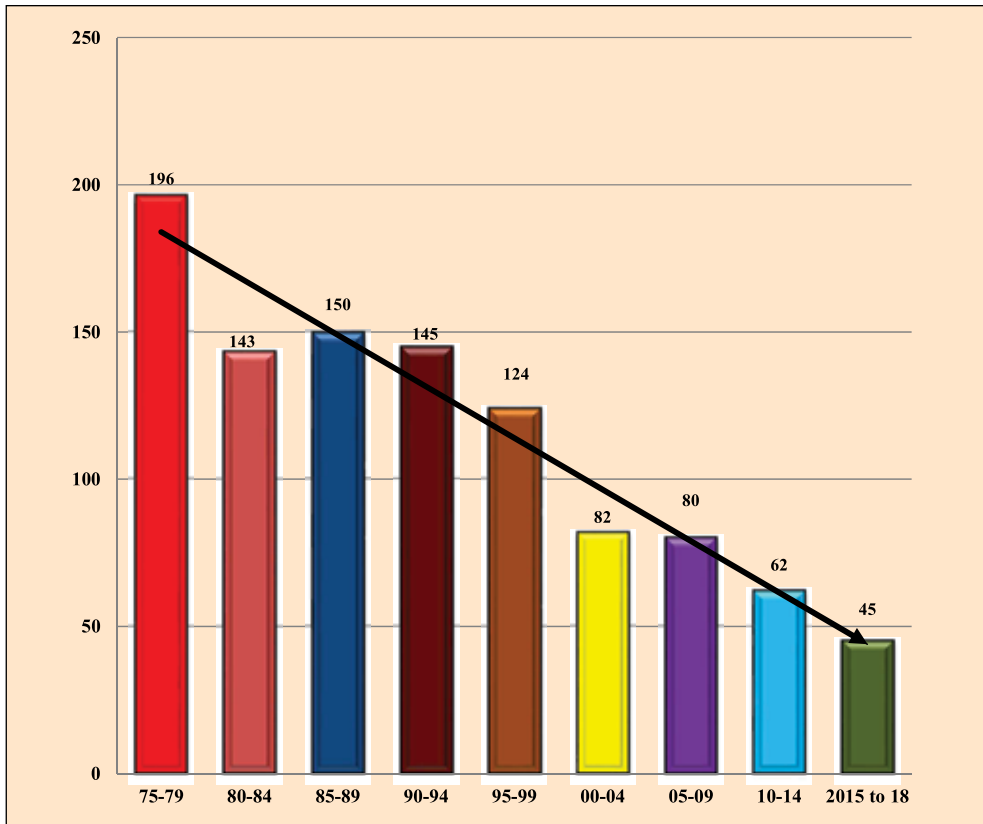
Salient features of continuous and sustained improvement in CIL's safety performance:

Comparative Accidents Statistics of CIL of 5 Yearly Average since 1975

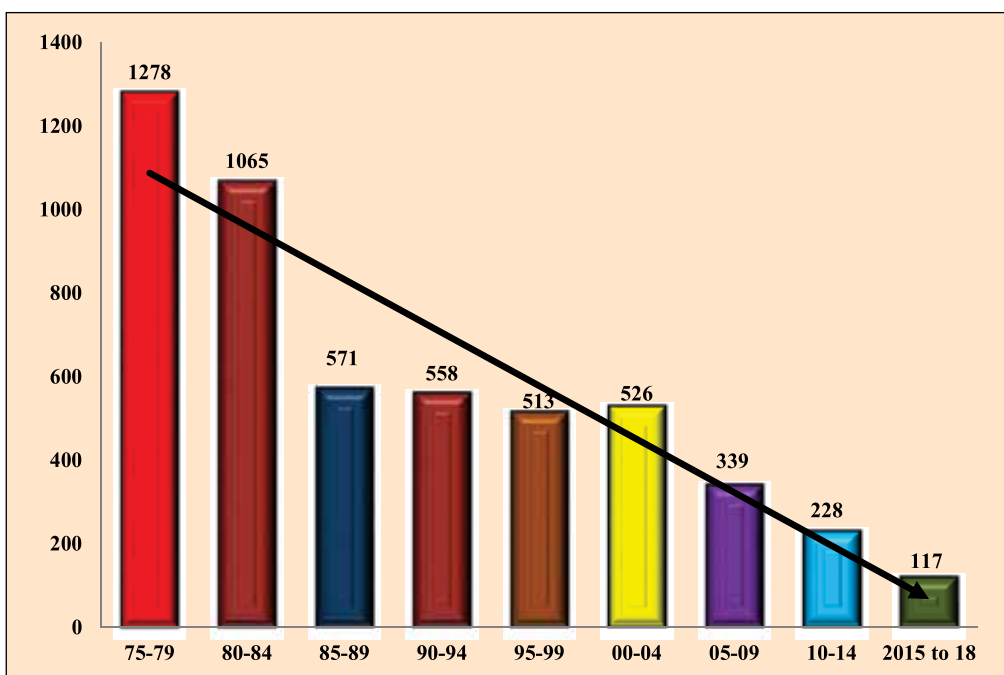
Time frame	Av. Fatal Accidents		Av. Serious Accidents		Av. Fatality Rate		Av. Serious Injury Rate	
	Accident	Fatalities	Accident	Injuries	Per Mill. Te	Per 3 Lac Manshifts	Per Mill. Te	Per 3 Lac Manshifts
1975-79	157	196	1224	1278	2.18	0.44	14.24	2.89
1980-84	122	143	1018	1065	1.29	0.30	9.75	2.26
1985-89	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
2015-18#	36	45	112	117	0.08	0.19	0.21	0.49

Note: # subject to reconciliation with DGMS, Accident Statistics are maintained calendar year-wise in conformity with DGMS practice

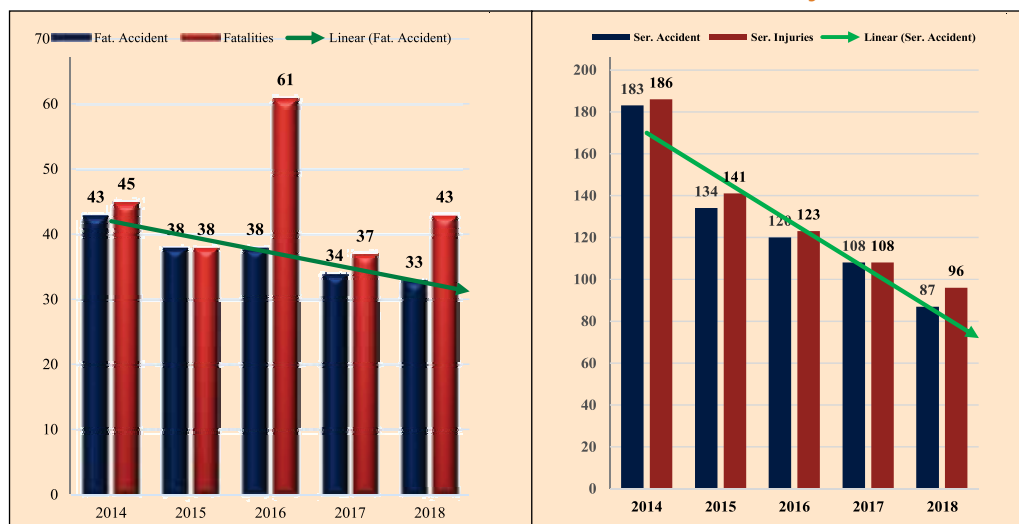
Trend of 5 Yearly Average Fatalities in CIL since 1975



Trend of 5 Yearly Average of Serious Injuries since 1975



Trend of Fatal Accidents & Serious Accidents for last 5 years in CIL



Overall Accident Statistics in 2018 vis-a-vis 2017 in CIL

Sl. No.	Parameters	2017	2018	Change in absolute nos.	% of Change
1	Number of fatal accidents	34	33	-1 (reduced)	-2.9%
2	Number of fatalities	37	43	6	16.2%
3	Number of serious Accidents	108	87	-21 (reduced)	-19.4%
4	Number of serious injuries	108	96	-12(reduced)	-11.1%
5	Fatality Rate per Mte. of coal production	0.07	0.07	0 (same)	0.00
6	Fatality Rate per 3 lakhs manshift deployed	0.16	0.18	0.02	12.5%
7	Serious injury Rate per Mte. of coal production	0.19	0.16	-0.03(reduced)	-15.7%
8	Serious injury Rate per 3 lakhs man-shift deployed	0.46	0.41	-0.05(reduced)	-10.9%

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

Company-wise Accident Statistics of CIL for the year 2018

Company	Fatal Accidents	Fatalities	Serious Accidents	Serious Injuries	Fatality Rate		Serious Injury Rate	
					Per MT	Per 3 lac manshifts	Per MT	Per 3 lac manshifts
ECL	1	2	24	25	0.04	0.04	0.52	0.53
BCCL	2	2	7	7	0.06	0.06	0.22	0.22
CCL	5	8	9	16	0.12	0.29	0.24	0.58
NCL	3	3	8	8	0.03	0.26	0.08	0.69
WCL	2	5	17	17	0.10	0.09	0.34	0.30
SECL	12	15	18	19	0.10	0.34	0.12	0.43
MCL	8	8	4	4	0.06	0.50	0.03	0.25
NEC	0	0	0	0	0.00	0.00	0.00	0.00
CIL	33	43	87	96	0.07	0.18	0.16	0.41

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

Company-wise Accident Statistics during the period 2016 to 2018

Company	Fatal Accidents			Fatalities			Serious Accidents			Serious Accidents		
	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
ECL	9	9	1	31	9	2	42	20	24	44	20	25
BCCL	6	2	2	6	2	2	05	13	7	05	13	7
CCL	4	5	5	4	6	8	07	5	9	08	5	16
NCL	4	3	3	4	3	3	13	10	8	13	10	8
WCL	5	3	2	5	3	5	14	18	17	14	18	17
SECL	8	7	12	9	9	15	25	36	18	27	36	19
MCL	2	5	8	2	5	8	7	6	4	07	6	4
NEC	0	0	0	0	0	0	0	0	0	0	0	0
CIL	38	34	33	61	37	43	113	108	87	118	108	96
	Fatality Rate Per MT of coal production			Fatality Rate Per 3 lac manshifts			Serious Injuries Rate Per MT of coal production			Serious Injuries Rate 3 lac manshifts		
ECL	0.71	0.22	0.04	0.60	0.18	0.04	1.01	0.50	0.52	0.86	0.41	0.53
BCCL	0.17	0.06	0.06	0.17	0.06	0.06	0.14	0.39	0.22	0.14	0.39	0.22
CCL	0.07	0.09	0.12	0.13	0.20	0.29	0.13	0.08	0.24	0.26	0.17	0.58
NCL	0.05	0.03	0.03	0.31	0.24	0.26	0.15	0.11	0.08	1.01	0.81	0.69
WCL	0.12	0.06	0.10	0.12	0.06	0.09	0.41	0.39	0.34	0.41	0.36	0.30
SECL	0.06	0.06	0.10	0.18	0.20	0.34	0.21	0.25	0.12	0.57	0.80	0.43
MCL	0.01	0.04	0.06	0.13	0.32	0.50	0.05	0.04	0.03	0.44	0.38	0.25
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
CIL	0.11	0.07	0.07	0.25	0.16	0.18	0.23	0.19	0.16	0.51	0.46	0.41

Major Activities of Safety & Rescue Division of CIL:

- Inspection of mines to review safety status of mine & follow up action thereof to improve safety status of mine.
- Prima-facie fact finding / preliminary enquiry into fatal accidents and major incidences.
- Imparting specialized training by SIMTARS accredited executive trainers to unit level and Area level executives, mine officials and members of Safety Committee, who are directly engaged in ensuring safety in mine.
- Framing of internal technical circulars / management guidelines / advisory related to safety issues and monitoring implementation thereof.
- Maintenance of accidents / major incidents statistics Database.
- Framing reply of different coal mine safety related parliamentary questions 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)-2005.
- Monitoring safety related R&D activities in CIL.
- Organizing meeting of CIL Safety Board and monitoring recommendations / suggestions made during 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.
- Assisting in organizing the Standing Committee on safety in coal mines and monitoring recommendations / suggestions made during meeting.

Measures taken for improvement of safety in 2018-19:

CIL has vigorously pursued several measures in the year 2018, 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:

- Conducting Safety Audit:** Safety Audit of producing mines of CIL has been conducted through multi-disciplinary Inter-Area Safety Audit teams in 2018 for assessing safety status of mines and violations pointed out during the said safety audits are being rectified.
- Safety Management Plans (SMPs):** Site-specific risk assessment based SMPs have been prepared for each mine of CIL by involving mine officials and workmen and the same are being updated on continual basis. The process of Risk Assessment in mines is continuous and on-

going for improving Safety Standards of Mines. All SMPs are being monitored through Internal Safety Organization (ISO) of each subsidiary.

- Principal Hazards Management Plans (PHMPs):** Principal Hazards Management Plans (PHMP) are also being formulated as a part of Safety Management Plan (SMP) to avert any mine disaster or major mine accident. Trigger Action Response Plan (TARP) are being prepared to safety deal with emergency, if any.
- Standard Operating Procedures (SOPs):** Site-specific, Risk Assessment based Standard Operating Procedures (SOPs) for all Mining and Allied operations are framed and implemented. The same are being updated on continual basis to cater to the changing mine dynamics.
- Conducting Special Safety Drives on different Safety Issues:** Special Safety drives on different safety matters are being organized to improve safety standard of mines and enhance safety awareness amongst employees.
- Participation in International Mines Rescue Competition (IMRC):** Mine Rescue Team of WCL, a subsidiary of CIL was sent to participate in IMRC – 2018 held at Yekaterinburg, Russia to gain international exposure on mine rescue system of major coal producing nations. This Team achieved “Most Active Team” Award in (IMRC) 2018.



- vii. **Observation of "ILO's World Day for Safety and Health at Work"** in CIL (HQ) as well as all subsidiary HQs, Areas and mines to promote the preventive Safety and Occupational Health Service (OHS) along with introduction and hoisting of "CIL's Safety Flag".



- viii. **Foreign Technical Training Programme in China:** An educational training program on "Coal Mine Safety Management for CIL Executives and Exposure to Best Practices in China " from 17.10.2018 to 26.10.2018 at School of Safety Science and Technology, Henan Polytechnic University, Jiaozuo, Henan, China under tutelage of Shri K Pathak, Professor, IIT Kharagpur was organized.



- ix. National Dust Prevention Committee meeting: The 17th meeting of the National Dust Prevention Committee (NDPC) was held on 6th September, 2018 in Kolkata under the Chairmanship of the Director (Technical), CIL Shri Binay Dayal for assessing the status of dust suppression arrangement and measures taken to reduce adverse effects of dust related problem in mines of CIL and other coal producing companies.



- x. Regular co-ordination 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.
- xi. Continuous updation of Online Safety Monitoring System: Online Centralized Safety Monitoring System "CIL Safety Information System (CSIS)", which was developed in 2017. Relevant information on mine safety is uploaded in said database.
- xii. Programme of imparting Special Training by SIMTARS, Australia accredited Trainers: Executives who had undergone specialized training on Risk Assessment through SIMTARS, Australia are engaged in imparting training and upgrading the knowledge of Mine level executives as well as Members of Safety Committees of individual mines to identify the hazards and evaluate the associated Risks in the mines so as to prepare Risk assessment based Safety Management Plans (SMPs), Principal Hazards Management Plans (PHMPs) and Standard Operating Procedures (SOPs).

Apart from the above specific actions, the following are on-going measures for improving safety standards:

- **Emphasis on adoption of the state-of-the art technology in suitable geo-mining locales.**
 - a. Adoption of Mass Production Technology (MPT) in more number of UG mines.



Haldibari UG Mine of SECL

- b. Deployment of more number of Surface Miners to eliminate blasting operation in OCPs.



Gevra Project, SECL

- c. Deployment of relatively higher capacity HEMM in more number of OCPs.



Gevra Project, SECL

- D. Mechanization of UG drilling.



Roof Bolter-used for supporting the freshly cut coal roof by the continuous miner.

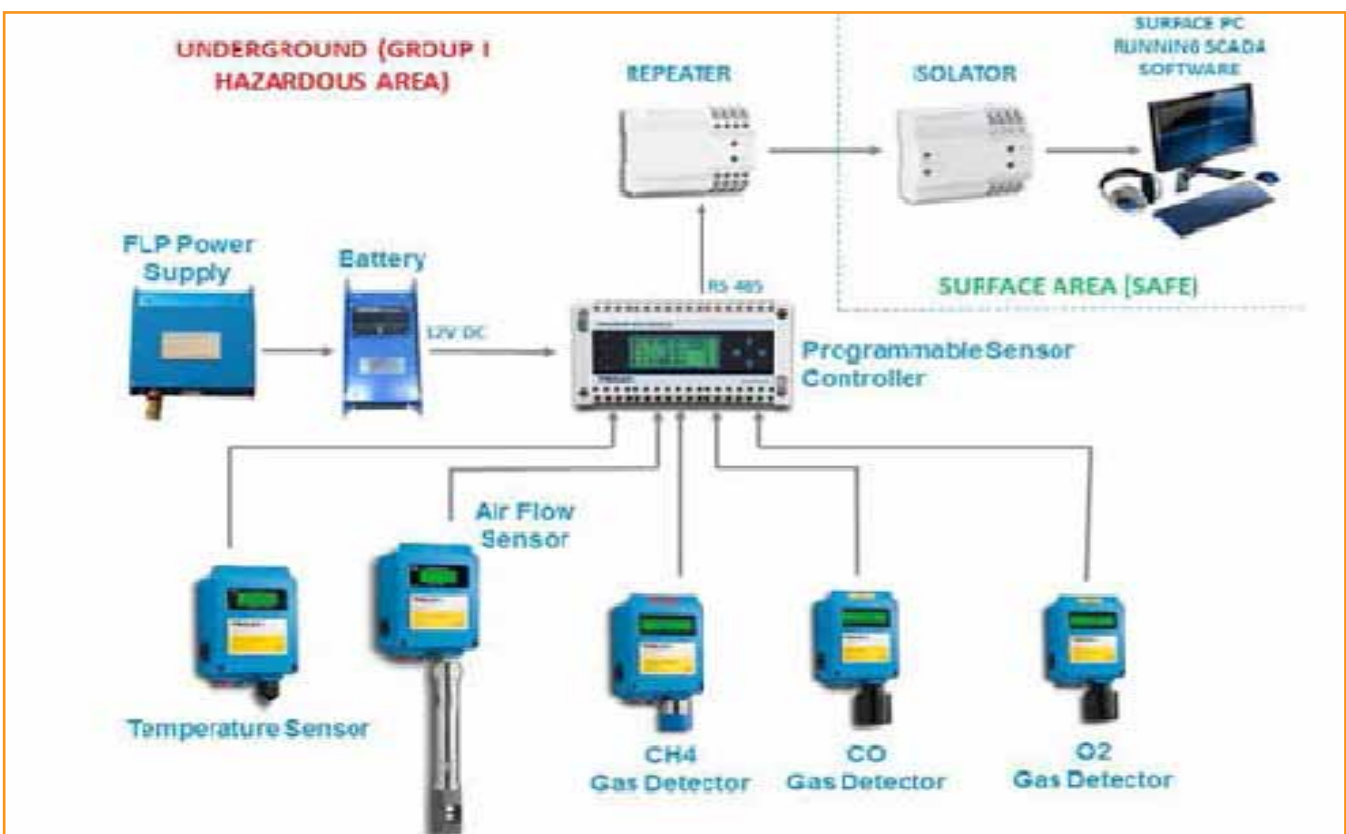
- **Adoption of the state-of-the art mechanism for Strata Management**

- Scientifically determined Rock Mass Rating (RMR) based Strata Support System.
- 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.
- Mechanized Drilling for Roof bolting.
- Use of Resin Capsules in place of Cement capsules.

- Use of modern Strata Monitoring Instruments.
- Imparting quality training to support crews & front-line mine officials, supervisors & grass root level workmen.

- **Mechanism for monitoring of mine environment:**

- Detection of mine gases by using Methanometer, CO-detector, Multi-gas detector etc.
- Continuous monitoring of mine environment by installing Environmental Tele Monitoring System (ETMS) & Local Methane Detectors (LMD) etc.



- Regular Mine Air Sampling and Analysis by Gas Chromatograph.
- Personal Dust Sampler (PDS).
- Use of Continuous Ambient Air Quality Monitoring System (CAAQMS) in large OCPs to assess the ambient dust concentration and take suitable mitigative measures.

- **Strengthening Water Danger Management:**

- Conducting Check Survey & Joint Survey to eliminate errors in mine survey.
- Preparation and maintenance of seam-wise Water Danger Plan.
- Preparation and implementation of Monsoon Action Plan.

- d. Adequate Pumping Facilities with adequate capacity of Sumps.
- e. Liaison with the State Meteorological Dept. & Dam Authority.
- f. Construction of Embankments with proper design against water bodies.
- g. Inter-mine joint survey between adjoining mines to prove inter-mine barriers to prevent transference of danger.

• **Training on Mine Safety & Skill Upgradation:**

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

- b. Training on Simulators to dumper operators.
- c. Skill up-gradation of frontline mining supervisors / officials on continual basis.
- d. Sensitization of all employees including Members of Safety Committees and contractual workmen on continual basis.

Mine Safety Inspection:

- o Round-the-clock Supervision of all mining operations by adequate number of competent & statutory Supervisors and mine Officials.
- o Periodic mine Inspections by Head Quarter and Area level senior officials.



- o Surprise back shift mine Inspections by mine and area level officials.
- o Regular Inspection by Workmen Inspectors appointed in each mine.
- o Regular mine Inspection by officials of Internal Safety Organization of respective subsidiary and CIL.

Steps for prevention of accidents in OCPs:

- a. Formulation and Implementation of Mine-specific Traffic Rules.
- b. Code of Practices for HEMM Operators, Maintenance staff & others.
- c. Sensitization training of Contractor’s Workmen involved in contractual jobs.



- d. Training imparted to dumper operators on Simulators.



- e. Lighting arrangement using high mast towers for enhancement of illumination as per stipulated guidelines.
- f. Eco-friendly Surface Miners for blast free mining and avoidance of associated risks.
- g. Dumpers fitted with Proximity Warning Devices, Rear view mirrors and camera, Audio-Visual Alarm (AVA), Automatic Fire Detection & Suppression System (AFDSS) etc.
- h. Ergonomically designed seats & AC Cabins for operators' comfort.
- i. Wet Drilling & water Sprinklers for dust suppression.



- j. Use of Shock Tubes & Electronic Detonators for control of ground vibration & fly rocks.
- k. GPS based Operator Independent Truck Dispatch System (OITDS) in large OCPs for tracking movement of HEMMs inside OC mine.
- mine.
- o Flow Chart prepared for transmission of information regarding crisis / disaster in mines from site of accident to the Ministry of Coal, New Delhi.

Mine Emergency Response System:

- o Emergency Action Plans prepared as per statute for each mine.
- o Mock Rehearsals for examining the efficacy of Emergency Action Plan.
- o Demarcating Emergency Escape Routes in belowground.
- o Check list prepared for dealing with an emergency in

Rescue Services for Emergency Response System in CIL:


- o CIL is maintaining a well establishment Rescue Organization comprising of 6 Mine Rescue Stations (MRS), 13 Rescue Rooms-with-Refresher Training facilities (RRRT) and 17 Rescue Rooms (RR).
- o All Rescue Stations / Rescue Rooms are fully equipped with adequate numbers of rescue apparatus as per the Mine Rescue Rules (MRR) - 1985.



- o This Rescue Organization is 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 who

are on call 24x7.

The Mine Rescue Station and Rescue Rooms are established at strategic locations spreading across different Subsidiaries to cater to the emergencies in their command area. The details are as under:

Company	Rescue establishment presently operating		
	Mine Rescue Station (MRS)	Rescue room with Refreshers Training (RRRT)	Rescue Room (RR)
ECL	Sitarampur	Kenda	Jhanjra, Kalidaspur, 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	Damua, New Majri & Sasti
MCL	Brajraj Nagar	Talcher	-
NEC	-	Tipong	-
Total	6	13	17

Statutory Frame Work for Coal Mine Safety:

Coal mining, world over, is highly regulated industry due to presence of many inherent, operational and Occupational Hazards. Coal Mine Safety Legislation in India is one of the most comprehensive and extensive statutory framework for ensuring Occupational Health and Safety (OHS). Compliance of these

safety statutes is mandatory. The operations in coal mines are regulated by the Mines Act, 1952, the Mine Rules –1955, the Coal Mine Regulation-2017 and several other statutes framed thereunder. Some of the important statutes related to coal mine safety are as follows:

Sl. No.	Statute
1	The Mines Act -1952
2	The Mines Rules -1955
3	The Coal Mine Regulation -2017 (Notified recently on 27.11.2017)
4	The Mines Rescue Rules -1985
5	The Electricity Act- 2003
6	The Central Electricity Authority (measures related to safety & supply) Regulations - 2010
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

Safety Monitoring of CIL:

Apart from statutory monitoring by DGMS, the status of safety in mines of CIL is being monitored at various levels by the following agencies:

Level	Monitored By
Mine level	<ul style="list-style-type: none"> • Workman inspectors: as per the Mines Rule-1955 • Safety Committee: constituted as per the Mines Rule-1955 • Competent Officials
Area level	<ul style="list-style-type: none"> • Tri-partite Safety Committee • Area Safety Officer
Subsidiary HQ level	<ul style="list-style-type: none"> • Tri-partite Safety Committee • Internal Safety Organization (ISO)
CIL HQ: Corporate Level	<ul style="list-style-type: none"> • CIL Board of Directors • CIL Safety Board • CMDs Meet. • Corporate level ISO.
At National level	<ul style="list-style-type: none"> • Standing Committee on Safety in Coal Mines • National Conference on Safety in Mines. • Various Parliamentary Standing Committees

Safety Policy of CIL:

Safety is always given prime importance in the operations of CIL as embodied in the mission. CIL has formulated a Safety Policy for ensuring safety in mines and implementation of which is closely monitored at several levels.

- Operations and systems will be planned and designed to eliminate or materially reduce mining hazards;
- Implement Statutory Rules and Regulations and strenuous efforts made for achieving superior standards of safety;
- To bring about improvement in working conditions by suitable changes in technology;
- Provide material and monetary resources needed for the smooth and efficient execution of Safety Plans;
- Deploy safety personnel wholly for accidents for accident prevention work;
- Organize appropriate forums with employees' representatives for Joint consultations on safety matters and secure their motivation and commitment in Safety Management;
- Prepare annual Safety Plan and long term Safety Plan at beginning of every calendar year, unit-wise and for the company, to effect improved safety in operations as per respective geo-mining needs to prepare the units for onset of monsoon, to fulfill implementation of decisions by Committee on Safety in Mines and Safety Conferences and to take measures for overcoming accident proneness as may be reflected through study of accident analysis, keeping priority in sensitive areas of roof-falls, haulage, explosives, machinery etc.
- Set up a frame work for execution of the Safety Policy and Plans through the General Managers of Areas, Agents, Managers and other safety personnel of the Mines;
- Multi-level monitoring of the implementation of the Safety Plans through Internal Safety Organization at the company headquarters and Area Safety Officers at area level;
- All senior executives at all levels of management, will continue to inculcate a safety consciousness and develop involvement in practicing safety towards accident prevention in their functioning;

- Institute continuous education, training and retraining all employees with the accent placed on development of safety oriented skills;
- Continue efforts to better the living conditions and help of all the employees both in and outside the mines.

Neyveli Lignite Corporation India Ltd.

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

Year	Fatalities	Serious Injuries
2013-14	1	4
2014-15	1	1
2015-16	3	2
2016-17	Nil	1
2017-18	2	0
2018-19	1	Nil

1. Neyveli Mines are being operated with State of The Art Technology i.e. Specialized Mining Equipment's Bucket Wheel Excavators having inbuilt safety features.
2. Safety and Health policy is being implemented in its true spirit.
3. Mines are having organization set up of various divisions and equipped with sufficient number of statutory officials and other required engineers, supervisors, technicians etc.
4. NLCIL has well established Group Vestibule Training Centre, Unit Level Training centres and Learning and Development Centre to impart training and retraining.
5. Risk assessment based Safety Management Plans have been prepared for all the divisions and are under implementation.
6. Standard operating procedures have been established for all the activities of the mines and are strictly implemented.
7. Internal Safety Organization is functioning, headed by Chief General Manager / Mining.
8. Illumination, dust, noise and vibration studies are conducted once in six months and all the parameters are maintained as the norms.

9. All accidents and near miss incidents are thoroughly analysed and investigated for corrective measures.

Safety Audits

1. Mines are inspected everyday by Unit Statutory officials and ISO officials.
2. Workmen Inspectors are inspecting the various parts of the Mines twice in a week and maintaining the records as per statute.
3. Pit Safety Committee (PSC) Members are inspecting the

Mines once in a month and observations are deliberated in the monthly PSC meeting.

4. Inter-Unit Safety Assessment (IUSA) team members are inspecting the mines once in three months.
5. Central Safety Council Members are inspecting the mines once in six months.
6. Division –wise Safety Audits are conducted with the co-ordination of ISO officials.

The audit recommendations are implemented and compliance reports are furnished regularly.

Accident Statistics

Sl.No	Particulars	2018-19 (April 2018 to March 2019) Mines
1	Numbers of Fatal Accidents	1
2	Numbers of Fatalities	-
3	Numbers of Serious Accidents	-
4	Numbers of Serious injuries	-
5	Numbers of Reportable Accidents	-
6	Total man days worked	-
7	Total Production in Million Tonne	-
8	Fatality rate per Million Tonne of Lignite Production	-
9	Fatality rate per 3 lakh man shifts deployed	-
10	Serious injury rate per Million Tonne of Lignite production	-
11	Serious injury rate per 3 lakh manshifts deployed	-

Safety Budget & Actual

Year	Safety Budget	
	Allocated	Actual 2018-19
2018-19	₹ 173.00 Lakhs	About ₹ 126.99 Lakhs

Safety Trainings

TRAININGS GIVEN AT GVTC APRIL 2018 TO MARCH 2019

BASIC TRAINING		REFRESHER TRAINING		SPECIFIC JOB TRAINING		ORIENTATION TRAINING TO EXECUTIVES	Total no. of PERSONS TRAINED
EMPLOYEES	CONTRACT WORKERS	EMPLOYEES	CONTRACT WORKERS	EMPLOYEES	CONTRACT WORKERS		
4	1178	1024	2009	818	1032	385	6450

FIRST AID TRAINING GIVEN IN NLCIL MINES 2018-19 (APRIL 2018 TO MARCH 2019)

YEAR	MINE-I	MINE-IA	MINE-II	Barsingsar Mine	NLCIL MINES
2018-19	239	92	114	09	454

Safety & R&D initiatives:

1. SIMULATOR based Training: Letter of Award (LoA) issued on 30.07.2018 for installation and commissioning of Virtual based reality SIMULATOR training.
2. Scientific Study of Neyveli Mines: As per Reg. 106 of Coal Mines Regulations 2017, in order to conduct scientific study for Neyveli Mines, Letter of Award (LoA) was issued to Indian Institute of Technology (BHU), Varanasi on 22.03.2019.
3. CCTV Surveillance in SMEs: SMEs are equipped with CCTV Surveillance systems to avert inadvertent entry of workforce into accident prone areas.
4. Electronification of Ground Water Control and Conveyor System in Mines.
5. Development of customized organic coatings for corrosion protection of Special Mining Equipment.

Emergency response system:

Emergency preparedness and response system for Fire, Inundation prepared for all mines and mock rehearsals are conducted at regular intervals. During the cyclone and other emergency periods control rooms are activated round the clock.

Occupational Health services:

- All mines have been equipped with sufficient number of first aid rooms and stations to ensure timely rendering of First Aid Services to the injured.
- A 340 bedded Hospital with state of art infrastructure as well as sufficient number of medical and para-medical staff is maintained in the vicinity of Mines.
- IME/PME Details from 01.04.2018 to 31.03.2019

Type of Medical Examination	Number of persons	
	Target	Actual
Initial Medical Examination (IME)	1653	1664
Periodical Medical Examination (PME)	4647	5149

Safety Conference and measures taken

Tripartite Safety Meeting

- a. Tripartite Safety Meeting was conducted on 30.06.2018 involving Management, Trade Union Representatives and DGMS officials.

- b. The Recommendations of 11th Safety Conference are complied, the Compliance report as on 30.09.2018 furnished to the DMS/Chennai region.
- c. Agenda items for the 12th National Safety Conference on Safety in Mines furnished to DGMS, Dhanbad on 09.05.2017.
- b. Mines Safety Week 2018 was observed for Barsingsar Lignite Mine from 10.12.2018 to 16.12.2018 and final day function held on 19.12.2018 at Bhilwara, Rajasthan.

Safety Workshops

- Safety Workshops on Mines Safety were conducted at Mine II, Mine IA and Mine I respectively on 08.02.2019, 16.02.2019 and 04.03.2019 to deliberate on SMP & SOP and enhance the existing safety standards of the Mine.
- Workshop on "Traffic Rules and SOP/COP" conducted for Operators of HEMM in mine at Barsingsar Lignite Mine.

Mines Safety Observance Week 2018

- a. Mines Safety Week 2018 was observed for Neyveli Mines from 03-09-2018 to 09-09-2018 and state level final day function hosted by NLCIL on 09-09-2018.

Singareni Collieries Company Limited:

Accident Statistics of SCCL:

- i. Details of fatal and serious accidents and rate of fatality and serious injury during 2014-15 to 2018-19:

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
2014-15	7	7	271	271	0.13	0.15	5.16	5.64
2015-16	7	7	225	225	0.12	0.14	3.73	4.51
2016-17	10	12	220	224	0.2	0.25	3.65	4.66
2017-18	11	12	210	215	0.19	0.24	3.47	4.34
2018-19	7	7	184	184	0.11	0.17	2.86	4.48

- ii. Details of fatal and serious accidents and rate of fatality and serious injury during 2014 to 2018 and 2019 (up to March):

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
2014	8	9	270	271	0.17	0.18	5.25	5.52
2015	7	7	245	245	0.12	0.14	4.05	4.98
2016	10	12	216	218	0.20	0.25	3.66	4.54
2017	11	12	210	216	0.20	0.26	3.57	4.77
2018	7	7	190	191	0.11	0.15	2.91	4.13
2019	2	2	39	39	0.11	0.30	2.07	5.90

Safety Measures in SCCL

STRATA CONTROL

- Phased out conventional mining in UG mines and semi-mechanization introduced by deploying 160 SDLs, 30 LHDs 3 Continuous Miners and one long wall unit in 30 underground mines.
- Roof/Sides support is being done based on geo-tech studies by Resin capsules with roof bolters.
- Sides are being supported with bolts along with wire mesh/ W-straps.
- Quad bolters and jumbo drills were provided in continuous miner panels to meet demand of support as per extraction requirement.
- Strata monitoring with TEL- TALES, Roof Extensometers, Load cells and Stress capsules are in use for monitoring strata behavior.
- Services of Scientific Institutions like NIRM, CIMFR & NGRI are being taken up for scientific investigation and studies in different mines on strata management.
- Exploring the feasibility of introduction of Continuous Miner and Long wall Technologies to enhance the safety of workings.
- To monitor strata control & mine environment activities, each region is provided with strata monitoring cells.

HAULAGE:

Men transport systems have been introduced in all underground mines.

- Chair Lift – 41, Mine Cars – 11 and Winding – 4
- Replaced haulages with belt conveyors for coal evacuation, wherever possible.
- Provided thrust breaks for haulers for automatic breaking in the event of power failure.
- Provided telecommunication on haulage roadways.
- Providing fencing between haulages and district travelling road ways to avoid inadvertent entry of persons into haulage roadways.

OPENCAST MINES

- Avoiding ground mounted persons and providing elevated platforms at each face.
- Haul roads are made wide with mild gradient.
- Monitoring of High wall benches (slopes) and dump slopes for early detection of slope failures.
- Provision of adequate illumination in mines.
- Provision of conveyance for men transportation in opencast mines.
- Use of Rear-view Cameras and proximity-warning devices in Dumpers in Open cast mines.
- Introduction of Automatic fire detection and suppression systems (AFD & SS) in all HEMM.
- Checking fitness of vehicles plying in mine premises.
- Providing effective communication with Wireless sets.
- Introduction of RFIDS, Vehicle Tracking System, OITDS to monitor the movement of HEMM.
- Guidelines on precautions to be taken during summer are circulated every year.
- Pre-Monsoon audit of the precautionary measures taken/ to be taken against danger of inundation is carried out every year.

ELECTRICAL & MECHANICAL

- Implementation of Shut down procedure and LOCK OUT and TAG OUT in electrical maintenance.
- Replaced all oil cooled transformers with air cooled transformers.
- Ensuring 50mA – 750mA EL tripping arrangements in all electrical equipments.
- Providing personal protective equipment like Hand gloves, Safety belts etc.
- Provided Nitrogen Injection Fire Prevention and extinguishing system at transformers in all 132 KV sub-stations.

GENERAL SAFETY

SIMTARS

- SCCL has opted to utilize the expertise of the Australian mining industry for development, implementation and monitoring of SMP in SCCL mines by Training a team of 10 executives at SIMTARS, Australia on Risk assessment based Safety Management System, under the program "Train the Trainers".
- Stage – III a Training Audit was completed in January 2019 by SIMTARS experts.
- Safety Management Plans of all Mines are under preparation.
- Safety Pledge at the beginning of each shift in all mines.
- Training and Re-training of all workmen including supervisors.
- Safety Audits are conducted on regular basis by constituting committees.
- Safety education through Press and local City Cable to promote safety education and awareness among employees
- Annual Safety Week, First-aid and Rescue Competitions are being conducted at Company level every year.
- Provision of corporate medical care to employees and their family members.
- Mine Safety Inspections:
- Every Mine has been provided with statutory man power to supervise/inspect the mining activities for safe operations.
- Area level senior officers will made inspections/surprise inspections to ensure implementation of SOPs, provisions of act, regulations.
- Regular and surprise inspections of the mines and departments by GM (S) of the region and corporate ISO officers to ensure safe operations and implementation of SOPs, provisions of Act, Regulations.
- Periodical inspections of Workmen inspectors.
- Monthly inspections/follow-up inspections by Pit Safety Committee members at Mine level.

- Special drive for accident prevention in OCPs:
- Conducting special awareness classes to all the employees including contract workmen.
- Conducting Safety audits to ensure implementation of all statutory provisions.
- Conducting Safety audit on HEMM and their movement.

Emergency response system:

- Emergency response plan prepared and submitted to the Directorate of Mines Safety.
- Mock rehearsals are being conducted at all mines to examine the efficacy of the emergency response system.
- Displayed emergency response flow chart at conspicuous places at the mines.
- Escape routes are prepared and being inspected and maintained for availability in emergencies.

Safety Monitoring in SCCL:

Level	Monitored by
Mine Level	<ul style="list-style-type: none"> • Workman Inspectors: As per Mines Rules, 1955 • Pit Safety Committee: Constituted as per the Mines Rules, 1955
Area Level	<ul style="list-style-type: none"> • Tri-partite Safety Committee • Area Safety Officer • General Manager (Safety)
Company Level	<ul style="list-style-type: none"> • Bi-partite Safety Committee • Tri-partite Safety Committee • Internal Safety Organisation (ISO) • C & MD • SCCL Board
National Level	<ul style="list-style-type: none"> • Standing Committee on safety in Coal Mines • National Conference on Safety in Mines • Various Parliamentary Standing Committees