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STANDING COMMITTEE
ON ENERGY
(2004)

THIRTEENTH LOK SABHA

MINISTRY OF COAL

SAFETY IN COAL MINES

FORTY-SEVENTH REPORT

LOK SABHA SECRETARIAT
NEW DELHI

February, 2004/Magha, 1925 (Saka)

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Presented to Lok Sabha on 4.2.2004
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LOK SABHA SECRETARIAT
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(2004)

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13. Shri Santosh Bagrodia
14. Shri Jayanta Bhattacharya
15. Shri Ramachandra Khuntia
16. Shri Ajay Maroo
17. Shri B.J. Panda

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorised by the Committee to present the Report on their behalf, present this Forty-Seventh Report on the subject "Safety in Coal Mines". The Standing Committee on Energy (2001) had selected the above-mentioned subject and entrusted the same to the Sub-Committee on Coal for examination and report thereon. The Sub-Committee could not finish the task and their unfinished work was entrusted to the subsequent Sub-Committees on Coal of the Standing Committee on Energy pertaining to the years 2002 and 2003.

2. Taking into consideration, the public importance of the subject, the Sub-Committee on Coal of the Standing Committee on Energy (2001) held extensive and wide-ranging informal discussions with the representatives/Trade Unions of various coal PSUs, Singareni Collieries Company Limited and Neyveli Lignite Corporation on the subject during their study tour to Hyderabad and Chennai during September, 2001. The Standing Committee on Energy (2002) also held informal discussions on the subject with the representatives/Trade Unions of Central Coalfields Limited and Central Mine Planning & Disign Institute Limited during their study tour to Ranchi during May, 2002 and Western Coalfields and Mahanadi Coalfieds Limited and Central Mine Planning & Disign Institute Limited during their study tour to Ranchi during May 2002 and Western Coalfields and Mahanadi Coalfields Limited during their study tour to Nagpur and Bhubaneswar, respectively, during September, 2002. The Standing Committee on Energy (2003) further held informal discussions on the subject with the representatives/Trade Unions of Northern Coalfields Limited, Bharat Coking Coal Limited, Eastern Coalfields Limited, South Eastern Coalfields Limited, Mahanadi Coalfields Limited, Neyveli Lignite Corporation and Western Coalfields during their study tour to Singrauli, Kolkata, Bhubaneswar, Chennai and Mumbai during October, 2003.

3. The Standing Committee on Energy (2001) was briefed by the representatives of the Ministry of Coal and Directorate General of Mines Safety (DGMS) on 19.2.2001 on the subject. The Sub-Committee on Coal of the Standing Committee on Energy (2003) took oral evidence on the aforesaid subject of the representatives of the Ministry of Coal and DGMS on 2.7.2003 and 17.12.2003.

4. The Committee wish to express their thanks to the various Trade Unions/Officers Associations for placing before them, the requisite Memorandum/Material in connection with the examination of the subject. Their details are contained in *Annexure VII.*

5. The Committee also wish to express their thanks in particular to the representatives of the Ministry of Coal and Directorate General of Mines Safety for placing before them the detailed material/ information as desired by the Committee/Sub-Committee and sharing with the Committee/Sub-Committee their frank views, perceptions and constraints concerning the subject.

6. The Standing Committee on Energy (2004) considered and adopted this Report at their sitting held on 29th January, 2004.

7. The Committee place on record their profound appreciation for the work done by the Sub-Committee on Coal of the Standing Committee on Energy pertaining to the years 2001, 2002 and 2003.

8. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in thick type in the body of the Report.

NEW DELHI;
February 3, 2004
Magha 14, 1925 *(Saka)*

SONTOSH MOHAN DEV,
Chairman,
Standing Committee on Energy.

PART I

REPORT

CHAPTER I

INTRODUCTORY

Coal, which is also known as "Black Diamond", is one of the valuable gifts of nature to mankind. It is the most important source of energy for electricity generation in India. Bulk of electricity generated in the country (about 65.7%) is from thermal power stations, which depend upon coal as feed stock. In addition, other industries like steel, cement, fertilizers, chemicals, paper and thousands of medium and small scale industries are dependent on coal for their process and energy requirement. Coal is also being used for domestic cooking purposes. India is, therefore, too much dependent on coal for electricity generation and its consumption in the country will continue to rise in the foreseeable future.

2. There are four types of coal found inside the earth. These are designated as Peat, Lignite, Bituminous and Anthracite. Peat is the first stage of coal formation. Lignite represents second stage in the coalification series. Its colour is brownish black. Bituminous coal occupies the third stage in the coal family and the fourth is Anthracite. It is hard with jet black shining colour. Out of the above four types of coal family, India is using two types *i.e.* Lignite and Bituminous (hard coal). Whereas Lignite is being mined in Neyveli in Tamil Nadu, coal is available and is being extracted in almost all parts of the country, with high concentration in the States of Jharkhand, Chhattisgarh, Orissa, West Bengal, Andhra Pradesh and certain pockets in Maharashtra, Madhya Pradesh and Uttar Pradesh.

3. The first recorded history of coal mining in India is about 229 years old. Raniganj in West Bengal is recognized as the birth place of the coal mining in the country where in the year 1774, coal mining operations were started. Thereafter, the coal industry grew slowly during the first 150 years. The real growth of the industry has taken place only after independence when steps for industrialization of the country were initiated through the Five Year Plans and especially after

nationalization of the coal industry in 1971 and 1973. In the course of time, many private entrepreneurs started coal mining operations in the Raniganj Coalfields. They did mining unscientifically as the mining science was not well developed. The private owners mined the coal for profit making since there was no law regulating mining and no attention was given to the safety of workmen. To regulate the mining operations in the country, an Act was passed in January, 1901 which was amended in 1923. Thereafter, it was amended from time to time but the general framework remained unchanged. Experience of the working of the Act revealed a number of defects and deficiencies which hampered effective administration. Hence, in 1952, another Act namely "Mines Act, 1952" was enacted and the rules, regulations and bye-laws framed thereunder. Since then, safety in coal mining operations is regulated by the said Act. The major rules and regulations framed under the Mines Act are:

- The Mines Rules, 1955 which gives the conditions of work, like hours of work leave, sanitation, workmen's participation in safety relating to occupational health,
- The Coal Mines Regulations 1957, which lays down the technical guidelines for safety in coal mines.
- The Mines Rescue Rules, 1985 giving the arrangements to be made to deal with emergencies.

4. The agency empowered to enforce the Mines Act and the rules and regulations framed thereunder, is the Directorate General of Mines Safety (DGMS) under the Ministry of Labour. Safety in coal mines is regularly monitored through intensive and quality inspections by DGMS, Internal Safety Organisations of Coal India Limited and its subsidiaries and line management of coal companies.

5. The Coal Mines Regulations, 1957 lay down the technical aspects of the safety procedures to be followed during coal mining. In addition, the Directorate General of Mines Safety (DGMS) issues technical guidelines in the forms of circulars.

6. Mining, especially coal mining, is acknowledged to be the most hazardous peace-time operation. Excavation of minerals from the earth's strata is a process involving an essential disruption of the equilibrium of the natural forces in the earth's strata. Safety in coal mining assumes more importance when underground coal mining is involved where work has to be done in closed spaces in the absence of natural light and ventilation.

7. The following are the major hazards responsible for mining accidents:

(i) **Ground Movement:**

(a) Roof/Side Fall

(b) Air-blast

(ii) **Explosion:**

(a) Methane Explosion

(b) Coal Dust Explosion

(iii) **Fire:**

(a) Ignition

(b) Spontaneous Combustion

(iv) **Inundation:**

(a) From surface sources of water

(b) From underground sources

(v) **Machinery:**

(a) Wheeled Transport Equipment

(b) Other Transport—winding/haulage/conveyour etc.

(c) Non-Transport Machinery

(vi) **Electricity**

(vii) **Explosives**

(viii) **Fall of persons/objects.**

8. It may be seen from the above that the safety of the employees and workers of coal mining industry from the above dangers thus assumes utmost importance. Coal is required to be produced to meet nation's demand but it should be without loss of lives of miners who are taking risks of all hazards. With the advent of new technologies and techniques, there has been reduction in fatal accidents and serious injuries yet there is enough scope to improve the safety standards in the coal industry.

9. Taking into consideration, the spate of mining accidents in Bagdigi and Godavarikhani coal mines in BCCL and SCCL, respectively in the recent past and also due to public interest, the subject of safety has generated, the Standing Committee on Energy decided to examine the subject on "Safety in Coal Mines" in greater depth and details. The Committee undertook field visits to major coalfields and interacted with the various coal PSUs and trade unions and solicited their views and suggestions on the subject. the various issues relating to the safety and security of all those who are actively involved in the coal mining have been dealt with in the succeeding chapters.

CHAPTER II

ADMINISTRATIVE SET UP FOR SAFETY

The Ministry of Coal has the overall responsibility of determining the policies and strategies in respect of exploration and development of coal and lignite reserves, sanctioning of important projects of high value and for deciding all related issues. Under the administrative control of the Ministry, these functions are exercised through two Public Sector Undertakings, namely, Coal India Limited (CIL) and Neyveli Lignite Corporation Ltd. (NLC). The Ministry also acts in close association with Singareni Collieries Company Limited (SCCL) which is a joint sector undertaking of Government of Andhra Pradesh and Government of India.

2.2 The CIL is the apex body in coal industry. The Company has under it seven coal producing subsidiaries and one planning & design subsidiary. It is responsible to provide the planned quality of coal efficiently and economically with due regard to safety, conservation and quality. With this end in view, the CIL has formulated and documented the safety policy/guidelines. The same are as under:

(i) Operations and systems will be planned and designed to eliminate or materially reduce mining hazards;

(ii) Implement statutory rules and regulations and strenuous efforts made for achieving superior standards of safety;

(iii) To bring about improvement in working conditions by suitable changes in technology;

(iv) Provide material and monetary resources needed for the smooth and efficient execution of safety plans;

(v) Deploy safety personnel wholly for accidents prevention work;

(vi) Organize appropriate forums with employees representatives for joint consultations on safety matters and secure their motivation and commitment in safety management;

(vii) 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 fulfil 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 analyses, keeping priority in sensitive areas of roof-falls, haulage, explosives, machinery, etc.;

(viii) 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 units;

(ix) 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;

(x) 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.

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

(xii) Continue efforts to better the living conditions and help of all the employees both in and outside the mines.

2.3 For an effective implementation of the safety policy/guidelines, a strong administrative set up is the pre-requisite. When asked about the details of the said structure that looks after exclusively safety matter, the Ministry of Coal in a note submitted to the Committee stated that:

"Safety system in coal mines is managed by multi-disciplinary Internal Safety Organisation (ISO) at company and at CIL level.

The role of the ISO is advisory in nature. It makes inspections for monitoring safety status of the mines and recommends precautionary measures to be taken to avoid dangers to the line management. Internal Safety Organisation (ISO) have the following salient features:

- the ISO functions in the two tiers, *viz.* subsidiary company level, and at the holding company level of CIL. The Head of ISO reports to one of the Technical Directors of the company. At the subsidiary-level ISO is represented in each area by Area Safety Officers.

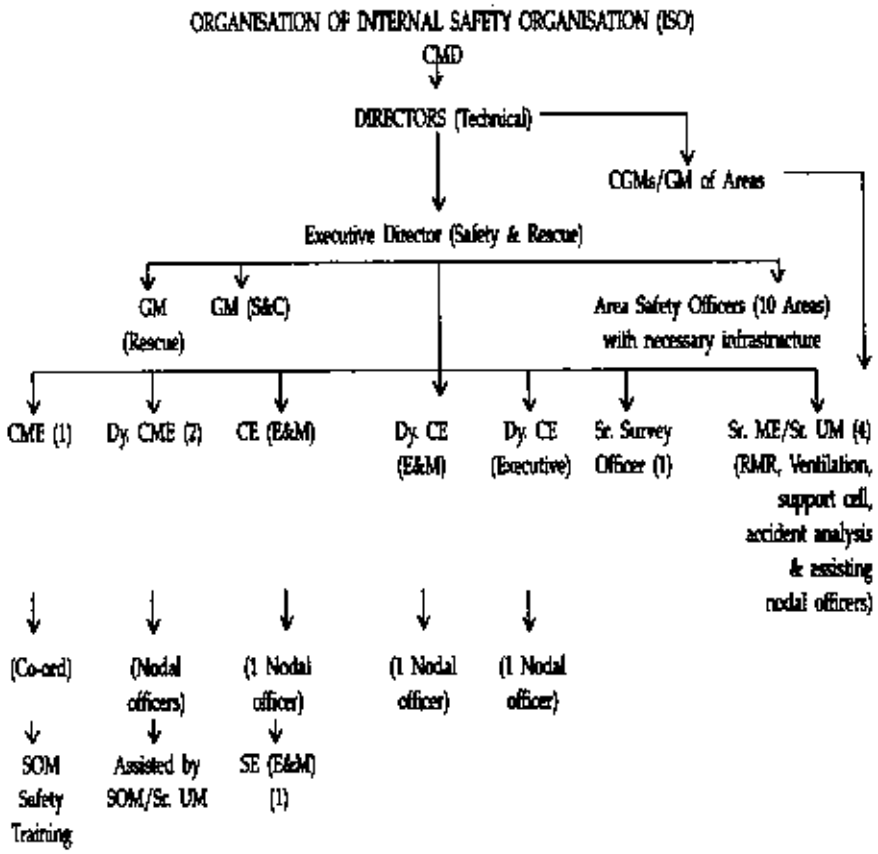
- ISO is multi-disciplinary comprising Mining, Electrical/ Mechanical Engineers, Excavations Engineers & Surveyors.

Coal India Safety Board meets twice every year to review and formalize policy decisions on safety related issues in Coal India. While Executive Director (S&R), CIL, under the guidance of Director (T)/CIL over views the corporate function of safety management system of the coal mines at company level, ISO with ED (S&R) at its head, looks after and guides the safety related activities at the area/mine level under the functional direction of D(T)/CMD of the company. Area level management comprising a number of mines/units belonging to the area, is looked after by Area Safety Officer under the direction and guidance of the Area GM. ISO as a whole functions as a advisory unit. Line management function of implementation of the safety related activities are looked after by Manager/Sub-Area Manager/GM, etc. of the mines with assistance of other staff officers functioning at their respective levels. Manager is assisted by Assistant Collieries Manager, Under Manager, Safety Officer, Overman and Mining Sirdar for safety matters. At the mine level worker's safety representative designated as Workman Inspector carries out inspection at periodic interval and advises the management on all safety related activities. ISO of the coal mines not only advises the line management but also implements all safety related activities."

2.4 In regard to coordination with DGMS, the Ministry further stated as under:

"Coordination with DGMS by Internal Safety Organisation is done as and where necessary, right from mine/unit/area level to the corporate HQ level. Tripartite meetings are held at colliery, area, subsidiary, CIL level having representation of management, union representatives and DGMS official".

2.5 Organisation of ISO in CIL and its coal producing subsidiaries is as follows:



2.6 Similarly, the subsidiaries of CIL have their own organizational structure of Internal Safety Organisation (ISO). Generally the Internal Safety organisation at subsidiary level is 3-tier Organisation. ISO at Corporate Level is headed by CGM (Safety and Rescue) with the following functions:

(i) Formulating Safety Policy of the company.

(ii) Participate in Operation Plan.

(iii) Inspection of Mines.

(iv) Organisation of Annual Safety Week.

(v) Enquire into accidents and subsequently analysis of the same.

(vi) Ensuring supply of good quality safety material.

(vii) Ensuring implementation of recommendations of Safety Conferences, CIL Safety Board, Standing Committee on Safety.

(viii) Review of preparedness for monsoon.

(ix) Organising specialized Safety Training.

2.7 The Area Safety Officer at area level have been assigned the following functions:

(i) Inspecting Under Ground and Opencast Mines

(ii) Conducting Area Safety Committee Meetings

(iii) Give safety clearance to new districts

(iv) Conducting meetings of Unit Safety Officers with area CGM/GM on monthly basis.

(v) Analysis of every accident and incident occurring in mines and other activities relating to mining.

2.8 There are also Safety forum both statutory and non-statutory. The statutory forum performed the following functions:

(i) Workmen inspectors drawn from Mining, Electrical and Mechanical discipline

(ii) Pit Safety Committee at every colliery comprising workers from all sections/categories including workmen inspectors, 5 persons nominated by the Trade Unions

(iii) Tripartite Committee at area level comprising area level Trade Unions, the Management and DGMS officials

(iv) Tripartite Committee at Corporate Level comprising Company level Trade Unions, Management officials of Corporate level and Directorate General of Mines Safety concerning the region.

2.9 The non-statutory Forum for safety of miners and executives includes:

(i) Joint Consultative Committee at Unit/Colliery Level

(ii) Joint Consultative Committee at Area level

(iii) Area Safety Committee/Board at Area level

(iv) Joint Consultative Committee at Corporate level.

Disaster Management

2.10 Every company of Coal India Ltd. has a disaster management plan. Each area (group of mines), the company headquarters and the Rescue Station to which the mines are attached, are connected by wireless and P&T telephones.

2.11 Emergency Action Plans have been framed in each mine. In the event of a major accident, the Emergency Action Plans are put into operation and a Control Room is set up immediately for dealing with the emergency. Simultaneously, the Rescue Station is informed, alongwith the local DGMS office, senior officers of the Area and company headquarters. The sounding of the siren informs all Rescue Trained Personnel of the mine to assemble at the mine.

2.12 The Rescue Organisation of CIL has been organized to render Rescue Services within 30 minutes of receiving information of occurrence of a major accident/incidence. Coal India Ltd. has six Rescue Stations, 14 Rescue Rooms with Refresher training facilities and 19 Rescue Rooms. These Rescue stations are equipped with modern Rescue Apparatus and staffed with well trained Rescue personnel. Most modern and sophisticated Training galleries have been set up to impart training under simulated conditions.

2.13 Coal India Ltd. has also acquired a Large-dia Boring Machine for evacuation of miners who may be trapped below ground.

Monitoring of Safety in Coal Mines:

2.14 Safety in Coal Mines is monitored by the following bodies:

1. Directorate General of Mines Safety
2. Workmen's Inspectors
3. Safety Committee at mine level
4. Area Level tripartite Committees
5. Tripartite Safety Committee at subsidiary company level
6. Coal India Safety Board
7. Standing Committee on Safety in Coal Mines

8. Conferences on Safety in Mines: The Conference on Safety in Mines are convened by the Ministry of Labour at an interval of about 3 to 4 years to have a general review of safety in mines and with particular areas which are identified for special attention. This Conference makes recommendations for improvement of safety standards in mines and some of these recommendations later are incorporated in the Statutes.

2.15 When asked about the position of manpower requirement and actual deployment for safety related measures, Ministry of Coal in a written note stated as under:

> "The requirement of manpower for safety changes with operational changes, like number of mines/districts being operated, the technology used therein, the age and distance of workings, etc. Also, the status is dynamic with superannuation, promotions and fresh induction of personnel. The requirement of manpower for safety is monitored by various high level Committees like the Standing Committee on Safety in Coal Mines, the CIL Safety Board, the company level Tripartite Committees besides the DGMS where workmen's representatives participate. Manpower requirement for safety is assessed from time to time and corrective action taken as required."

2.16 On being enquired about the shortage of supervisory staff, surveyors, mining sirdars, etc., who are directly linked with the mining activities, CIL in a written reply stated that the requirement of supervisory staff and surveyors is dynamic on account of creation of new districts or amalgamation of existing districts. This is filled by posting persons who have passed the overmanship/mining Sirdars Certificate/Surveyors Certificate examination conducted by DGMS. At present, there is a shortage of overmen and mining Sirdars but there is no shortage of surveyors.

2.17 Commenting upon the action taken to fill up the vacancies, CIL in a note stated that following steps have been taken, for filling up the vacancies:

- by organizing the districts/mines
- promoting mining sirdars who have passed Overmanship Certificate to the post of Overman
- promoting persons who have passed mining sirdarship examination to the post of mining sirdar
- imparting training to suitable persons to assist them to pass Overmanship/Sirdarship examination

- diploma holders and subordinate mining engineers are being engaged as overmen.

2.18 The following data collected from the Coal subsidiaries indicate the extent of the shortage/surplus staff in each subsidiary:

Sl. No.	Name of the Subsidiary	Overman/Sr. Overman	Mining Sirdar	Surveyors
1.	NCL	(-) 39	(-) 06	(-) 02
2.	SECL	(+) 02	(+) 13	(+) 02
3.	BCCL	(-) 32	(+) 15	(+) 11
4.	ECL	(+) 09	(-) 31	(+) 22
5.	MCL	(-) 17	(-) 14	(-) 02
6.	WCL	(-) 47	(-) 106	(-) 07
7.	NLC	No shortage/ surplus	No shortage/ surplus	No shortage/ surplus
8.	SCCL	(-) 11	+ 148	+ 2

Safety Audit

2.19 One of the major responsibilities of the management is to conduct safety audit as per statute/orders of all the mines periodically. In CIL, the periodicity for conducting safety audit is once in two years. This was confirmed by CIL in a written reply submitted to the Committee. However, there is no uniformity in conducting the safety audit by the subsidiaries of CIL and other coal companies. The following table shows the periodicity of safety audit by the coal companies:

Sl. No.	Name of the Company	Periodicity for conducting Safety Audit
1.	NCL	Has been conducted every year
2.	SECL	Once in two years
3.	MCL	Every year
4.	WCL	Once in two years
5.	BCCL	Once in three years
6.	ECL	Once in two years
7.	CCL	1-2 years
8.	NLC	Once in a month

2.20 The Committee note that the principal responsibility for the safety of coal mine workers and all those who are directly engaged in the mining rests entirely with the management of that mine. The Committee have noted that safety system in coal mines is regularly monitored through intensive and quality inspection by DGMS, Internal Safety Organisation (ISO) of Coal India and its subsidiaries and line management of coal companies. ISO not only undertakes inspections for monitoring safety status of the mines but also recommends precautionary measures to be taken to avoid dangers to the line management. Apart, from these, there are also safety forum both statutory and non-statutory to monitor safety in coal mines. The Committee is unhappy to note that in spite of having a large contingent of managers and other supporting staff in each subsidiary of Coal India Ltd., no positive changes in the safety scenario are visible. The Committee note that one of the functions of the management is to ensure that mining is undertaken as per safety norms and compliance of various provisions of the Mines Act, 1952, Rules, Regulations and Orders made thereunder. The Committee have also been apprised that while conducting inspection of coal mines, the major deficiencies found by DGMS are; non-maintenance of statutory records, non-maintenance of mine plans, non-compliance of systematic support rules, non-provision of dust suppression and coal dust treatment arrangement, non-provision of adequate ventilation arrangement, non-maintenance of Heavy Earth Moving Machine (HEMM) in opencast mines, high benches in opencast mines and not adhering to prescribed method of work. The Committee have taken note of the deficiencies pointed out by DGMS and are not satisfied with the status of compliance of the statutes by the management. So much so that even mine plans are not being maintained, as per the Statutes. The Committee is equally concerned to note that adequate provision does not exist for ventilation and dust suppression. The deficiencies observed by DGMS clearly shows callousness on the part of the coal management in not adhering to the prescribed Rules and Regulations framed under various statutes. The Committee, therefore, recommend that Government should overhaul the safety environment in coal mines. A Study Group/ Committee can also be constituted for the purpose, if need be.

2.21 The Committee also find that whenever there is a lapse in respect of safety, the worker(s) and at the most, mine level officials are invariably held responsible for the same and the top management left scot-free. In the opinion of the Committee, the top management

is equally responsible for such incidents. The Committee, therefore, strongly recommend that top executives of coal companies, who are solely responsible for formulation and implementation of safety policy, should also be held accountable for failure to ensure safety in coal mines. Such an action will undoubtedly improve the safety environment in the mines.

2.22 The Committee also suggest that the role of ISO, Safety Committees and Workmen's Inspector should be activated and modern management practices like safety management plan for occupational safety and health should be prepared with the risk assessment study and implemented.

2.23 The Committee also observe that although safety audit is required to be conducted once in two years, yet there is no uniformity in undertaking the safety audits by the subsidiaries of CIL and other coal companies. The Committee find that the periodicity for conducting safety audit varies from one month to three years in coal subsidiaries. The Committee, therefore, recommend that CIL should review their orders and frame guidelines for conducting regular safety audit at uniform interval of time.

2.24 The Committee feel that the Coal India Limited should explore the possibility of creating a separate Directorate for conducting Safety Audit in all the subsidiaries and a separate cadre of trained personnel should man such a Directorate. It can then directly report to the Chairman, Coal India Limited.

2.25 The Committee note that supervisory staff, surveyors, overman, mining sirdars, etc. play very vital role in ensuring safety at the mine level and advises the management on all these aspects. The Committee are perturbed to note that on the one hand, there is an acute shortage of these staff in some of the coal subsidiaries, who are crucial for enforcing safety in coal mines and on the other hand, there are surpluses. The Committee, therefore, recommend that pending the creation of a separate Directorate, need based adequate safety staff be provided and shortages be met either by conducting open examinations or through inter-company and intra-company transfers etc.

CHAPTER III

IDENTIFICATION OF HAZARDS IN COAL MINES

The coal mine industry makes a major contribution to the national economy and to the well being of the society as a whole. For continuing viability of the industry, it is important that full advantage is taken of all the available techniques, methods and procedures and also of the advances in approaches to the management of all mining activities. Because of the inherent hazards of mining as an activity and the complexity of the various associated systems, it is not possible to be inherently safe.

3.2 On the point of identifying potentially dangerous areas, Ministry of Coal in a written note submitted to the Committee stated that potentially dangerous areas are identified through system of review of safety status of mines at various levels, discussions with DGMS officials during their inspections of mines as well as at DGMS office, safety audits of each and every mine conducted by external experts, annual exercise for monsoon preparation, etc. DGMS officials check mine plans and action is taken as per decisions arising out of these discussions. Since the working areas are constantly changing, as coal is extracted and workings move to new areas, the areas identified as potentially dangerous also keep changing.

3.3 A broad classification of potential dangers associated with coal mining are as under:

1. Danger from Roof/side fall
2. Danger from air blast
3. Danger from explosion
4. Danger from fire
5. Danger from inundation
6. Danger from machinery

3.4 The details of above mentioned potential dangers are contained in the succeeding paragraphs:

(a) **Ground movement**

(i) **Roof/side fall:** essentially, mining involves a disruption of the natural state of equilibrium of forces within the earth's crust due to extractions to obtain minerals or coal. When this equilibrium of forces is disturbed, stresses are set up in the rocks surrounding an excavation. When these stresses exceed the strength of the strata, there is a fall of roof or side.

(ii) **Air blast:** sometimes the roof over an area from which coal has been extracted does not fall. This is particularly true in the Indian context when the roof strata is hard sandstone. If a large area of exposed roof is allowed to hang, that is not brought down artificially, the large area of roof may come down on its own instantaneously and this may result in an air-blast. As broken rocks occupy greater volume than the solid rock, this sudden fall will expel a huge quantity of air instantaneously. This air is expelled through small areas (limited number of galleries) at very high velocity and at great pressure. This may result in workmen present being flung against the walls of the galleries/ equipment.

(iii) In **opencast mines:** if the slope of the excavation/heap of overburden or coal is too steep, the slope may fail and a huge quantity of earth may fall into the working area resulting in death of workmen and damage to equipments.

3.5 Roof/side falls in underground mines constitute the major reason for underground accidents and fatalities. About 35% accidents recorded in the coal mine industry occurred due to roof/wall falls. Over the years, steps have been taken to reduce such accidents but the ground reality has not changed much. A few years back, a paradoxical situation has arisen when fatalities from roof/wall collapse have been recorded more in development workings than depillaring areas where it has been the experience that dangers are supposed to be more, This indicated that more precautions need to be taken to secure freshly exposed roof/side of the development working through suitable support systems.

3.6 Regarding roof/side falls, the CIL in a written reply informed the Committee that:

> "In the past, roof and side fall accidents used to take place mostly within two hours of blasting. The reasons for this was dislodgement of supports, props and cogs, during blasting. At present roof support is done mostly by roof bolting/roof stitching where no dislodgement due to blasting is possible. Measurement of intensity of blasting is not necessary in underground mines as blasting is done as per the blasting pattern given in the permission for blasting-off-the-solid issued by DGMS, which is designed taking not consideration the intensity of vibrations due to blasting".

3.7 Agreeing with the Committee that roof/side fall has been the root cause of accidents in underground mines, one of the subsidiaries of CIL, namely South-Eastern Coalfields Limited (SECL), stated the reasons for it as under:

(i) Vibration produced due to blasting disturbs the existing geo-mining condition.

(ii) Freshly exposed roof/green roof is most prone to fall of roof/sides. Handling of explosive/blasting is done in underground mines as per the provision of the regulation as laid down in Coal Mines Regulation 1957 and Indian Explosive Act/Rules.

3.8 They further apprised the Committee that intensity of blasting in underground mines depends on:

(a) number of holes blasted in one round of blasting;

(b) quality of explosive used/holes;

(c) delay interval in between consecutive shots; and

(d) type of exploder used.

Based on the provision of Coal Mines Regulation 1957 each factor is decided and rating given so as to have minimum intensity *e.g.* it is fixed that a single shot exploder/multi shot exploder will fire how many number of shots gassy mines of 1st degree/2nd degree/3rd degree gassy mines. As per Coal Mines Regulation 1957, shot fire (competent person having Mining Sirdar, Gas Testing and first aid certificate) shall record in a bound paged book quantity of explosive

taken, used, returned, place where shots are fixed, number of shots and mis-fire, if any. Even entry shall be signed as well as countersigned by Manager and dated by him. In addition to it, records of explosive issued name-wise, shift-wise and explosive returned is maintained at Magazine under Indian Explosive Rules/Act. A monthly/annual reports on fixed formats is sent to Regional Controller of Explosive as is required under the provision. In addition to it, now a days in each shift of underground mines, Under Managers (holding 2nd class certificate) sufficient Overman and Mining Sirdars are posted. Mining Sirdar, Overman/Under Manager has also to write about blasting etc,. in their bound paged book kept for the purpose which is also to be counter-signed by Manager.

3.9 During the last five years, 119 fatalities occurred due to roof fall and 54 due to side fall. The following are the year-wise details of fatalities occurred due to roof/side fall:

Year	Roof fall	Side fall	Total
1998	36	14	50
1999	22	06	28
2000	23	20	43
2001	19	08	27
2002	19	06	25
Grand total	119	54	173

3.10 When asked about the taken by the management to reduce the occurance of roof/side falls and the fatality rate as well, the Western Coalfields Limited (WCL), one of the subsidiaries of CIL gave the details of the steps taken by them as under:

Roof Management

- Major thrust was given to the use of roof bolts/roof stitching to replace timber support in green roof areas.
- Roof bolting with W-straps is extensively being used in the development and depillaring to replace timber support in phased manner.

- Scientific studies have been undertaken by outside agencies for strata control at Tandsi mine of Kanhan area and Saoner-1 mine of Nagpur area by different agencies.
- Impetus was given for determination of RMR for preparing support plans as per the Paul Committee recommendations. All the underground mines have been covered and support plan designed as per RMR values.
- Recommended formation of lesser number of production districts and concentration of production centres for better supervision.
- Detailed enquiry into every roof/side fall incident is conducted and recommended corrective action for future implementation, and circulated upto gross root level.
- Training and retraining of support personnel and supervisors.

3.11 From the above, it appears that even after the claims of management that latest technology of roof bolting/stitching and support introduced to reduce the possibility of fall of roof and sides, these hazards still constitute a large percentage of accidents. When asked about the recurring accidents due to roof/side falls, the Ministry of Coal in written reply, informed the Committee that analysis of accidents due to fall of roof and sides in underground mines over the past five years shows a declining trend as may be seen from the chart given below:

Year	1998	1999	2000	2001	2002
No. of fatal accidents due to roof/side fall accidents	38	25	27	27	21
Total no. of fatal accidents	91	93	80	69	62
% of fatal accidents due to roof/side falls	41.8	26.9	33.7	39.1	33.8

The Ministry further informed the Committee as under:

"Extraction of minerals/coal from the earth strata involves working against forces of nature, which may not be entirely mapped out, or homogeneous in nature. Therefore, accidents due to roof/side falls cannot be eliminated entirely, despite all due precautions. At

present accidents due to roof and side falls in the last 5 years constitute an average of 35% of the total accidents in the mines of CIL."

3.12 The Committee have been apprised that during the year 2000, an exercise was undertaken to analyse in detail, the accidents caused by fall of roof and side by DGMS. The analysis revealed that:

(i) 13 per cent of roof fall accidents occurred during setting of supports and 3% during withdrawal of supports.

(ii) 63 per cent of the roof fall accidents occurred within 10m of development and depillaring faces *i.e.* in freshly exposed roof area. 33 per cent of such accidents occurred in depillaring district while 30 per cent in development areas.

(iii) 26 per cent of the side fall accidents occurred within 10m of the working faces.

(iv) All type of strata were involved in roof and side fall accidents. In the roof fall accidents, 40% of the fallen strata were coal. 17% were shale, 33% sand stone and remaining were combination of coal/shale or sand stone.

(v) The thickness of the fallen strata was upto 1m in 87 percent cases of roof fall accidents.

(vi) The thickness of the fallen strata was upto 1m in 81 percent cases of roof fall accidents.

(vii) 70 percent of roof fall accidents occurred due to inadequacy of supports in the workings.

(viii) 73 percent of roof fall accidents and 81 percent of side fall accidents occurred where gallery width was more than 4m.

(ix) 84 percent of the roof fails and 64 percent of the said fall accidents occurred due to lapses on the part of management and supervision.

(x) 57 percent victims of roof fall accidents were loaders followed by 19 percent support Crewmembers.

3.13 The analysis of the accidents, observations of the officers during inspection of mines and interaction with support crew and subordinate supervisory officials revealed one or more of the following deficiencies:

1. Systematic Support Rules were not being following strictly.
2. Workmen were sometime going in-bye of the roof supports.
3. A temporary support was not provided in the freshly exposed area before engaging the support crew for providing permanent support.
4. Inadequate or improper examinations of roof/side manifested into roof/side falls.
5. Proper dressing of roof and sides were not done prior to erection of support.
6. Support crew was not provided with proper tools/tackles.
7. Safety support withdrawal was not provided and supports withdrawal was carried out by hammering on erected supports.
8. A system of side supports was not adopted where the coal had a tendency to spall.
9. Galleries were widened excessively without any purpose.
10. Support crew was not adequately trained. Sometimes loaders and other diverted untrained workers were engaged for bolting operation in the absence of regular support crewmembers.
11. Rope dowels were used in place of ribbed bars.
12. Grout was not able to provide the desired anchorage of 3 tonnes and 5 tonnes after 1/2 an hours and 2 hours of setting time respectively.
13. Nuts were not compatible with respective bolts resulting into slipping of nuts over threads.
14. Holes were not drilled in right direction and up to desired depth.
15. Proper types of support materials as envisaged by tech. Circular No. 3 of 1966 were not used.

16. Bolting was not done soon after the exposure of the roof resulting into bed separation.

17. A system anchorage testing and keeping record was not in vogue.

18. Instead of random anchorage testing, pre-decided bolts were subjected to anchorage testing.

19. A proper type of anchorage testing machine compatible with the bolts was not provided.

3.14 On a point of use of hidden slips, which is a latest technology for preventing roof and side falls, Ministry of Coal informed that CIL will explore the availability of such instruments. On the same point, Singareni Collieries Co. Ltd. stated that instrument required to detect hidden slips (Roof Stabilizer) has not so far been developed indigenously, so it is proposed to obtain them from abroad to prevent roof fall accidents.

(b) Explosions:

(i) **Methane explosion:** some inflammable gases, mainly methane along with some other hydrocarbons are associated with coal and are released into the atmosphere when exposed. These gases form an explosive mixture when mixed with oxygen of the air within certain percentage. Such an inflammable mixture can explode with disastrous consequences and result in loss of lives and considerable damage to the mine.

(iii) **Coal dust explosion:** fine coal dust is generated in the course of extraction of coal. This coal dust, which is generally present on the roof/sides/floor of the galleries (tunnels) may be raised in the mine atmosphere and form a coal dust cloud under certain circumstances. Such a coal dust cloud may result in an explosion if initiated by a spark of sufficient energy and duration.

3.15 In a reply regarding identification of potentially dangerous areas especially with reference to highly gassy mines/accident prone mines due to gases, Ministry of Coal stated as under:

"DGMS identifies accident prone mines every year through a statistical exercise based on the accident statistics for the previous

5 years of each and every coal mine. A list of such mines is circulated to each coal mining company. On receipt of the list of accident prone mines by the companies of CIL, specific measures are taken at each accident prone mine based on analysis of the accident occurred thereon.

The Coal Mines Regulations (CMR), 1957 have laid down criteria by which mines are classified into degree-I/II/III gassiness, progressively of higher gassiness. Protective measures to be taken against inflammable gas are laid down in the CMR. These are complied with. 'Fiery Seam' has been defined in CMR as a seam where fire/ spontaneous heating exists within the precincts of the mine. Protective measures to be taken against outbreak of fire are laid down in CMR. These are complied with.

Over and above the measures required to be taken by the CMR, CIL has established continuous Environment Tele-Monitoring System (ETMS) in 14 highly gassy/fiery mines to give audio visual warning of build up of a situations that may lead to fire/explosions. Installation of more such system are planned".

3.16 All the underground mines especially gassy and dust prone mines are required to be ventilated properly, to exhaust the gases and dust from such mines. On the point of proper ventilation arrangements in all the underground gassy/dust prone mines, the Ministry of Coal informed the Committee that mechanical ventilators booster fans/ auxiliary fans are provided to augment ventilation where required. The Ministry further informed the Committee regarding making the gassy mines environment friendly as under:

"In order to make the underground environment more friendly CIL has taken up a programme to drain out methane (CH_4) from a few working mines under programme called CMM (Coal Mine Methane) and CBM (Coal Bed Methane). Demonstration project under UNDP assistance has been taken up in two highly gassy mines namely Moonidih & Sudamdih of BCCL. Extraction of highly inflammable methane, which other-wise when mixed with underground atmosphere not only degrades the working environment due to reduce oxygen, will have a significant contribution in reducing potential for fire damp explosion apart from it's economic utilisation as energy source".

(c) **Fire**

(i) **Ignition:** coal is combustible and can catch fire if a source of ignition of sufficient duration and intensity is available. Such a source of ignition may be electrical spark, friction, open flame, etc., a fire may be assisted by lubricants that may have been spilled in the area.

(ii) **Spontaneous combustion:** coal has the property of self oxidation, that is, an oxidation reaction starts automatically between the carbon present in the coal and oxygen in the air as soon as the coal is exposed to the atmosphere. If the current of air available is too weak to conduct away the heat generated by this reaction the temperature will increase. With increase in temperature, the speed of the reaction increases and the process may continue until an open fire breaks out. Conditions for such fires are readily available in goaves (areas where most of the coal has been extracted and the roof has been allowed to fall) and disused galleries in underground mines.

(iii) **In Open Coal Mines:** sometimes, the coal seams being excavated catch fire due to spontaneous heating. The hot coal has to be quenched and excavated. The coal seam under fire loses strength and sometimes there is collapse of part of the coal face and a cloud of incandescent material is raised which can burn to death anyone caught in it.

3.17 At the time of nationalization of coking coal mines in 1971 and 1973, there were 70 active fires in 42 collieries of Jharia Coalfield, covering an area of 17.32 sq. kms. It has been estimated that about 1864 million tonnes of coal reserves are blocked and about 37 million tonnes of coal might have been damaged due to these fires. Efforts made so far dealing with these fires could only prevent the spreading of fires barring a few exceptions but complete extinction of this is most of the cases was not possible.

3.18 Out of the above 70 active fires mostly in the Jharia Coalfields under BCCL, the Ministry of Coal/Coal India Limited took 22 fire projects in hand during 1976-1988 for extinguishing the same with the available technologies. As a result, 10 fires have been extinguished and spreading of the rest of the fires has been controlled. The area affected by the fire has also reduced by about 50%. In addition, 14

schemes have been approved under EMSC schemes of Government to deal with fire and subsidence problems of certain identified areas of Jharia Coalfields. Out of these, 5 schemes have been completed.

3.19 Regarding identification of fiery mines, the CIL in a note submitted to the Committee stated as under:

"Mines having a potential for an outbreak of fire are identified by subsidiary companies of CIL on the basis of examination of Safety Audits and other geo-technical considerations. In addition to compliance with the CMR, 1957 and DGMS Circulars, preventive actions are being taken as recommended by the DGMS, the Safety Audits, etc. Actions as laid down in the statutes regarding precautions against fire like, examination of old workings, examination of isolation stoppings, analysis of air samples behind isolation stoppings/fire stoppings to detect development of heating/ fire, are taken and the implementation status are monitored by DGMS".

3.20 11 mines have been identified in SCCL having potential danger of fire, based on fire incidents taking place 2 times or more within a period of 5 years.

3.21 As regards, the measures taken to extinguish the remaining fires of BCCL in the Jharia Coalfields, the Ministry of coal stated as under:

"Various measures like quenching, blanketing, sand flushing, invert gas injection, water pooling, etc., are being taken by BCCL to restrict/quench fire. Schemes under EMSC and RCPS have also been taken up.

Due to such measures taken by BCCL, spreading of fire has been retarded. However, due to enormity of the problem, fire in BCCL in Jharia Coalfield could not be completely controlled".

3.22 Coal India Limited (CIL) on the one hand, in a written reply informed the Committee during its study tour to CIL's subsidiaries that there is no fund constraints for undertaking any safety related activities in its subsidiaries but on the other hand, BCCL one of the

subsidiaries of CIL stated that due to paucity of funds, they have not been able to undertake serious safety measures. The Committee asked the Ministry of Coal to furnish factual position, who replied as under:

> "It is fact that Coal India Ltd. has informed the Committee that there are no fund constraints for undertaking any safety related activities in its subsidiaries. The same is correct. Day-to-day activities relating to safety aspects are fully looked after and all required safety actions are taken by the subsidiary companies. In BCCL also day-to-day activities related to safety are fully looked after by the company. However, in BCCL perennial problem of underground fire in old workings exists. To control this danger of fire and subsidence in BCCL, huge funds needs to be invested. BCCL with its present financial condition is not in a position to take such protective work to restore the safety. Recently Ministry of Coal has approved an Action Plan for mobilization of funds to deal with the problem of fire and subsidence in BCCL/ECL.

The implementation of the above Action Plan has already been started and Stowing Excise Duty has been increased from Rs. 4.25 per tonne on coking coal and Rs. 3.50 per tonne on non-coking coal to Rs. 10.00 per tonne for coking and non-coking coal for building up the fund. Action for other items of the Action Plan are in process. CIL is also contemplating contribution to this fund by Rs. 6/-per tonne effective from 1.4.2002".

(d) Inundation

(i) **From surface sources of water:** water from surface sources may suddenly rush into the working areas and result in loss of lives and damage to property.

(ii) **From underground sources:** water tends to accumulate in the lower regions of mines. Also water bearing strata may be present in the immediate vicinity of a mine. If an inadvertent connection is made to a waterlogged area or water bearing strata either directly or through a fault or geologically disturbed area, this may result in a sudden inrush of water into the working area with loss of a large number of lives.

3.23 When asked about the steps taken for identifying the danger of inundation, CIL in a written reply furnished to the Committee stated that following actions are taken in this direction:

(i) Before every monsoon, the danger of inundation is examined in every mine and appropriate steps are taken to counter the same.

(ii) Safety Audits of mines by external experts are regularly carried out to identify danger of inundation besides others.

3.24 On being enquired whether mines having potential for inundation have been identified, the Ministry of Coal informed the Committee that they have already identified such mines which are given in Annexure-I. They further apprised the Committee that since the working areas are constantly shifting along with depletion of coal reserves, identification of areas having a potential for inundation is a continuous process and mines are checked for water danger regularly and preventive action taken as required. On receiving the list of Accident Prone Mines (APM), steps are taken for each mine, as applicable to that particular mine to bring the mine out of the APM list. Following additional steps are being taken to ensure safety in such mines:

- In depth analysis of cause-specific and place-specific accidents and risks involved in every mining activities is done and corrective measures are taken in such mine.
- More vigorous training and re-training are imparted to workers. More frequent spot safety talks and counselling are held in such mine.
- Calling of injured persons before Safety Committee members and discussion on corrective measures.
- Safety awareness drives are conducted from time to time to increase safety awareness."

3.25 On the point of installation of high capacity dewatering pumps, the CIL in a written reply stated as under:

"Pumping is regular exercise in mines especially in underground mines to discharge the make of water in below ground and capacity of pumps installed is dependent on depth of the mine and quantity

of make of water. Pumps having adequate capacity are installed in all underground mines.

In case of emergency, pumps & electricals/accessories already installed are likely to be damaged and may not be available for use. Therefore, installing high capacity pumps for use in emergency in mines would not serve any purpose.

Also, in case of inundation, the quantity and rate of pumping can not be assessed with any reasonable degree of accuracy. The quantity and rate of pumping required in case of inundation may be enormously higher than that required for normal operation of the mine. Installation of very high capacity/rate of pumping required in emergency in every underground mine, which may or may not be required in the entire life of the mine, would be prohibitively costly and may not be practicable.

For example, in the case of inundation of Gaslitand mine in September, 1995, an entire river entered the mines for 3 days. A huge expenditure was incurred in attempting to dewater the mine for over six months and then abandoned as the inrush of water had damaged ventilation devices, disrupting the ventilation system leading to outbreak of fires. Therefore, installation of pumps for emergency dewatering may not be practicable. However, as desired by this Committee, standby emergency pumping capacity is kept in readiness at central locations".

3.26 On being asked about the construction of water-tight chamber in the mines, to prevent inundation, the Ministry of Coal informed that CIL agree with the suggestion. But from previous experience of inundation, it is found that water inrush is so sudden and so fast that in most of the cases, the persons get very little time to react. Therefore, the utility of watertight chamber in underground mines needs to be explored further. In this regard, SCCL informed the Committee that one watertight chamber is proposed to be constructed in one of the underground mines on trial basis.

(e) Machinery

(i) **Wheeled transport equipment:** in the recent times, with the increase in opencast mining using Heavy Earth Moving Equipment (HEMM), accidents associated with HEMM and

trucks are on the rise. The hazards associated with the use of large dumpers (capable of carrying upto 170 T capacity) are compounded on account of their large size and resultant reduced visibility. Concentrated operation of wheeled trackless transport like trucks and dumpers is associated with hazards of workmen being runover, collision of vehicles or toppling from haul roads.

(ii) **Other transport-winding/haulage/conveyor, etc.:** accidents also take place in underground mines due to the use of transport equipment either vertical transport in shafts/pits (wells to gain entry into the coal seam) or other transport like haulages, conveyors, locomotives, etc.

(iii) **Non-transport machinery:** use of loading machines (including HEMM like shovels, drills, draglines/pumps, etc./ can result in accidents.

(f) Electricity

The use of electricity can also result in accidents if proper precautions are not taken.

(g) Explosives

Explosives are used in mines to break rocks. Unless proper precautions are taken in the use of explosives, accidents may take place. Also there is danger of being hit by projectiles of rocks during blasting. Precautions against initiating methane/coal dust explosions need also to be taken while using explosives.

2.47 Commenting upon the hazards noticed in coal mines, the representatives of the Colliery Mazdoor Union operating in ECL & BCCL submitted the following suggestions for the considerations of the Committee:

(i) Long and arduous journey where underground travel is arduous and working faces exist at long distance man riding system should be introduced. But in ECL mines the system cannot be introduced.

(ii) Roof support—Apart from roof—bolting, roof stitching, triangular chalk, square chalk, high set props, and steel prop sufficient in number should be made available to support

roof. Roof-bolting and high set props to support freshly exposed roof must be of high standards. Jacks of high set props become out of order frequently. Care has to be taken in this regard and standard jacks along with high set props be made available.

(iii) Underground fire-sectionalization of old workings to reduce inspection of old workings and chance of underground fire sectionalization stoppaging should be completed in war-footing.

(iv) Gassy mines and other mines having active fire pose serious problem of heat.

(v) Environment monitoring system should be introduced for early detection of carbon monoxide, carbon dioxide and methane gas, etc. This system should be incorporated in all degree III gassy mines immediately as recommended by the Safety Conference on Coal mines.

(vi) Equipments to detect gasses in underground mines—Methanometer, flames safety lamp co-detector toximeter, multi gas detector should be made available as per requirement. All the instruments should be in order all the times. Filter self-rescuer should be made available not only in degree III mines but also degree II gassy mines also. Proper training to be given to the miners to use the apparatus.

(vii) Turn winding engine, mine fan, etc. continuously in degree III gassy mine—at the time of electric supply failure for hours together continuous running of winding engine and mine fan specially in degree III mines is required for which alternative power line or DG set should be provided.

(viii) Inundation

(a) Committee to be constituted consisting of DGMS officials, trade union members and management officials (ISO) to review the danger of inundation unit and area wise. Monsoon preparation should be made sincerely and effectively.

(b) When mine workings approach towards water logged area of nearby mine or where the top seam is full of

water as per coal mines regulation, 1957 advance bore hole flank holed, etc. are to be placed to satisfy that water logged area is far away (60 meter) from the place of working.

(c) Position of barriers, partings, existing dams, ventilation stopping and all accessible isolation stopping likely to contain water. Water dams are to be repaired if necessary through which water may enter the workings causing danger to lives and property. Inspection by a team of local officials headed by the Manager, workmen's Inspector including the survey wing of the colliery would be very helpful. Water danger plan as per status to be maintained and up-to-dated.

(d) Underground workings with less than 15 meter hard cover should be shown on the mine plan and demarcated by pagging below ground. Unless definite from available information, thickness of hard strata should be proved by drilling bore holes in low cover areas.

(e) Communication system prevailing is also not up to the standards, specifically under heavy down pour flow of river, zore water disrupt the communication system. Alternative arrangements such as walkie-talkie and other system should be considered to combat the situation.

(ix) **Coal dust**—Every mining company operating mechanized mine should take immediate steps to ensure that (a) adequate arrangements and infrastructure facilities to carry out dust surveys in mines and (b) air-born dust surveys are to be made and necessary control measures wherever required to be taken in day to day workings at all mechanized long wall faces mechanized board pillar working and road header rushing operations and also coal handling plants.

3.28 Roof and side fall accidents still continue to be a major cause of fatality in underground coal mines inspite of introduction of steel supports in such workings. The Committee note that roof/side falls account for 35% of all the fatal accidents in underground coal mines of CIL. In SCCL, the rate of fatalities due to roof and

water as per coal mines regulation, 1957 advance bore hole flank holed, etc. are to be placed to satisfy that water logged area is far away (60 meter) from the place of working.

(c) Position of barriers, partings, existing dams, ventilation stopping and all accessible isolation stopping likely to contain water. Water dams are to be repaired if necessary through which water may enter the workings causing danger to lives and property. Inspection by a team of local officials headed by the Manager, workmen's Inspector including the survey wing of the colliery would be very helpful. Water danger plan as per status to be maintained and up-to-dated.

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3.28 Roof and side fall accidents still continue to be a major cause of fatality in underground coal mines inspite of introduction of steel supports in such workings. The Committee note that roof/side falls account for 35% of all the fatal accidents in underground mines of CIL. In SCCL, the rate of fatalities due to roof and

side falls is alarming. During the last five years from 1998 to 2002, about 51% fatalities in SCCL occurred due to roof and side falls. The Committee feel that deficiencies in most of the accidents were avoidable. The Committee note that various circulars have been issued by DGMS to prevent roof/side fall from time to time. However, they are not being complied with all the seriousness which they deserve. The Committee, therefore, strongly recommend that management of the coal companies should ensure that the guidelines issued by DGMS in this regard are followed in letter and spirit.

3.29 It has been brought to the notice of the Committee that roof bolting, roof stitching, triangular/square chalk, high set and steel props, are not made available and where available, are not of desired standards. Jacks of high set props run out of order frequently. The Committee desire that these should be enquired into and appropriate corrective action taken in the matter.

3.30 The Committee further observe that vibration produced due to blasting disturbs the existing geo-mining conditions. The freshly exposed roof/green roof is most prone to the fall of roof/side. Handling of explosives/blasting is done in underground mines as per the provision of the regulation as laid down in Coal Mines Regulations, 1957 and Indian Explosive Act/Rules. As such every care should be taken to ensure that these are duly followed with all seriousness. The Supervisory staff should be made accountable for every lapse in following DGMS guidelines. Serious action may be taken against such officials for repetitions.

3.31 The Committee are glad to know that induced blasting is in vogue in some mines of CIL. Adequate precautions are being taken including suspension of work till falling of stone parting, where induced blasting method is being practiced to regularize the fall overlying hard strata in case of depillaring with caving.

3.32 The Committee observe that the mixture of some inflammable gases, mainly methane along with some other hydrocarbons can explode with disastrous consequences and result in loss of lives and considerable damage to the mine. Mine coal dust has also been responsible for explosions in the coal mines. The coal dust clouds have also been responsible for low visibility in the coal mines. The Committee, therefore, recommend that to flush out the gases from the underground coal mines, sufficient ventilation

facilities with high capacity exhaust fans should be provided in each and every mine. To monitor the presence and nature of the gases in the mines, multi gas detectors and also computerized gas/ environmental monitoring system should be established especially in highly gassy mines.

3.33 The Committee further observe that the highly gassy mines are identified through a statistical exercise based on the accident statistics for the previous five years of each and every mine. The Committee feel that identification, merely based on the statistics, is a very primitive method to identify such mines. There is a need to develop some machines/equipments for continuous monitoring of degree-III gassy mines and those having active underground fire in a phased manner. At the same time, the Committee recommend that necessary facilities for monitoring the environmental parameters in respect of Methane and Carbon Monoxide should be provided at mines. The Committee note that to make the underground environment more eco-friendly, CIL has taken up a programme to drain out methane (CH^4) from a few working mines under the programme called CMM (Coal Mine Methane) and CBM (Coal Bed Methane). The Committee recommend that coal bed methane should be extracted and commercialized in collaboration with Gas Authority of India Limited (GAIL) and other experts/group/firms. Sufficient funds may also be provided for this purpose.

3.34 The Committee note that the coal companies at times, do not pay attention to the protection of the environment, as it deserves. It has been brought to the notice of the Committee that many of the opencast mines, leave the land degraded after completion of the mining operations. Also Trucks/Dumpers loaded with coal pass through residential areas, causing dusty conditions. In this context, the Committee desire that filling up of opencast excavation and reclamation of the degraded land should be made mandatory under the law. The Trucks/Dumpers after loading coal should be suitably covered so as to avoid dust being raised in the environment. At the same time, the Committee desire that adequate arrangements and infrastructural facilities be made available to carry out dust surveys in the mines and corrective action taken thereon.

3.35 The Committee observe that one of the major hazards associated with the coal mining is inundation from underground water bodies and/or from surface water. Most of the mines are old.

They are filled with water due to which it is dangerous to work in the underground seams or adjacent mines. Moreover, mines are provided old maps which are not reliable. The Committee are of the view that to avoid accidents due to inundation whether major or minor, proper planning of the mines is the best solution. The Committee, therefore, desire that updated mine plans should be prepared and maintained and mining should be carried out strictly as per plan. Correlation of survey, periodical check survey, boring/ drilling to connect with exact location, etc. should be carried out frequently. It has been brought to the notice of the Committee that if holes are made at regular intervals for proving partition, then the extent of water can be known. The water can then be removed, before faster working. The Committee feel that in order to minimize the accidents on account of inundation latest geo-physical methods of proving barriers/partings developed and tested by CMRI, Dhanbad and NIRM, Kolar (KGF) should be made use of in the coal mine areas susceptible for inundations.

3.36 The Committee note that mine fires are a serious and widespread problem and result in loss of coal reserves and add to the cost of production. It is estimated that in Jharia Coalfields alone, about 1864 million tonnes of coal might have been blocked and about 37 million tonnes of coal might have been damaged due to these fires. The measures for controlling coal mine fires, in case of Jharia coalfields include bull dozing, levelling and covering with soil to prevent the entry of oxygen and to stabilize the land for vegetation. Efforts made so far in this regard could only prevent the spreading of fires but their complete extinction in most of the cases was not possible. The Committee are of the view that the problem of fire and subsidence control especially in the Raniganj and Jharia coalfields should be treated as a "National Problem" and adequate funds be allocated by the Government to tackle this problem.

3.37 The Committee feel that very little has been done to tackle serious economic and environmental problems arising out of the coal fires. Today coal fires are mainly under control in development countries, but effective techniques for fire fighting are missing in newly industrializing countries. It has been brought to the notice of the Committee that a US Mining Engineer had invented high tech means of putting out coal fires. Under this technique, the heat resistant grout, a mixture of sand, cement, water and foam is pumped around the burning coal and shut off its oxygen supply. This has

been used to quench 25 fires in the western US. The Committee desire that the Ministry of Coal/CIL should evaluate this technology to access its effectiveness. If found suitable in terms of cost and effectiveness, it should be replicated for use in our country in phased manner in order to save further damage to the valuable coal reserves.

3.38 The Committee have recognised the urgent need for making the emergency plan responsive, speedy and effective in each mines. The Committee, therefore, recommend that each mine should review the existing emergency plan at higher level keeping in view the risk from fire. There is also a need of stablishing rescue rooms in coal mines having risk of fire where more than 350 persons have been employed in a shift in underground mine. The feasibility of storing oxygen type of rescuer at strategic places in underground mine with the risk of fire in an emergency situation should also be explored. The coal companies should also formulate and implement structured training programmes for the miners, officials and management to develop awareness and increasing effectiveness of emergency response in case of fire.

3.39 The Committee note that like any industry, the use of machines cause many accidents in mines. In opencast mining, accidents associated with Heavy Earth Moving Machines (HEMM) and trucks, are on the rise. The Committee feel that accidents on account of vehicular traffic of men and machines are purely due to gross negligence. The Committee desire that coal companies should take preventive measures such as separate lane properly fenced off from haul roads for pedestrians and vehicular traffic, banning of plying of trucks and other heavy vehicles in the mine premises without valid passes issued by competent authority, checking of road worthiness of vehicles, observance of traffic rules and regulations meticulously. The Committee find that in underground mines incidents of men being trapped in fly wheels and by moving parts on cornish pumps are common. As inclines and underground haulages are developed, men are run over, crushed and entangled. The Committee find that the major earth moving machines and transport equipments though meet the requisite standards, at the time of their procurement/installation but degrade due to lack of proper maintenance, during their use. The Committee, therefore, recommend that Heavy Earth Moving Machines (HEMM) should be used only when they are in perfect working condition. Only trained persons should be allowed to operate such machines.

3.40 The Committee, further note that a potential hazard also exists on roof bolting machines with machine controls that are not protected against unintentional activation. The Committee recommend that to prevent accidents due to roof bolting machines, the Automated Temporary Roof Support (ATRS) and other machine controls should be protected from accidental activation that may result in the machine or machine component coming in contact with the operator.

CHAPTER IV

MINE MAPS

As per provision of Coal Mines Regulation 1957, each mine has to maintain various mine plans e.g. (i) Surface Plan; (ii) Underground Plan; (iii) Ventilation Plan; (iv) Geological Plan (v) Stone Dusting Plan; (vi) Dust Sampling Plan; (vii) Joint Survey Plan; (viii) Water Danger Plan; (ix) Electricity Plan; (x) Abandonment and/or Discontinuance Plan, etc.

4.2 Sub-regulation No. 58 to No. 65 of Coal Mines Regulations 1957 stipulates in details about the various plans and sections and survey instruments and materials to be maintained in coal mines.

4.3 The planned mapping of coal mines is one of the most important aspect for preventing accidents in addition to promoting safety in coal industry. In the unorganized sector when the coal mining was in the private hands and especially prior to 1952, when the Mines Act was enacted and an exclusive Directorate created to monitor the mining activities, the mine mapping remained a neglected area. Wherever mapping undertaken, the updating was ignored with the result that mining industry had seen disasters like Bagdigi, where the root cause of the accident was attributed to the faulty working plan. This has been demonstrated from the following observation of the Bagdigi Enquiry Committee:

> "There has been a serious error and fault in the preparation and maintenance of the working plan and this error was the root cause for deviation in the direction of working and the resultant accident".

4.4 When the Committee wanted to know the statutory rules and regulations under which mapping of mines is done, the Ministry of Coal informed as under:

> "Detailed directions regarding drawing of mine plans are given in the Coal Mines Regulations (CMR) 1957. The Mines Rescue Rules, 1985 also requires maintenance of Rescue Plans. Additionally, some other plans are required to be maintained as per Circulars issued by the Directorate General of Mine Safety (DGMS). Some plans are required to be maintained as required by the permissions to

extract coal or for working in some specific conditions issued by the DGMS. Apart from this, various other plans are required to be maintained by statutory authorities, e.g. by Environment Department, by Controller of Explosives, etc. Mine plans are prepared after survey by mine surveyors possessing statutory qualifications obtained on passing surveyorship examination conducted by DGMS. These plans are updated at intervals as prescribed by the CMR/as directed by DGMS".

4.5 The major plans required to be maintained and periodicity of updation of these plans are as under:

Types of major mine plans and their schedule of updation

Types of Plan	Maintained under CMR No.	Periodicity of updation as required under the CMR
1	2	3
Surface Plan	59 (1) (a)	
Underground Plan	59 (1) (b)	
Vertical Projection Plan/Section	59 (1) (c)	
Ventilation Plan	59 (1) (d)	Once in 3 months as prescribed under CRM 58 (3)
Geological Plan	59 (1) (e)	
Combined Plan for contiguous Seam	59 (2)	
Key Plan	59 (4) (a) (1)	
Abandoned Mine Plan	58 (3), 61	Where any mine/seam/section thereof is abandoned or the working thereof has been discontinued over a period exceeding 60 days within 30 days after abandonment or within 90 days after discontinuance of the workings
Plans accompanying applications for permission to work under different conditions	100, 100A, 101, 104, 105	

1	2	3
Systematic support Rules for development workings	108 (1)	One time prior to commencement of operations and if geo-physical conditions change
Systematic support Rules for liquidation of coal pillars or extraction of coal by other methods like, longwall, opencast etc.	108 (1)	One time prior to commencement of operations
Dusting Plan	123, A (1) (a)	Once in 3 months as prescribed under
Sampling Plan	123, B (3) (a)	CMR 58 (3)
Plans accompanying applications to extend working within 60 m of water logged/likely water logged workings	127 (4) (a)	Once in 3 months as prescribed under CMR 58 (3)
Plans/sections to be drawn while approaching within 60 m of water logged/likely water logged workings or workings with unusual seepage of water	127 (6) (b)	Once in 15 days
Plans accompanying notice for construction of dams	129 (1)	One time monthly, by the first week of the month
Blastpower deployment plan	193	

4.6 When asked whether any latest state-of-the art technology and Information Technology (IT) has been introduced to survey and prepare the maps, CIL in a written reply stated as under:

"In the field of mine surveying, modern surveying instruments like Electronic Distance Meter (EDM), Electronic Total Station (ETS), Gyro-theodolite, Global Positioning System (GPS) are being used for acquiring the survey data. Information Technology is being introduced and mine models are prepared using MINEX software in CMPDIL. With the application of the above technology, there is substantial improvement in accuracy of mine surveying, productivity and safety".

4.7 When enquired about the mechanism in force to ensure the correctness of the maps, the CIL stated that the correctness of mine plans are ensured by:

(a) periodical check survey;

(b) co-relation of survey with adjoining mines;

(c) close traverse of all survey work; &

(d) boring/drilling to connect with exact location.

4.8 Further, on the same point of ensuring correctness mine maps, Ministry of Coal in a brief note stated that:

"Mine plans maintained as required by the mining safety statutes are required to be submitted to DGMS. Section 7 of the Mines Act, 1952 empowers the DGMS to examine and to take possession of any plan, section, register, other record, etc. The Chief Inspector of Mines (CIM) or an Inspector may appoint any person/s under the service of the Government as a Special Officer for the purpose of surveying, levelling or measuring any mines under Section 8 of said Act. If the Regional Inspector (RI) of Mines Safety suspects that a plan/section is inaccurate, he is empowered by the CMR to require that a fresh plan be made within such time as he may specify in his order. In case, the plan is not prepared within the time specified in the order or to the satisfaction of the RI, or the plan or section is not prepared or brought up-to-date as required under these regulations, he may get the plan or section prepared by any other agency and the cost thereof as certified by the CIM, shall be defrayed by the owner of the mine and recoverable from him as arrear of land revenue."

4.9 It has been brought to the notice of the Committee by various trade unions of coal companies that updated maps are not displayed at the prominent places and also are not made available to the supervisors, inspectors, mine sirdars and trade unions. In this regard, the CIL clarified as under:

"Mining safety statutes as embodied in the Mines Act, 1952 and the Coal Mines Regulations, 1957, framed thereunder do not specifically provide for display of mining maps at prominent places. However, hand plan of the district (the smallest unit of working area) and copies of the Systematic Timbering Rules are provided

to the Overmen and Mining Sirdars of the district. DGMS inspectors are empowered to examine mine plans. There is no provision in the statutes for making mine plans available to the Trade Unions. However, mine plans are made available to persons of the Trade Unions, competent to examine mine plans like Workmen's Inspectors and Members of the Standing Committee on Safety in Coal Mines and the CIL Safety Board".

4.10 Digitisation of mine plans/maps would help the management to prepare the same accurately and also scientifically. When asked whether all the mine maps/plans have been digitized, the Ministry of Coal informed that:

"Digitisation of mine plans has only been introduced recently. Fire area plans of Jharia Coalfields and afforestation have been digitised. In NCL, mine maps are being prepared and updated by electronic total station. NCL has also introduced computer application in Surpac Software for preparation of plans for faster assimilation of data".

4.11 On a point of undertaking scheme by DGMS for the modernization of survey system, the Ministry informed the Committee as under:

"The law requires that any mine will submit an abandonment mine plan (AMP) before a mine is closed or abandoned. On a future date, if necessary DGMS supplies these AMPs to interested operators. These plans also from a reliable basis for identification of dangers to adjoining operating mines. These plans are subject to deterioration over a period of time due to moisture, shrinkage of paper on which these plans were made and due to various other factors. Thus a proposal has been made for a new Plan Scheme "Modernization of survey capabilities in DGMS through digitization of mine plans and automated survey systems" for the 10th Plan period. This plan scheme has been approved by the Planning Commission. This plan scheme will cater to the need of survey section of DGMS only".

The Committee have observed that there exists an elaborate system for preparation and updating of mine maps and plans. Detailed directions have been given in this regard in the Coal Mines Regulations, 1957. Besides, DGMS issues circulars from time to time

for preparing and updating the mine maps for working under some specific conditions. The Committee have been apprised that modern surveying instruments are being introduced for acquiring survey data and for preparing Mine models with the help of information technology. Further, Mines Act, 1952 empowers the DGMS to examine and take possession of any plan, section, register, other records, etc. If the DGMS or Chief Inspector of Mines or Inspector feels that the plan/map is inaccurate, he is empowered to get the plan or section prepared correctly by any other agency. The Committee are perturbed to note that despite all these initiatives, the ground reality has not changed. At times, the maps and plans are prepared using unscientific and unreliable old methods. Moreover, where such maps and plans are prepared, their updation, as required under Coal Mines Regulations, is not undertaken regularly. The Committee take a serious view of this. The Committee are of the opinion that accurate and scientific survey of mine maps are pre-requisite for mining coal safely. Unscientific and wrong mapping can lead to disasters. Bagdigi tragedy is a glaring example in this regard. The committee, therefore, desire that mine maps and plans should be prepared scientifically and updated as required under the statute using modern techniques like satellite imageries, global positioning system, etc. and also with the help of trained manpower/surveyors to ensure the correctness of such maps and plans. At the same time, check and recheck survey be undertaken to ensure correctness of maps and plans. The Committee also desire that Government should fix personal responsibilities of top management in the event of failure to ensure correctness of maps and their updation. The Committee are of the view that until and unless the plans are approved by DGMS, no mining activities should be carried out.

4.13 The Committee find that in order to ensure correctness of maps, digitization of maps has been taken up, recently, as a part of new plan scheme. The Committee welcome this and recommend that all the mine maps and plans be digitalized in a phased manner, during the 10th Plan itself. The Committee also recommend that adequate funds be made available for the purpose.

4.14 The Committee express its concern over the fact that updated maps are not displayed at the prominent places and also are not made available to the supervisors, inspectors, mine sirdars and trade unions on the plea that mining safety statutes, as embodied in the Mines Act, 1952 and the Coal Mines Regulations, 1957 framed

thereunder, do not specifically provide for display of mining maps at prominent places. The Committee recommend that updated maps should be displayed at the prominent places and given to representatives of Trade Unions as a number of Trade Unions working in various subsidiaries have desired the same before this Committee. If need be, the amendment of Mines Act, 1952 may be carried out for the purpose.

CHAPTER V

DIRECTORATE GENERAL OF MINES SAFETY (DGMS)

The First Indian Mines Act was enacted in 1901. This Act was superseded by the Indian Mines Act, 1923, which was again replaced by the present Mines Act, 1952. Major changes were incorporated in 1959 and 1983. The Mines Act, 1952 covers mines of all minerals within India including offshore mines within the limits of India's territorial waters. Currently, the Act applies to some 600 coal mines, more than 6000 metalliferous mines and 29 oil fields.

5.2 The Bureau of Mines Inspection was established in Calcutta (new Kolkata) in 1902 for the purpose of administering the Indian Mines Act. This organization was renamed the Department of Mines in 1904 and the headquarters moved to Dhanbad. In 1960, the organisation's name was changed to the office of the Chief Inspector of Mines. From 1967, it has been known as the Directorate General of Mines Safety (DGMS).

5.3 The safety, health and welfare of persons employed in the Indian mining industry is regulated by the Mines Act, 1952 and associated Rules and Regulations. The Act is administered by DGMS, under the Union Ministry of Labour. DGMS undertakes safety promotional initiatives and programmes with zonal, regional and sub-regional offices throughout India. It is staffed by the qualified professionals in mining, electrical and mechanical engineering, occupational health, law, mine surveying, statistics and administrative staff.

5.4 The broad functions of DGMS include:

(a) Inspection of mines;

(b) Investigations into accidents and dangerous occurrences;

(c) Interaction for development of safety equipment, material and safe work practices;

(d) Development of safety legislation and new safety standards;

(e) Granting of statutory permissions and exemptions under provisions of the Mines Act, 1952;

(f) Review of project reports and mining plans;

(g) Safety information dissemination;

(h) Conduct of examinations for granting statutory certificates;

(i) Safety promotional initiatives and programmes including organization of conferences on safety in mines, national safety awards, safety weeks, safety campaigns, safety education and awareness programmes, workers' participation in safety management through workmen's inspectors, safety committee and tripartite review mechanism.

5.5 The mission of DGMS is the reduction in risk of occupational diseases and casualty to persons employed in mines.

5.6 Sharing the experience while administering the various legislations and subordinate legislations relating to mining industry, DGMS in a written note stated as under:

"Although the safety scenario in the coal mines in India generally indicates an improving trend (No. of fatal accidents came down from 278 in 1951, 199 in 1971, 165 in 1981, 138 in 1991 and 106 in 2001), the frequency of the mine accidents are still large. New technology in the form of mechanization and deeper and difficult mining conditions in future are likely to pose more problems in the years to come.

Presently safety statutes are implemented by the mine management and the compliance by the management is overseen by DGMS. Overseeing compliance has its own limitations. Developed countries world over are, therefore, gradually shifting from the concept of prescriptive legislation (enforcement) to self-regulation (goal setting legislation).

The provisions made under the various rules, regulations, orders, etc. and also after various amendments in the mines are sufficient to look into the problems of safety if the concept of self-regulation is accepted in line with the developed countries."

5.7 The Committee observed that some of the regulations/orders etc. were framed before independence and also 5-10 years after the independence of the country. Some of the provisions in this rules have become outdated and have not kept pace with the development taking

place in the coal mines. On this point, the Committee asked DGMS as to whether there is any need to change such regulations. They replied as under:

"Yes, the regulation needs constant amendment with the change in methodology and the need for social environment of the country. The same is applicable to Mines Act and the allied regulations and regular amendment is being done. The amendment proposed is based on the recommendations of the Court of Enquiry, Safety Conference and Committees appointed to look after the safety in mines. During the process of amendment, the comments are sought from the Mining Companies, Worker's representatives, Mining Institutions, Research bodies and others connected with mining. Once the comments are received, the proposal and comments are considered by the Committee appointed as per Section 12 of the Mines Act, 1952 before laying it in the Parliament, which is the final body to consider it."

5.8 When asked whether CIL is satisfied with the role assigned to DGMS for safety related activities, it informed the Committee as under:

"The role assigned to DGMS for enforcement of the Mines Act, 1952 is quite satisfactory. However, CIL would like to bring to the attention of the Committee certain points regarding the role being played by DGMS as given below for consideration:

- Coal companies are constantly interacting with DGMS to sort out the issues but these are taking considerable time delaying the mining process;
- The system of appeals against rulings of the DGMS in the Committee provided in this regard under the Mines Act, has become defunct. DGMS is sometimes insisting on and enforcing unreasonably stringent safety conditions which is making mining operations too costly/unviable. For example, method of mining by Komra Method in Sudamdih Shaft Mine in XV Seam (good quality coal) was discontinued because of non-compliance with DGMS permission leading to an accident. Permission for this method was discontinued permanently resulting in blocking of large quantity of coal; and
- DGMS is insisting on costly resin grouting in some areas where the local management are of the opinion that less costly quick setting cement capsules would suffice".

5.9 CIL feels that a body for moderation of rulings/decisions of DGMS may be formed. The scope of operation of this moderating/ regulating body may not be restricted to the items for which appeal could be made to the Committee under the existing Mines Act and may cover all decisions of DGMS.

5.10 DGMS officials undertake General Inspections (GI) of mines in which overall assessment of the safety status is ascertained and remedial action taken. The periodicity of such inspection is once in 2 years in each mine. In addition, DGMS officials make other inspections also. It should be subjected to a General Inspection (GI) from time to time and the average frequency of such inspections are once in a quarter.

5.11 When it was ascertained from DGMS as to what is the periodicity of conducting inspection of the mines and what has been the actual periodicity, they informed the Committee as under:

> "DGMS undertakes inspection of mines under Section 7 of the Mines Act, 1952. No periodicity of such inspection has been prescribed."

5.12 As has been stated above by DGMS, the periodical inspection of each and every mine in the country in every two years could not be conducted by them due to acute shortage of inspecting staff. As against the sanctioned strength of 123 inspecting officers of DGMS, there are only 99 officers in position. When the Committee wanted to know as to whether DGMS had conducted any study to assess the required strength, they informed that no study has been carried out in the recent past. However, SIU team has been constituted by the Ministry and the study is under process. The mis-match between the sanctioned strength and the actual strength is mainly due to procedural delay in recruitment.

5.13 When asked about Action Taken by DGMS against the officials for violation of statutes by the management, they furnished the following information for the last five years:

Year	No. of Inspections	No. of Prohibitory orders	No. of Improvement Notices	No. of permission withdrawn	No. of prosecution launched (\$)
1998	4752	16	39	—	53
1999	6106	19	31	—	92
2000	5642	38	76	60	82
2001	5410	69	144	34	68
2002	5667	30	36	39	63
2003*	4582	30	34	24	32

\$Prosecution against coal & non-mines together.

*Data upto Oct. 2003, except col. 6, which is upto Nov. 2003.

5.14 DGMS further informed the Committee that violations observed during inspection are brought to the notice of the management in writing subsequently through violations letters which the mine management is supposed to rectify within a time frame and submit the report to DGMS. In case of non-compliance of the directive, other actions are taken by DGMS.

5.15 Views of various Trade Unions/subsidiaries of CIL in regard to role of DGMS were also received by the Committee. Some of them are as under:

5.16 Representatives of Colliery Mazdoor Sabha of Northern Coalfields Limited informed the Committee as under:

> "Officers of DGMS inspect the mines off and on. But in most of the cases, it is seen that after getting the information of the inspection, they try to hide most of the unsafe aspects or the officers of DGMS are forced to overlook them. Sometimes, fatal or other accidents occur due to this. A victim of accident is generally held responsible for the accidents in the investigation carried out. In this regard, the organization would like to suggest that officers of DGMS should be made responsible for the accident taking place in their areas so that they could be made more responsible in discharging their duties".

5.17 Representatives of Central Coalfields Limited (CCL) Colliery Karamchari Sangh informed:

"Safety norms fixed by DGMS are in accordance with International safety norms. But as far as its implementation and in practice is concerned, the status is not very satisfactory due to various reasons both at the management and at the workers' level".

5.18 On the other hand, the representatives of Eastern Coalfields Limited (ECL) stated as under:

"Eastern Coalfields Limited (ECL) is satisfied with the role of DGMS for safety related activities although there is scope for better interaction between ECL and DGMS. Officials of DGMS take up periodical assessment of mine condition to avoid accidents, normally inspecting each mine once in a quarter, meticulously following the periodicity. All the mines are covered by them. It is under that there is shortage of DGMS officials for their proper functioning".

5.19 The following are the suggestion made by the representatives of Western Coalfields Limited (WCL) for improving the functions of DGMS:

"To enhance the frequency of inspections of DGMS officials, the number of DGMS officers should be more".

5.20 The Committee note that basically DGMS was started as the Bureau of Mines Inspections in 1902 to take care of safety in mining activities. However, over the period, a large number of other functions have been assigned to the Directorate General of Mines Safety (DGMS). This coupled with perennial shortage of staff has affected, DGMS capacity to oversee the safety standards in various mines and especially in coal mines where the material is always combustible. Even various functions assigned to DGMS may adversely affect its capacity to oversee safety in mines. For example, one of the functions of DGMS is to grant statutory permissions and exemptions under the Mines Act, 1952 and review project reports and mining plans. It later on, a mishap occurs in a mine where no mining should have been allowed in the first place, it is doubtful whether DGMS would ever accept this fact while investigating the case of accident in such a mine. In most of the cases, it has been noted that the blame is put on the persons who lost their lives in

an accident and the case is closed. Rarely, action is taken against senior persons in management. The Committee feel that there is a need to review the working of DGMS and examine as to which of the functions should be entrusted to them and which can be better handled by some other organization. For example, whether holding of examinations for grant of statutory certificates can be transferred to UPSC or any other organization like Indian School of Mines, etc., can also be considered. DGMS is also responsible for development of safety equipment, material and safe work practices, etc. However, as it is under the control of Ministry of Labour it can hardly be expected to get any support and guidance in these matters from Ministry of Labour. The Committee desire that DGMS should be put under Ministry of Science and Technology and also closely associated with the Council of Scientific and Industrial Research as it is one of the Science and Technology Organisation and de-linked from the Ministry of Labour. The shortage of manpower in DGMS, has affected the periodicity of conducting inspection of mines. In this context, the Committee recommend that cadre review of DGMS be undertaken immediately and need based manpower provided to them. The Committee also desire that an Authority should be established which can hear the appeals against the decisions taken by the DGMS.

5.21 The Committee find that DGMS does not part with copy of enquiry report conducted by them in the aftermath of the fatal coal mine accidents either to Trade Unions or its representative/Members of Tripartite Safety Review Committee. In fact, the Report of the DGMS is never made public. On the other hand, the ISO enquiry report is made available to the management and/or Trade Unions and is discussed in the Tripartite Safety Committee. The Committee are of the view that when Reports of Enquiry Committee constituted in the aftermath of Rail/Air accidents, etc. are made public, there is no justification or rationale, whatsoever, in withholding the DGMS Enquiry Committee Reports from public. The Committee, therefore, recommend that inquiry reports of DGMS should be made public and copies thereof should be made available to concerned Trade Unions.

5.22 The Committee find that one of the institutions to strengthen safety apparatus in the mining industry is in organizing mine conferences from time to time. The aim of these conferences are to review and implement safety in mines in a spirit of mutual

cooperation and trust. At these conferences, problem of Mine Owners, Managers, Supervisors, Workmen, Ministry of Labour, DGMS and other Government agencies, Educational and Research Institutions, Professional bodies are addressed with a view to enhance the status of safety in mines. The Committee note that first conference was held in the year 1958, 2nd in 1966, 3rd in 1973, 4th in 1978, 5th in 1980, 6th in 1986, 7th in 1998, 8th in 1999 and 9th, which is the last, in the year 2000. The Committee further find that these mine safety conferences have made far reaching contribution for promoting safety of mines by suggesting useful measures to improve the standard of health and safety in mines. Many of the recommendations have been incorporated in the legislation as well. The Committee find that the periodicity of organizing this conference is not regular. The Committee recommend that a period of 3 to 4 years is desirable for conducting such a conference. The Committee, therefore, recommend that a fixed periodicity be assigned for holding this conference.

5.23 The Committee find that in the event of a mine accident, there is a tendency of multiple disciplinary action simultaneously emanating from different authorities like ISO/DGMS and local police. The Committee are of the view that there is a need to curb disciplinary action by multiple agencies and only one authority should be authorized for taking action, as in the case of the Railways. Further, multiple outside interventions affects timely rescue operations and cause demoralization to the workers and officers. The Committee note that in case of Railway, enquiry after accident is conducted by a single agency *i.e.*, Commissioner of Railways, where officers are on deputation from Railway. The police or other authorities do not come into picture, except in case of sabotage. It is in this context, the Committee recommend that DGMS, which is empowered by the Mines Act, 1952, to fix responsibility and prosecute person held responsible in a Court of Law for awarding punishment, should be the sole authority for fixing responsibility of awarding punishment in case of mine accidents. This is all the more important as a person appointed by the Central Government to hold Court of Enquiry has all the powers of Civil Court (Section 24 of the Mines Act, 1952). The Committee also recommend that Mines Act, 1952 be amended, if need be for ensuring protection to a miner in this regard.

5.24 The Committee note that at present the Directorate General Mines Safety's role is limited to investigations into fatal mine accidents only. Serious accidents are not being enquired into by

DGMS. The Committee desire that DGMS should not only investigate the fatal accidents but also serious ones. They should then analyse them in detail and issue guidelines and develop appropriate legislation to keep pace with time.

5.25 The Committee find that the present Mines Act was enacted in the year 1952 for regulating the working conditions in mines by providing for measures to be taken for the safety of the workers employed therein and to provide certain amenities to them. The Mines Rules, 1955, Mines Vocational Training Rules, 1966 and Coal Mines Regulation were framed under the Act. The Committee further find that the Coal Mines Regulations primarily deal with the underground mining only. At present, there is no regulations for opencast mining and regulations for underground mining are made applicable to them. Taking into consideration that more than 75% of coal is extracted from the opencast mines, there is a need for separate Regulations for opencast mines also. At the same time, the Committee are of the view that there is a need for change in the Mines Act, 1952. Similarly, the Rules/Regulations have not kept pace with the development taking place in the coal mining sector. Thus there is also a need to examine these Rules/Regulations/Orders afresh. The Committee, therefore, desire that Government should review the Mines Act, 1952 and the Rules/Regulations/Orders made thereunder in the light of latest developments taking place in the mining sector and amend the relevant Act, Rules, Regulations, etc.

CHAPTER VI

EQUIPMENTS USED FOR SAFETY

Safety in Indian Coal mines has travelled a long way since the beginning of the century when the first Mines Act was enacted in January, 1901. Completely manual and labour intensive mines of the past have paved the way to wholly mechanized system producing more than 350 million tonnes of coal annually. Despite a lot of efforts, serious and fatal accidents are assuming rising trend in the Indian coal mining industry. With the introduction of new technologies and techniques, the power to combat the hazards in mining has though greatly improved, yet there is enough scope to further improve it.

6.2 When enquired about the protective wears used by the miners, the Ministry of Coal stated that the following accessories are provided for the purpose:-

1. Canvass shoes/gumboots
2. Safety helmets
3. Safety belts (need based)
4. Goggles (need based)
5. Hand gloves (need based)
6. Self rescuers for underground mines
7. Chin guard (need based)
8. Apron for welding operation
9. Dust mask (specialized operation)

6.3 The following are the major equipments being used for the safety in both opencast and underground coal mines by CIL:-

Opencast—Safety features form an inherent part of the equipment used in opencast mines like-

- audio-visual alarms in dumpers and tippers to give alarm while reversing

- manual/automatic fire suppression systems in heavy earth moving machinery
- emergency steering used in case of engine failure
- parking and emergency brakes for preventing accidents due to rolling while dumpers are parked
- safety belts
- horns, backlights, front lights, crane brakes, propel brakes dust extractors in drill machines

Some other equipments are also used like field switches for quick disengagement of power in case of emergency. Also fire extinguishers and tenders are provided in large opencast mines.

Underground: cap lamps, flame safety lamps, gas detectors, safety boots, helmets, filter self rescuers in deg.III/deg.II and fiery mines, environmental tele-monitoring systems, powered support, cement capsules/resin capsules for grouting roof bolts, flame proof/intrinsically safe electrical equipment etc.

6.4 During the course of discussion, when asked whether these equipments meet the international safety standards and requirements, CIL replied:—

"All equipment used in underground mines have the DGMS approval which is accorded after stringent tests at approved National Laboratories. Some imported equipments are accorded DGMS approval when they conform to European/US standards."

6.5 As has been stated above by CIL, DGMS grant approval to various equipments and machineries used in the coal mines. For obtaining approval of any mine safety equipment, it is generally required to conform to BIS specification and if there are no such specifications, then standards/specifications of other countries are followed. When asked as to what extent the BIS standards conforms to international standards, the Ministry of Coal apprised the Committee as follows:-

"Bureau of Indian Standards formulated BIS standards for many of the equipments and materials keeping in view the International Standards and their applicability in Indian context".

6.6 When asked whether there is any need to upgrade the BIS standards especially in the context of alleged use of sub-standard equipments and mechanization as pointed out by some of the Trade Unions, the Ministry of Coal in a written reply informed the Committee as under:-

"The present BIS standard takes care of the specification and standards to be maintained for manufacture and supply of quality equipment. Moreover BIS also has a system of reviewing the specification from time to time and consider upgradation if felt necessary.

All Coal Mines Safety Equipment are required to possess approval from Director General of Mines Safety. DGMS issues the approval generally for the equipment which conform to BIS specification and are found suitable from safety point of view".

6.7 Commenting upon the hiring of equipments and machineries and deployment of contractors labour in coal mining, the CIL in a note stated:-

"Code of practices have been framed in respect of hiring of equipments and machineries in the mines of subsidiary companies. Whenever contract labour is employed in mining activities, the safety of all the operations are supervised by supervisor of the subsidiary companies".

6.8 The following measures are taken in respect of hiring of equipments and machineries and deployment of contractor's workers:-

1. vocational training of all contractors' workers
2. driver's licences are checked
3. fitness of vehicles deployed by contractors are regularly checked
4. adherence to statutes
5. provision of personal protective equipment to contractor's workers
6. payment of death/injury compensation

6.9 Clarifying further, CCL in a note submitted to the Committee stated that:-

"Statutory safety provision as for use of protective equipment/ implements like shoes, helmets, gloves, goggles, safety belts are complied with the contractors workers. Also the contractors are pressurized for compliance of statutory provision regarding engagement of workers possessing requisite qualifications, observing working period and training of the workers. Also they are asked to ensure deployment of only fit and road worthy equipments".

6.10 When the Committee enquired whether regular check is carried out about the condition of the equipments and machineries used by the coal companies and contractors periodically to ensure their fitness/ readiness, CIL in a written reply stated that it is regularly done. They further stated that:-

"Before deployment of any contractual transport equipment, they are examined for road worthiness certificate/fitness certificate from Motor Vehicles Department. Thereafter equipment are examined periodically by the departmental engineers. The period of such exercise varies depending on the number and condition of the equipment deployed".

6.11 When asked what action is taken when the equipments are found below the standards, CIL replied:-

"No equipment which is not good condition is allowed to be used and every equipment reported to be defective is taken out of service and not put in use till the defect is rectified".

6.12 Asked about the use of different foreign technologies both in opencast and underground mines, CIL furnished the details as under:-

"**Opencast:** imported equipment are maintained as per the maintenance schedule of the Original Equipment Manufacturer (OEM). Major spare parts are procured from the OEM.

Underground: in case of use of foreign technology in underground mines like Powered Support Longwall face equipment and continuous Miner Technology, maintenance is done as per maintenance schedule of the Original Equipment Manufacturer (OEM). Major spare parts are procured from the OEM".

6.13 During its discussions with the representatives of the Trade Unions, on the point of procurement and use of equipments in coal mines, the Committee have been informed as under:-

(i) **Koyla Mazdoor Sabha Operating in NCL:-**

".....Safety related equipments are not supplied on time which is a matter of regret. Suitable norms should be prescribed in this regard and initiative should be taken to implement it.

It is mandatory for all the employees in the coal industry to wear helmet but in the NCL, not more than 60% people, whether they are employee or officer, wear helmet on duty.

The helmet available at present is so heavy and uncomfortable that it is difficult to wear it all the time. Particularly the operators feel inconvenient in operating the machines while wearing the helmet. Maintenance staff also feel inconvenience in working under the machines while wearing the helmet.

Different projects present models during the annual mines safety week which are at times quite innovative and prepared by the young officers and employees after applying their mind and intellect. One feels during the demonstration that the work can be executed with extreme safety after using them. But despite giving several assurances during the safety week, those officers and employees and equipments invented by them are forgotten and their zeal for further research fades and the equipments developed by them are also not used.

Different types of machines have been supplied to NCL from different parts of the world but their spare parts are not made available on time and the same are not available in our country too. In such a situation, it is difficult to maintain the machines properly. This compels the use of faulty machines which is quite dangerous. Most of accidents to take place because of inadequate supply of spare parts for proper maintenance of these machines".

(ii) **CCL Colliery Karmachari Sangh, operating in CCL:-**

"Major machines, equipments and materials used in mines lack safety standards. Boots supplied, though approved by competent authority, are far below the standards and requirements. They get worn out much earlier than the stipulated time period.

Major equipments/machines used by the company meet requisite standards at the time of commissioning. But due to lack of proper maintenance, standards degrade. As regards machines/equipments used by contractors, they are not up to the mark. They lack safety devices. They do not meet even the national standards.

Safety provisions are adequately inscribed and agreed upon in the agreement entered into with the contractor, but they are not followed religiously.

The condition of machines/equipments used in coal company and contractor is not periodically checked for fitness. No record is made available on demand, which shows that these are not properly maintained.

Technology being used in opencast mines can be improved by proper utilization of machines. As regards underground mines, the technology introduced is not being fully utilized, resulting in wastage of resources. Material budget for spares is made every year but spares are not made available according to budget resulting in poor maintenance and lack of safety to workmen and machines".

6.14 The Committee note that miners are required to wear equipments which help them to be safe, whether they work in an opencast or an underground mine. The surface miners wear hard hats, steel toed boots and safety glasses. Underground miners are equipped with self rescuers which allow them to breath in the event of a mine fire. Underground miners also carry gas detectors which is used to measure gases in the air. Surface miners are also required to use hearing protection when working in high noise areas. The Committee are of the opinion that the equipments, machineries, tools and materials used in mines need to be safe, robust, reliable and capable of working safety under hostile environment.

6.15 The Committee note that although sufficient arrangements are there to procure and use latest equipments such as audio-visual alarms in dumpers and tippers to give alarm while reversing, manuals/automatic fire suppression systems in heavy earth moving machinery, emergency steering used in case of engine failure, parking and emergency brakes for preventing accidents, safety belt, etc., yet the number of accidents due to fall of machines, fall of persons

from machines and failure of machines are on the increase. The Committee feel that major machines and equipments used by the various subsidiaries of CIL do meet requisite standards at the time of commissioning, but due to lack of proper service and maintenance, their standards degrade. Further, at times, sub-standards spares are used to repair the equipments. The Committee, therefore, recommend that while placing the orders for supply of equipments especially those which are to be imported, a clause may be entered into the agreement, for supply of spares by the same manufacturer for a minimum period of five years so as to ensure the requisite quality of spares and their availability at all the times. The management of coal companies should also ensure that Annual Maintenance Contracts (AMCs) in respect of all the machines, whether imported or indigenous, be entered into with the manufacturer or its authorized distributor for rendering timely service for the smooth the fault-free functioning of the equipments.

6.16 The Committee is unhappy to note that sometimes inordinate delay takes place while procuring the equipments. The reasons furnished for such delay are (i) non-supply of the ordered equipments within the financial year; (ii) floating of global tenders for the equipment required to be imported (iii) late approval of DGMS to procure these equipments. The Committee are not convinced with the reasonings adduced by the Government. The Committee, therefore, recommend that the management should streamline and simplify the procurement process in such a way so that the delivery of equipment/machineries is not delayed by the manufacturer so much that DGMS approval expire.

6.17 The Committee find that many of the activities have been outsourced. For instance, over burden removal, coal/sand transportation activities are outsourced by hiring of equipment. The Committee desire that for any lapse in safety of the persons deployed by the agencies engaged for hiring of equipments, a suitable penal provision against such agencies should be provided in the agreement.

6.18 The Committee are also not satisfied with the standard/ quality of machines/equipments used by contractors. They are not upto the mark and lack safety devices. The Committee, therefore, recommend that a panel at CIL level may be established to study/ review afresh the norms for the safety requirements to hire

equipments and machines and deployment of contractor labour in coal mining activities. This will avoid procurement of sub-standard quality of machines and safety equipments by contractors.

6.19 Whereas it is mandatory to wear helmet in coal mines whether opencast or underground, it has been observed that in many of the coal fields, miners do not use the protective gadgets and other equipments during duty. The Committee take serious view of it and desire that nobody should be allowed to enter into mining areas without having protective wears such as helmet, safety shoes, safety belt, dust mask (wherever necessary), etc. Failure to use such safety items should be dealt with serevely.

6.20 The Committee is glad to know that the equipments procured/used have DGMS approval and conform to European/US standards. The Committee hope and trust that the present standard would not fall below the international safety norms. It has been brought to the notice of the Committee that of late poor quality gumboots/shoes and helmets are being supplied to the miners. These are uncomfortable to wear. The wear and tear of the equipments is also very high. The Committee are of the view that lowest price should not always be the criteria for procurement of safety wears. Appropriate quality/standards have to be ensured for the purpose.

6.21 The Committee find that the quality of equipments and machinery supplied in coal subsidiaries do not conform to the desired standards. In this context, the Committee recommend that the coal companies should set up quality control cells, identify critical items which require testing for quality assurance at the time of procurement and during use and arrange testing of the same. Testing facilities should be get up wherever, it is techno-economically feasible.

CHAPTER VII

STATE-OF-THE-ART TECHNOLOGY

The sustainable development of coal industry is the basis for the sustainable development of an economy. Highly efficient, safe and clean exploitation and utilization of coal resources is a new requirement of time for the coal industry. The meet this challenge, an appropriate technical support system must be established.

7.2 When asked about the status of new technologies being used so as to reduce the incidence of accidents, Coal India Limited (CIL) in a brief note informed the Committee that the following State-of-the-art technology is adopted in this direction:—

"1. Design of system of support of roof in the development workings in underground mines by scientific support systems based on Rock Mass Rating (RMR) studies.

2. Increased use of Roof Bolting/Roof Stitching methods of support using steel roof bolts/steel wire ropes with quick setting cement grout to arrest bed separation at early stages to impede deterioration of roof.

3. Introduction of modern drills like Universal Drilling Machine (UDM) to avoid exposure of support personnel to unsupported roof while drilling for roof bolting and greater use of quick-setting cement/resin capsules grouted roof bolts for support in development workings in underground mines.

4. Reduced exposure of workers to mining hazards by mechanization of loading operations by increasing use of SDLs and LHDs in below ground mines. Powered Support Long Wall (PSLW) system of mining, Continuous Miner Technology, etc., are being progressively adopted in suitable areas.

5. Regular monitoring of mine environment by handheld gas detectors/alarms and flame safety lamps for detaching inflammable and noxious gases. Besides, for early detection of situations that could lead to an outbreak of fire or an

explosion, highly capital intensive computerized continuous mine Environmental Tele-Monitoring Systems (ETMS) have been installed and are in operation in thirteen identified underground mines.

6. Introduction of surface miner, an eco-friendly technology to reduce hazardous operation like drilling, blasting and crushing in large opencast mines of MCL."

7.3 In Neyveli Lignite Corporation (NLC), the details of the technologies being adopted are as under:—

a. Installation of wireless network at 800 Mhz for improved communication in the mines is in progress. This is to enhance the communication between adjacent mines.

b. Installation of PLC Controls in Bucket Wheel Excavators, Mobile Transfer Conveyors, Spreaders and Conveyors in expansion areas and new projects. This will ensure greater safety in operation of equipments and protect men and machineries.

c. The introduction of PLC controls is contemplated for future mining projects also.

d. Use of specialised monitoring equipments in the following areas:

(i) Vibration analyzer—for monitoring vibration arising out of blasting and vibration of main components in specialized mining equipments.

(ii) Rope wear monitor—for measuring fixed diameter of hoist winch ropes of specialised mining equipments.

(iii) Test kit-for over speed monitoring and centrifugal switches used with bucket wheel hoisting/lowering mechanism.

e. Automation of bucket wheel operation—use of dead man safety device is in practice.

f. Use of automated fire quenching by introduction of emulsifier system for major transformers at sub-stations is installed.

g. Endoscope for gear box diagnosis.

h. Strain gauge for examination of built up strees and load on tension members.

i. Use of load cells for balancing and testing of equipments during rejuvenation and major repairs for structural stability.

7.4 In SCCL, following state-of-the-art technology have been introduced with a view to reduce the accidents:—

"Standardization of roof bolting activity, introduction of mechanization in roof bolting activity. Use of modern strata monitoring equipment like extensometers, tell tail, load cells and convergence recorders. One project has been taken up under S&T project at Kothagudem.

- Use of GPR to determine the thickness of the barrier against unapproachable water logged working;
- Use of laser guns to measure the temperature in sealed off area before reopening; and
- Procurement of gas chromatography to analyse the air samples quickly."

7.5 Explaining the level of technology being used, the Northern Coalfields Limited (NCL) have stated that the level of technology is adequate since the equipments are of high capacity and safety features are incorporated in the equipments itself. They, however, further stated that the technology upgradation should continue. The Eastern Coalfields Limited (ECL) also expressed their satisfaction over the status of technology but desired that the technology like proving of barrier with certainty, providing fore warning before impending roof-fall, etc. and continuous monitoring system for mine gases need to be upgraded and inducted/developed.

7.6 The SECl is using the following technology:—

(i) Development of infra-red equipment for deployment in OB dump yard to reduce accidents.

(ii) Study of behaviour of front abutment pressure in B&P depillaring panel with roof bolting—final report from CMRI is awaited.

(iii) Development of computerized continuous monitoring of mining equipment namely—Shearer, Belt Conveyor, Ventilation Fan, etc. in consultation with CMRI.

(iv) CMRI (CIL R&D) project is developing the computerized continuous monitoring/improvement of mining equipment *viz.* Shearer, Belt Conveyor, Ventilation Fan, etc., CIL R&D Board has been approached for extension of time.

(v) Development of numerical model on support density to assess the capability and support requirement for longwall operations in the company and also to develop support design guidelines for future longwall faces.

7.7 The Mahanadi Coalfields Limited (MCL) also adopts modern Technology which is upgraded from time to time. Present technology in MCL are as under:—

(a) Roof bolting injection introduced for support at faces.

(b) To assess the vibration level after blasting. Digital Vibrometers are being used.

(c) Total station is being used for surveying at surface & underground mines.

(d) For heavy dewatering from deep mines, high head and high discharge submersible/TV pumps are provided.

(e) Rescue stations are equipped with latest technology & instruments.

(f) Multi-gas detectors are used. Computerized gas monitoring is being done in underground mines.

(g) Breath analysers are being used at large.

(h) Dust masks are being used at large.

(i) Surface mines are used at OCPs for coal production, which has resulted better environment and eliminates blasting and consequent production of dust.

(j) 10 CuM Shovel and 85 Tonne Dumpers are introduced which further improves the working environment as well as reduces traffic density for safer transportation.

7.8 The management of Bharat Coking Coal Limited (BCCL) informed the Committee that the total stations have already been introduced for mine surveying. Proving of barrier by ground Penetrating Radar System is also introduced. BCCL has, however, desired that introduction of more tele-monitoring system, modernization of laboratories are needed. They further stated that the present technology needs further modifications for improving safety and production particularly in underground mines. These are: (i) introduction of more longwall basis; (ii) introduction of continuous miners for more production and less exposure of persons; (iii) introduction of more SDLs, LHDs and roof bolter machines; and (iv) introduction of remote control SDLs.

7.9 The level of technology being used in the Western Coalfields Limited (WCL) is as under:—

(a) Environmental tele-monitoring system to detect mine gases at various places in a mine. This is monitored from surface.

(b) Use of continuous miner in underground mine so as to reduce exposure of men at the working face. This is being done in collaboration with Joy Mining & RMT UK.

(c) Face mechanization of underground mine by using Side Discharge Loaders and Load Haul Dumpers, eliminating manual loading.

(d) Scientific method of classifying the rock strata of the underground mine and designing effective support system based on Rock Mass Rating (RMR).

(e) Ground Penetration Radar (GPR) system is used to ascertain the thickness of barrier against water logged working and also the barrier between two adjoining mines.

(f) Extensive use of cement capsules for quick support of green zone.

(g) Use of resin capsules in disturbed geological conditions.

(h) Use of hydraulic operated roof bolting machines.

(i) Slope stability study of dumps in opencast mines.

7.10 Need based upgradation of technology is being continuously explored. Filter self rescuer is being replaced by the latest technology of self-contained self rescuers (oxygen type).

7.11 In the Western Coalfields Limited (WCL), the thrust area for mechanization have been identified which is as follows:—

(i) **Eliminating basket loading**—Side Discharge Loaders and Load Haul Dumpers being extensively used for loading of coal into tubs in the mines of WCL, which has reduced the exposure of work persons under freshly exposed roof. Further, possibility of deploying remote operated SDL/LHDs is being explored to avoid the exposure of workers at vulnerable areas.

(ii) **Support of freshly exposed roof (green roof)**— New technology *viz.*, compressed/hydraulic roof bolting machines have been introduced in some of the mines of WCL.

7.12 Commenting upon the constraints in going for latest technology in the underground mines to ensure safe mining, the South Eastern Coalfields Limited (SECL) have informed the Committee that for increasing rapid production specially of better quality standard, coal mines mechanization is a must. Right now, level of mechanization in underground mines is better than other coal companies like use of SDL, LHD, hydro-fracturing longwall mining is also in practice in some mines. Continuous miner is highly successful and, therefore, is going to be adopted in 4, 5 other underground mines. But financial constraints are there as longwall and continuous miner are very costly. In SDL system, roof supports takes a lot of time and hence Indianised roof bolting is required in the system which is less costly than imported rocker bolter. AM-50 road headers are working in two underground mines. Three machines are deployed, each producing 300 TPD. A total of twenty number mobile hydraulic roof bolters are developed and introduced. New technology is being gradually introduced. It will take its own time.

7.13 On the other hand, the Eastern Coalfields Limited (ECL) informed the Committee that the constraints to have latest technology in underground mines are hiring of technical know how, procurement of costly equipments, training of personnel in latest technology and development of infrastructure, have spares and their maintenance.

7.14 The Mahandi Coalfields Limited (MCL) was of the view that considering geo-mining condition, intermediate technology by adopting LHD and SDL has already been adopted in four underground mines of MCL *viz.* Talcher, Nandira, HBI and Orient Mine No. 3 making them loader less. Other mines like Deulbera Colliery Orient Mine No. 2 and Orient Mine No. 4 are partly mechanized with LHD/SDLs. Loader less mining is in process of completion in Orient Mine No. 2 & 4. Most of the mines have been made loader less and balance will be made shortly. Action is already being taken for introduction of mass production technology like engagement of continues miner on trial basis in one of the miner.

7.15 When enquired about the level of technology available for the safety related activities and its upgradation, the CIL in a written reply informed the Committee as under:—

> "The level of technology used for safety related activities is comparable with that of many advanced countries. For example, roof bolting technology based on Rock Mass Rating (RMR) has been widely adopted for support of roof and sides in underground mines. Also 13 computerised Environmental Tele-Monitoring Systems are in operation and two more are under installation in the mines of CIL. Loading operations in underground mines have been more or less mostly mechanized through the use of Side Discharge Loaders (SDL)/Load Haul Dumpers (LHD). Continuous Miner Technology/Powered Support Longwall faces (PSLW) are being introduced in some selected mines.
>
> Upgradation of technology is a continuous process in CIL. Safety in mining operations can be enhanced with greater mechanization and reduction of manpower deployed in operations and remote controlled operations. However, in our present socio-economic conditions, optimization of the technology is thought to be required. As such appropriate technology through mechanization of the more hazardous operations like loading is already being done."

7.16 Regarding the present level of mechanisation in underground mines from the safety and security point of view, the CIL stated that greater safety may be obtained through use of PSLW along with remote controlled operations where the same production that is obtained currently by 300 persons may be obtained by only 7 persons deployed below ground. However, this would involve enormous reduction of manpower resulting in considerable loss of jobs.

7.17 The Committee observed that the rate of fatality in the coal mines is directly linked with the use of latest technology. More mechanization/use of the state-of-the-art technology means less fatalities as is in the case of advanced countries. The following tables give the picture of rate of fatality in the developed and other countries:—

FATALITY RATE PER THOUSAND PERSONS EMPLOYED

Year	Australia	France	India	CIL	Japan	USA	Germany	Czech Rep.
1996	0.35	0.23	0.29	0.27	0.00	0.31	0.14	0.15
1997	0.21	0.08	0.33	0.28	0.65	0.24	0.11	0.27
1998	0.33	0.00	0.30	0.26	0.00	0.24	0.03	0.16
1999	0.29	0.00	0.29	0.27	NA	0.30	NA	0.16
2000	NA	0.13	0.30	0.25	NA	NA	NA	0.17

FATALITY RATE PER MILLION TONNE OF COAL PRODUCED

Year	Australia	France	India	CIL	Japan	USA	Germany	Czech Rep.
1996	0.04	0.37	0.48	0.44	0.00	0.04	0.25	0.13
1997	0.02	0.15	0.52	0.43	0.47	0.03	0.19	0.23
1998	0.03	NA	0.46	0.40	0.00	0.03	0.05	0.13
1999	0.02	0.00	0.44	0.40	NA	0.03	NA	0.13
2000	NA	0.29	0.46	0.37	NA	NA	NA	0.12

7.18 When enquired about the poor rate of fatality in terms of coal produced, the Ministry of Coal in written reply stated as under:—

"From the above, it is found that if fatality rate per thousand per person employed is compared, performance of CIL is better than USA and Australia, but if rate per million tonne is considered, then we are far below them which indicate that in order to improve fatality rate per million tonne, the manpower is to be reduced and we have to go for mechanisation with adoption of new technology."

7.19 So far as fatality rate in Underground and Opencast mines in India is concerned, the Committee observed from the table given below that the rate of fatality per million tonne of coal production and per lakh manshifts deployed in underground mines in CIL for the last five years has been much more than opencast mines:—

FATALITY RATES FOR UNDERGROUND MINES & OPENCAST MINES IN CIL DURING 1998-2000

Year	Underground		Opencast	
	Per million	Per 3 lakh per metre square	Per metre	Per 3 lakh metre square
1998	1.42	0.25	0.13	0.22
1999	1.31	0.24	0.17	0.27
2000	1.13	0.22	0.19	0.33
2001	1.01	0.19	0.12	0.22
2002	0.89	0.18	0.11	0.21

7.20 There has been huge variation of fatality rates between opencast mines and underground mines. When asked about it, Ministry of Coal informed that underground mining has greater hazards as compared to opencast mining. Besides this, advantage in opencast is less restriction of space. The other reasons furnished by the Ministry for the high fatality rate in underground mines are as under:—

"Unfortunately in India we are employing large number of manual loaders in the high risk zone areas and most of the accidents are taking place in the depillaring areas due to frequent roof fall.

The accident reduction in developed countries has been directly proportionate to mechanization. In India, we still have to continue with mining practices and large manual workforce is being exposed in high risk zones *i.e.* drilling, blasting, supporting, loading, etc. Recently, Coal India has advised Central Mine Planning & Design Institute to identify locales for introduction of mass production technology e.g. longwall as well as continuous miners technology.

The report has been received and appropriate action will be taken for introduction of suitable technology."

Risk Assessment and Management

7.21 One of the major components of safety is risk assessment and risk management. Quick and accurate information and also synthesis and evaluation of numerous technical data constitute an important component of safety management in mines. When asked on this point as to whether any computer based Mine Safety Information System (MSIS) is available with the CIL and its subsidiaries, the Ministry of Coal informed the Committee as under:—

"Information/data arising out of enquiries into accidents/reports of inspections are constantly and continuously processed for management of the safety system. Mine Safety Information System (MSIS) is existing in the form of Safety Status Report-I and Report-II for opencast mines. However, this was under modification as to include some other issues relating to safety. This is under process, in the meantime, a detailed programme has been taken up in the Xth Plan period, through integrated COALNET application software system for networking of system from the Apex level to the mine level. The software will provide information regarding capture and monitoring of data for various safety status and regulations mine conditions, accidents, communication, etc."

The status of implementation of COALNET software is given below:—

(i) COALNET Application Software Phase-I: the package is to be implemented at CIL Hqrs., subsidiary Hqrs. and MoC. Implementation at CIL Hqrs. has been done. At subsidiary Hqrs., the work has started and expected to be completed by June, 2004.

(ii) COALNET Application Software Phase-II: this application including the safety module in all areas/mines is scheduled to be completed in 10th Five Year Plan. Implementation in 36 years have already been approved to be taken up in 2004-2005.

7.22 The Committee have taken note of the State-of-the-Art Technology being used in Coal Sector. These include scientific

support system in underground mines based on Rock Mass Rating (RMR) studies, roof bolting/roof stitching, introduction of modern drills like Universal Drilling Machine (UDM), reduced exposure of workers to mining hazards by use of SDLs & LHDs, Power Support Long Wall (PSLW), multi-gas detector, vibration analyzer, GPR to determine the thickness state, etc. The Committee are satisfied with the level of new technologies employed. Almost all the coal subsidiaries are in the process of upgradation of their technologies for improving production under safer environment. In this context, ECL have pleaded for upgradation of technology like proving of barrier with certainty, provision of forewarning before impending roof-fall, etc. and continuous monitoring system for mine gases. Similarly, BCCL have desired further upgardation in their technologies, especially for underground mines and asked for (i) introduction of more longwall basis; (ii) introduction of continuous miners for more production and less exposure of persons; (iii) introduction of more SDLs. LHDs and roof bolter machines; and (iv) introduction of remote control SDLs. SECL and MCL wanted more continuous mining technology. In this context, the Committee recommend that the Ministry of Coal should play a proactive role in inducting appropriate technologies for these coal subsidiaries. One time need based Grants should be given to them for the purpose.

7.23 The Committee are also perturbed to note that despite introduction of all these latest technologies/techniques in mining operations, accidents like Bagdigi in BCCL, Ramagundam in SCCL, both due to inundation and Godavarikahani (SCCL) due to roof fall are still happening. The Committee, therefore, recommend that latest technology like seismic/radar based techniques may be developed for location of the actual partings/separation between the workings and the water bodies to further down the rate of accidents and fatalities. The Committee feel that zero level accident can be reached apart from increase in production and productivity with the use of latest technology and mechanisation. The Committee, therefore, recommend that the workers' exposure to mining hazards should be restricted as much as it can be by maximum use of improved technology and mechanisation.

7.24 The Committee observe that the level of technology being implemented in the Indian coal industry seems to be adequate since the equipments are of high capacity and safety features are incorporated in the equipment. However, the Committee feel that

the process of technology upgradation should continue. The Committee further desire that coal companies should identify the thrust areas for mechanization.

7.25 The Committee, however, feel that there is a need for more R&D efforts to deal with the local geo-physical conditions of mining so that appropriate type of technologies can be introduced. The Government should, therefore, earmark and spend more money on R&D efforts.

7.26 The Committee are unhappy to note that the coal producing subsidiaries of CIL, especially loss making companies are facing constraints to have latest technology in underground mines like hiring of technical know-how, procurement of equipments, training of personnel in latest technology, development of infrastructure, adequate spares and their maintenance. The Committee observe that the two companies *i.e.* BCCL & ECL of CIL are still incurring heavy losses. The reasons attributed for such losses are old underground mines, deployment of large workforce, etc. There is, thus a need for mechanization of mines for which heavy investment is required. Taking into consideration, the pruning of manpower, the Committee recommend that Power Support Long Wall (PSLW) technology should be introduced in the underground mines wherever it is technically feasible. The Committee further observe that since coal reserves from the upper seams in opencast mines are depleting fast, coal companies would be required to extract the coal from the deeper seams to meet the growing demand. As such, coal for the future needs, will have to come from underground mines. The Committee, therefore, recommend that the underground mines should be mechanized at the earliest and Ministry of Coal/Coal India Limited should provide adequate financial assistance for the purpose. The Committee are of the view that the administrative/procedural rigmarole should not come in the way of coal companies in introducing latest technology and its upgradation.

7.27 The Committee express their deep concern over disasters which continue to take place, particularly in underground coal mines. A glance over safety statistics reveals that fatality rate per thousand persons employed is practically constant for the last two decades *i.e.* 0.34 and 0.33 for the period 1981-90 and 1991-2000 respectively. Although opencast mining operations are considered safe all over the world, accidents rates in open cast coal mines. In our country, is

as high as in the underground, in spite of the fact that only 17% of the coal is extracted from underground mines and 83% from open cast. The Committee are of the considered view that contract operations are causing more accidents due to various reasons like ill trained manpower, frequent change of work force, longer working hours, use of smaller machineries, equipments and vehicles, which are not compatible to the size of opencast operations. In fact, the rate of accidents of contract workers have been reported to be much higher than regular workers. It is in this context, the Committee recommend that new initiatives like 'Risk Assessment' and Safety Management Plans need to be introduced in all the coal mines on priority basis, in order to reduce accidents and disasters. Besides, intensive training of the contract workers, irregular and unsafe practices in contract operations, need to be strictly curbed.

7.28 The Committee note that long and arduous journey is required to be undertaken by the miners, before they actually start extracting coal. The Committee are of the view that this not only causes undesirable fatigue, but also retards productivity of the coal miners. The Committee, therefore, recommend that where long and arduous journey is involved and working faces exist at long distances in underground mines, man riding system or any other appropriate arrangements, for transport of miners, should be introduced. This will not only improve output per man per shift (OMS) but also relieve a miner from unavoidable fatigue.

CHAPTER VIII

COMMUNICATION SYSTEM

Mining of coal is still one of the most dangerous of all major industries, the death rate being 50 per cent higher than in docks, and nine times higher than in factories. The non-fatal accidents rate is nearly twice of that in docks and six times higher than in factories. With the increasing use of new techniques, the occupation had tended to become more dangerous than what it was when a hand industry.

8.2 Until recently, most coal came from underground mines. But now there are a large number of opencast mines. Underground coal mines are notorious killers due to roof falls and explosions. Accidents have resulted in the death of hundreds of miners.

8.3 The safety set-up in mining plays very vital role to reduce rate of accidents. Effective communication system in coal mines is the need of hour. Hundreds of accidents which need not and ought not to have happened could have been prevented by effective and strong communication system in coal mines. Certainly the present communication system in place is much advanced and developed than it used to exist in earlier days but it needs further improvement particularly in underground mines.

8.4 Ministry of Coal in a brief note submitted to the Committee stated that the following communication system is in vogue in CIL, SCCL and NLC:—

Coal India Limited (CIL)

All the underground mines of Coal India Limited (CIL) have been connected with surface to underground by different types of telephone communication systems such as Central Despatch System (CDS), Rhino Voice System, etc., and other forms of communication. In opencast mines, wireless system has been provided for communication. Apart from this P&T telephones, Wireless System, Hot Lines, etc., have been provided for surface to surface communication between mines, Rescue Stations/RRRT/RR, Area Offices, Company Headquarters, DGMS, Meteorological Department, Police Stations, Railways, Dam Authority & Local Administration, etc.

8.5 The prevailing communication system in some of the coal PSUs is as under:—

Western Coalfields Limited (WCL)

(i) Walkie-Talkie system

(ii) CDS System

(iii) Mobile Telephones

(iv) Wireless/Duplex system

Eastern Coalfields Limited (ECL)

(i) Opencast mines: DOT, MARR, Walkie Talkie & TDS, Wireless

(ii) Underground Mines: DOT, MARR, CDS & Point to Point Telephone, Wireless

(iii) Public Address System for communicating of safety messages.

Bharat Coking Coalfields Limited (BCCL)

1. Communication between BCCL HQ to Area HQ exists in two forms:

   (a) Through BSNL phones (P&T) all areas

   (b) Through UHF link - BCCL HQ to (i) Barora (ii) Block—II (iii) Govindpur (iv) Katras (v) Sijua (vi) Eastern Jhari Area

2. Communication between Area HQ and Mines (pit offices) through internal phone (EPBAX/RAX) exchanges, centrally placed at Area HQ and connected to Mine offices mostly through overhead line network.

3. Internal Communication in Opencast Mines.

   (a) Maintained through VHF wireless sets

4. Communication in underground mines

Maintained through sound power telephones with underground telephone cable network (DGMS approved type)

No. of pits existing	No. of pits fitted with telephone		No. inclines fitted with telephone up to underground working
	Up to pit bottom	Up to district	
85	63	30	49

No. of underground Distt.	No. of Distt. provided with tele-communication system connected underground with surface	No. of Distt. where tele-communication system is in working order
145	79	79

Procurement action is in process for 220 Nos. sound power telephones for providing in pit bottom and districts where telephones are not provided. Present communication system is effective but installation of V-sets for areas to BCCL HQ is under consideration for effective means of communication from areas to BCCL HQ.

Mahanadi Coalfields Limited (MCL)

Underground tele-communication system has been provided in all the districts of mines of MCL for UG to surface. Wireless telecommunication system has been provided between MCL HQ and Ib Valley Area. The communication by means of handheld walkie-talkies communication system has been provided in all the OC mines of MCL. These systems are considered to be adequate to meet any eventuality in an effective manner.

South Eastern Coalfields Limited (SECL)

An effective and elaborate communication system prevails in the mines, Sub-Area, Area Headquarter, Subsidiary Headquarter as well as in the Rescue Station, Medical Centres and the DGMS offices. The communication system has been planned so that the network supports seamless communication from any cluster to another with ease of

operation and accessibility. The cluster-wise communication system available and their inter-connection are described below:

(a) **Between the Mines site and the Manager**

This is the first layer of our communication system and most of the informations are generated here. In order to cater this requirement, we have introduced. Auto-cum-Manual Central Despatch System (CDS) in the underground mines. The system facilitates direct conversation from the district key installation points to the surface offices of Manager, Colliery Engineer and other personal associated with the mine management and production. The interface is available to connect to the residences of Mine Manager, Colliery Engineer through the CDS board inspector. For open cast mines, walkie-talkies sets have been provided enabling direct communication between the Manager and other people of the mine.

(b) **Between Manager-Agent/CGM/GM**

A reliable voice communication network between the above officials have been established by introduction of Electronic Exchanges in all the sub-area level caters the voice communication requirement of the mines, Manager & Agent. These exchanges are again inter-connected through the central switching of Area CGM/GM offices exchange by means of 10 channel digital UHF links where the distance is less than 5 to 8 kms. And by telephone cables in case of locations where the distance is less than 5 kms. for closed network operation within the area. Wherever the traffic density is relatively low, MARR/single channel radio equipment has been introduced in place of 10 channel UHF radio.

(c) **Between Mine-Area Hqr. and Rescue Stations**

Static 15/20 watt VHF sets have been installed at mines, rescue offices of the respective area and the area CGM/GM offices to have a simplex voice communication among these three points. In addition to above, mobile VHF sets have been fitted in the vehicles attached to Sub-Area Managers, Area Safety Officers and Area CGM/GM so that they can be communicated and contacted for exchange of messages whenever necessary. Direct telephones from BSNL is available in the area CGM office as well as to the main rescue stations in order to have a direct voice communication facility.

(d) **Between Area Office to Subsidiary Hqr.**

At Present High Frequency Independent Side Band (HF-ISB) system is working between subsidiary Hqr. and all the 12 area offices catering

for open broadcast voice and low speed data channels. There are also direct P&T telephones in the area offices as well as in the subsidiary Hqrs. as an alternate means of communication, although the reliability of P&T phones provided by BSNL at sub-area/area offices is not up to the mark. In addition to above, V-SAT communication is installed and commissioned for uninterrupted communication between area CGM/GM, Area Safety Officer and SECL HQ HODs.

An order has already been placed for establishment of Integrated Satellite communication system catering to both voice and data traffic between subsidiary Hqr. to all the 12 CGM/GM offices. On commissioning of the above network, reliable voice high speed data, internet access and video conferencing communication network will be established in SECL.

(e) **Between Mine-Area Hqr. and DGMS**

At present the subsidiary Hqr. acts as a nodal point of communication with DGMS. The informations from mine, area are normally routed to subsidiary Hqr. through the communication channel described above and Bilaspur Hqr. interacts with the DGMS officials. At Bilaspur, the DGMS office is provided with the internal exchange communication facility meant for subsidiary Hqr. and a direct communication is possible. For voice/fax communication with other DGMS offices at Jabalpur, Nagpur and Dhanbad, SECL depends on the PSTN STD facilities provided by BSNL.

(f) **Between Mine-Medical Centre and District Administration**

The medical centres and mines are connected through the internal telephone exchange of the respective sub-area and area through centralized switching. For communication between mines and district administration, information is required to be routed through Area CGM/GM office. The direct telephones of BSNL are available at medical centres for communication with district administration.

(g) **Emergency communication, disaster and adverse weather condition**

It is a fact that during any of the above situation normal communication is disrupted. However, the simplex VHF wireless communication is normally continued even during the adverse climatic condition between area office to Sub-Area Managers office. We have got one number portable INMARSAT-Mini-M terminal working on

VSNL gateway for direct communication with any of the PSTN subscriber in the country or aboard.

(i) The Radio Trunking system was also installed at Gevra and Bhatgaon Areas to facilitate Mobile communication requirement in opencast mines for effective monitoring. Total 22 nos. of UHF Radio links are working between area Hqrs. to its project in the company to improve the reliability and smooth flow of information from the Area Hqrs. to the projects.

(ii) As many as 70 electronic telephone exchanges for surface communication and 76 underground communication systems for communication with underground mines and projects were in place to ensure effective monitoring system.

Singareni Colliery Company Limited (SCCL)

8.6 So far as Singareni Colliery Company Limited (SCCL) is concerned, the following communication systems are functioning there:—

At Mines

At mines, telephones approved by DGMS to cater the needs of communication within the mines and for underground to surface. In some mines where mechanization is existing, Central Despatch System of communication is being used. An S&T project with collaboration of CMRI to have cordless system of communication at mines is being taken up.

Mines to General Manager's Office

- Each mine is connected to General Manager's Office through land line phones;
- Each Manager and Agent are proposed to be provided with Cell Phones.

General Manager Office to Corporate Office

- Each General Manager office is provided with land phone along with Group Dialing and STD facilities;
- Every General Manager is provided with Cell Phone;
- Each General Manager's Office is equipped with FAX;

- Each General Manager's Office is provided with wireless set; and
- Each Rescue Station is also provided with wireless set.

8.7 Commenting upon the effectiveness of communication system, SCCL in a note submitted as under:—

A. The communication in opencast mine is very effective by the following methods:

(i) Ground stations at different locations have been established in the project.

(ii) All mobile vehicles are provided with mobile wireless sets.

(iii) Supervisors working fronts are provided with hand control wireless sets.

(iv) All the loading equipment like shovels are provided with fixed wireless sets on the machine itself.

The above systems are effective and adequate.

B. Communication in underground mines is effective by the following methods:

(i) Central Despatcher System (CDS)—This is an intrinsically safe communication system, the control of which is done by a person on surface in each shift. About 20 to 30 Amplifiers (Telephones) are available in each system, approved by Director General of Mines Safety.

(ii) Auto-cum-manual exchange upto 40 lines were installed in some mines—Approved by Director General of Mines Safety.

(iii) Sound Powered Telephones—These are powered by the voice of the speaking person and transmitted through 2-core cable. These are intrinsically safe and approved by DGMS.

(iv) Pager phones permanently fixed along the Man-riding Haulage roadways which are also intrinsically safe.

(v) Communication system comprising of Console, amplifiers (placed 100 M apart) along Longwall gate belt conveyors and some of the trunk belt conveyors in mechanised mines. These systems are imported from UK and China.

(vi) Shaft signalling and communication equipment installed where Winding Engines are working for communication between the Onsetters, Banksmen and the Engine operators.

Neyvelli Lignite Corporation (NLC)

8.8 Ministry of Coal has further informed the Committee that a strong communication set up is installed in Neyveli Lignite Corporation (NLC), the details of which are as under:—

"Fixed wireless sets installed are checked for their performance of the communication clarity, their working within the parameters and defects, if any, are attended to, to ensure that the sets work without any problem for communication during the monsoon.

Walkie-talkie etc. provided to the executives are undergoing pre-checks, defects, if any, rectified and made available to the executives. Standby sets with additional batteries are also made ready for immediate issue to the executives, if their set is likely to take time for rectification. Certain number of standby sets and batteries are kept for issue, on demand during the monsoon period.

Telephone communication system provided inside mines at all locations are thoroughly checked for the proper function of the instrument, cable line for their condition and remedial immediate action taken to ensure fail free telephone communication during monsson."

8.9 When enquired whether the present system is adequate to meet any eventuality in an effective manner, CIL in a written reply informed the Committee that communication in opencast mines is effected through walkie-talkie, wireless, internal and P&T telephones. In underground mines, communication systems between surface office and underground workings are through underground telephones, Central Despatch System (CDS), Singalling etc. The surface office of underground mines is provided with STD facilities, Internal Telephones,

Wireless Communication/Multi Access Radio Tele-communication with Rescue Stations/Area Headquarters/Company Headquarters. They further stated that the present systems are sufficient to meet any eventuality.

8.10 Regarding introduction of latest technology in place of the present communication system(s), CIL informed the Committee that the present system is serving the required purpose adequately.

8.11 The Committee visited various subsidiaries of CIL for an on the spot study of safety in coal mines. During discussion with the representatives of various trade unions, the Committee found that the communication system in vogue in various coal companies did not meet their expectations. The following suggestions/comments were made by them for improving the existing communication system:—

(i) **Communication in the mine:** Statutorily it should be stated that in an underground mine, telephone communication should be from all the working face to pit bottom and also to the surface. It should be rugged and independent of power supply from the surface.

(ii) **Communication between mine and rescue station and other offices:** In the case of emergency, it is found that a mine is cut off from all the other external agency due to presence of outdated system prevalent, so it is necessary to develop the communication based on satellite and "V set" system. **[Akhil Bharatiya Khadan Mazdoor Sangh]**

(iii) Communication system needs modernization and improvements.

[Rashtriya Koyla Khadan Mazdoor Sangh] INTUC

(iv) All the vulnerable points of the mine to be linked with telephone, wireless, walkie-talkie sets. Hand sets should be given to the Line Managers and Supervisors.

[Collieries Karamchari Sangh] CCL

(v) It would be better if present communication system is replaced by latest technology. Any improvement over the present system using the State-of-the-art technology will be highly helpful.

[Eastern Coalfields Limited] ECL

8.12 The Committee have taken note of various communication systems installed in opencast and underground mines. The Committee are of the view that elaborate communication systems do exist but there is need to augment it further. It has been brought to the notice of the Committee by some of the Trade Unions that the communication system which exists in mines is not satisfactory and proves to be almost ineffective in case of emergency due to shortage of equipments with supervisors. In this context, the Committee desire that system of communication should be further upgraded and latest equipment be made available with every supervisor and line manager. the Committee also desire that use of V-SAT should also be considered for introduction in underground mines at the earliest.

CHAPTER IX

RESCUE AND RECOVERY OPERATION

The Mines Rescue Rules, 1985 in respect of rescue and recovery operations are most comprehensive. These cover almost all the aspects involved in carrying out an emergency operation.

9.2 The Rescue Rules provide that it shall be the responsibility of the owner to establish, maintain and ensure proper functioning of rescue room or rescue station as required under these rules, to appoint Superintendent, instructors, rescue room incharge, rescue trained persons, and to provide necessary rescue equipment and apparatus as may be necessary for compliance with the provisions of these rules.

9.3 Ministry of Coal, in a brief note submitted to the Committee stated that after take over of rescue services from Ex-CCMRSC by CIL in the year 1985, the requirement of rescue establishment, equipment, manpower and training were reassessed by a Committee (N.R. Mitra Committee) for revamping and modernizing the rescue services of CIL and fulfilling the requirement of Mines Rescue Rules.

9.4 The location of Rescue Station (RS), Rescue Room with Refresher Training facilities and Rescue Room (RR) in different subsidiary coalfields and type and number of rescue equipment to be provided were further studied and finalized by a Committee (Dubey Committee), constituted by Ministry of Energy, Govt. of India.

9.5 Subsequently, further recommendations were made by Standing Committee on Safety in Coalmines for strategic location of Rescue Rooms to ensure that rescue help must reach and every mine within half an hour time in case of emergent need. Accordingly, some more Rescue Stations were established, equipped and manned to fulfil this requirement.

9.6 Thus rescue services of CIL has been revamped, modernized with rescue establishments of standard design and latest state-of-the-art equipment. Presently 6 Rescue Stations, 15 Rescue Rooms for Refresher Training and 17 Rescue Rooms are functioning and ensure rescue help to each and every mine within half an hour.

9.7 The following apparatus and equipment, as per rule, shall be of a type or standard approved by the Chief Inspector (In-charge of the Rescue Station/Room) appointed by the Mine owner/ Management:—

(i) breathing apparatus;

(ii) smoke helmets and apparatus serving the same purpose;

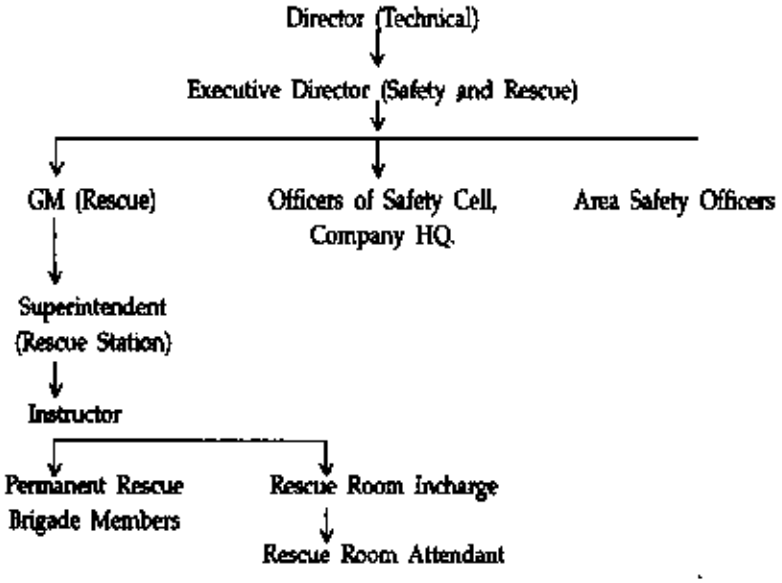
(iii) reviving apparatus; electric safety lamps and flame safety lamps;

(iv) gas detector; and

(v) self rescuers.

The details of these equipment are at Annexure-II.

9.8 So far as Coal India Limited (CIL) and its subsidiaries are concerned, the administrative set up looking after the rescue and recovery operations at the subsidiary level, as indicated by the CIL to the Committee, is as under:—



9.9 In respect of the rescue arrangements in CIL and its subsidiaries, CIL in a written reply informed the Committee that Coal India has well equipped rescue organizations to cater the needs of rescue

operations in case of emergency. As against the requirement of 2,152 rescue trained persons in all the coal producing subsidiaries of CIL, there are 2,479 on roll (327 persons in surplus), as may be seen from the table given below.

Status of Rescue trained persons in CIL

Company	As on date	Required	On roll
ECL	01.07.03	495	697
BCCL	10.07.03	389	393
CCL	09.07.03	274	339
WCL	20.06.03	301	356
SECL	30.04.03	600	571
MCL	07.06.03	74	60
NEC	09.07.03	19	63
CIL	—	2152	2479

9.10 All the Coal PSUs have extensive rescue organizations staffed by well trained personnel equipped with modern state of the art equipment for maintaining constant alert in order to provide the rescue cover in case of any emergency within shortest possible time. Commenting upon the status of rescue/recovery operations, Eastern Coalfields Limited (ECL) in a note furnished to the Committee, stated as under:—

"Rescue Stations/RRRTs are provided with DOT and MARR telephone to get quick information about emergency. The rescue vans in these Rescue Stations/RRRTs fully equipped, are kept in readiness for movement immediately on getting the information about emergency. Response time is only 5 minutes and reaching time at the destination is 30 minutes depending on the route involved.

All the four Rescue Rooms situated in different Areas, RRRT situated at Kenda Area and Central Mines Rescue Station, Sitarampur are fully equipped to start rescue/recovery operation in emergency at short notice without loss of time. To avoid delay in starting Rescue/Recovery operations at the emergency site, it is

necessary to conduct integrated emergency stimulation exercises periodically so that the reasons of delay are identified well in advance and corrective action taken."

9.11 In the regard, SECL furnished the following information:—

"In our Company, Rescue and Recovery works can be started immediately because rescue stations and rescue rooms are situated in the close proximity of mine within 35 kms. Rescue Trained Persons have been distributed in all the mines and in all the three shifts so that rescue and recovery works start as quick as possible. Our company is also equipped with sufficient numbers of high capacity pump sets and are being kept readily available with Diesel/Electrical fittings for dealing with emergency like Singareni Coal Mines. Besides that, pump sets are also available in different units to tackle situations, which are not normal, without loss of further time."

9.12 BCCL in this regard stated as under:—

"We are having one Rescue Station at Dhansar, two Rescue Rooms with refresher training facilities one at Madhuban which is the north-west end of Jharia Coalfields and the other at the south-east end of coalfields at Sudamdih colliery. Besides, this, three Rescue Rooms are located at Moonidih, Murulidih and Chhatabad in such a way that no mine is more than 10 km. away from the rescue room and maximum time to reach any mine from a Rescue Room is less than 30 minutes and rescue work is started immediately. Basically, the Rescue Services are provided against irrespirable atmosphere in the mines due to explosion, fires and gasses. It is only in the case of water that rescue/recovery operations are started after dewatering is completed because rescue apparatus are not meant for use under water. Otherwise rescue/recovery work is started immediately.

Rescue station Dhansar and all rescue rooms are well connected by telephones with each other and with all the collieries. Siren has been provided at all rescue rooms. Permanent brigade members and emergency van drivers are posted in all the 3 shifts as required under rescue rule.

On getting an emergency call from any mine, the members on duty blows the siren and all the members immediately rush into

the emergency van which is well equipped with all necessary apparatus to deal with the emergency. The van leaves the Rescue Station within 3 minutes time and reaches the site of incidence within 30 minutes. After discussion with colliery officials, the rescue and recovery work can start immediately.

Our permanent rescue brigade persons posted at Rescue Station and Rescue Rooms are very sincere, efficient and dedicated to their duties. Rescue allowance is being paid to them. Regular training is being given to them. All the mines are also having rescue trained persons known as field volunteers and refresher practice is given to them at Rescue Station/RR Rooms in 45 days".

9.13 Regarding the rescue arrangements/preparedness, as required under the statute (The Mines Rescue Rules, 1985), South Eastern Coalfields Limited (SECL) apprised the Committee as under:—

"Our company has well organized Rescue Organisation under Director (Technical/Operation), headed by Chief General Manager (Safety and Rescue) with close supervision and guidance of General Manager (Rescue). We have one (1) Rescue Station centrally located at Manendragarh, Hasdeo Area and Ten (10) numbers of Rescue Rooms situated in the close proximity of every mine within 35 kms. to provide rescue assistance without delay. Rescue Station and Rescue Rooms are well equipped with the required number of operations, rescue van and rescue brigade members with proper modern training facilities under the charge of qualified personnel as per statute (Mines Rescue Rules, 1985). Perfect tele-communication system has also been arranged to facilitate the communication without delay.

Besides, that, there are 600 numbers of Rescue Trained Persons distributed to all the underground mines of SECL and also in all the three shifts, to start rescue and recovery work immediately as per statute (Mines Rescue Rules, 1985).

All mines are having rescue plan marked in emergency escape route for quick rescue operation. Mock rehearsals are being carried in every mine periodically and duly pit practices of rescue trained persons.

Rescue and Recovery works are important activity and dedicated work-force exists in SECL. They are being provided with Rs. 300/-, Rs. 225/- and Rs. 125/- to the executives, staff and workmen and

respectively per rescue refresher practice as pre-requisite. Minimum number of practices in a year is 8 (eight) only. It is eighteen for the members of the permanent brigade.

So, it is considered that above organization, apparatus, perks and perquisites (in the form of rescue allowances) are adequate to meet rescue and recovery work at SECL".

9.14 Contrary to the replies given by Coal India Limited (CIL) and its subsidiaries, the representatives of one of the Trade Unions, namely, CCL Colliery Karmchari Sangh, operating in CCL informed the Committee that 'the system of keeping Rescue Team always on alert is not visible in their subsidiary. Each and every member of such team is engaged in day-to-day mine work. At the time of emergency, the organization takes considerable time resulting in loss of lives. Secondly, they (Rescue Management) are not well equipped to counter emergency.

9.15 When enquired about the provision of adequate emergency exist/escape route in the underground mines, the CIL stated that as per the coal mines regulations, Emergency Action Plan have been drawn up for each underground mine. Escape routes have been marked on plans as well as demarcated below ground. Mock rehearsals are conducted in all underground mines to familiarize workmen with the same. Escape routes are maintained for use during emergency.

9.16 The Committee note that as per the provision of Mines Rescue Rules, 1985, it is the responsibility of the owner to establish and ensure functioning of rescue room or rescue station and also to provide rescue equipments and apparatus as may be necessary for compliance of these Rules. The Committee further note that coal subsidiaries have well elaborated and structured rescue organization manned by trained personnel and equipped with modern state-of-the-art equipments. However, the past experience have shown that whenever any accident has taken place, the rescue operations have been delayed considerably leading to loss of lives of workers which otherwise could have been saved. It has been brought to the notice of the Committee that the system of keeping rescue teams always alert is not visible and members of the Rescue Team are assigned day-to-day mine work. Further, at the time of emergency, the Rescue

Teams have failed to counter emergency as they were ill-equipped. The Committee express their displeasure over this and recommend that a totally dedicated work force at the site be raised for the purpose. The Committee also desire that special perks and pre-requisite for rescue operation should be introduced. At the same time, the response time for undertaking rescue operations be further reduced from the present level of 30 minutes. The Committee also recommend that for curtailing delays in starting of rescue operations at emergency sites, periodical integrity emergency stimulation exercise be conducted at least twice a year and the reasons for delay identified and corrective action taken thereon. The Committee further recommend that the rescue equipments and accessories such as high capacity dewatering pumps, gas masks, fire extinguisher etc. should always remain in readiness especially in underground mines and periodically checked to ensure their preparedness. The Rescue Team should be imparted extensive and rigorous training and given accommodation closer to rescue station/rescue room so that they could report at the time of emergency without loss of time.

9.17 The Committee find that there is a shortage of equipment and other accessories/gadgets used for rescue operation. Further these are not of international standards. The Committee desire that shortage of these equipments and gadgets should be met and the existing equipments be upgraded/updated conforming to international standards. The Committee also desire that a promotional scheme be introduced for further upgrading the status of rescue operations.

9.18 The Committee note that there is consensus that disorientation and low visibility in the aftermath of fires and explosions are major considerations in underground escape and rescue strategies. But the practical and proven solution of these problems, with the requisite degree of flexibility to permit general application, are not readily available with the coal companies. The Committee feel that escape routes could help the trapped persons to save their life. The Committee, therefore, recommend that escape routes in all the underground mines be provided and demarcated properly and mock rehearsals conducted periodically, at least twice a year, to familiarize workmen with the same.

9.19 It has been brought to the notice of the Committee that the escape routes, wherever provided, are ill maintained. In most of the

cases, jungle crop have grown and it is not possible for the trapped persons to come out through this route. The Committee take strong note of this and recommend that escape routes should be well maintained, painted with fluorescent paint and properly cleaned so as to make it fit for use by the workers at the time of emergency. Wide publicity through sign bills, banners, posters, etc. should be made of the escape routes, so as to familiarize the workmen with such exist routes.

CHAPTER X

INSURANCE SCHEME FOR MINE WORKERS

Coal mining is a hazardous job and, therefore, it is a less preferred profession. Though all arrangements are made to ensure safe mining and reduce number of accidents but the accidents disaster are still taking place. Therefore all those who are actively engaged in the coal mining are required to be insured compulsorily under some suitable insurance scheme.

10.2 When Committee enquired about insurance cover for the coal miners, the Ministry of Coal informed that mine workers are covered under Workmen's Compensation Act. Apart from this, each company has its own policy for the employees, such as Group Insurance Scheme, ex-gratia, compensation in case of unnatural death, employment for their dependents, etc.

10.3 Ministry of Coal further stated that in case of death due to mine accident, the following benefits are given to the nearest kin of the victim in CIL:—

- Compensation as per Workmen Compensation Act, 1923;
- Ex-gratia payment of Rs. 25,000/- as per NCWA;
- Life cover scheme payment of Rs. 30,000/- under the provision of NCWA;
- Expense of funeral;
- Provident fund under Coal Mines Provident Fund (CMPF) scheme;
- Widow/children pension under Coal Mines Pension Scheme-1998;
- Gratuity (Maximum Rs. 3.5 lacs) under payment of Gratuity Act;
- Payment of leave encashment and other dues; and

- There is no insurance scheme for Coal India as a whole but there are some insurance schemes/Benevolent Scheme in the subsidiaries and payment is made as per the these schemes.

10.4 In SCCL and NLC, the following Insurance benefits are being extended to the miners working in these companies:—

Singareni Collieries Company Limited (SCCL)

(i) Family Benefit-cum-Insurance Scheme (FBIS)—accumulations;

(ii) Family Benefit-cum-Insurance Scheme (FBIS) to the extent of Rs. 10,000/- on death;

(iii) Group Insurance Scheme (GIS) to the extent of Rs. 37,000/-;

(iv) JPAIS for Rs. 1,000.00/- on death. Some of these schemes consist of insurance coverage.

Neyveli Lignite Corporation (NLC)

"The workers of mine are covered under the Group Personal Accident Insurance Scheme. In addition to the above, they are also covered under Employees Deposit Linked Insurance Scheme as per Employees Provident Fund Act".

10.5 It was brought to the notice of the Committee that an insurance scheme was launched for the benefit of miners and executives in MCL. This was later on withdrawn by the Insurance Companies. Tracing the background of the scheme, the Ministry of Coal informed the Committee as under:—

"Oriental Insurance Company had launched a scheme *viz.* "Long Term Group Janata Personal Accident Insurance Scheme" w.e.f. March, 1998. Although the duration/validity period of scheme was very short, MCL entered into a Memorandum of Understanding (MoU) with Oriental Insurance Company on 7th September, 1998 to avail of the validity of the period of the scheme which was

only for a period of 12 years from the launching date. The scheme stipulated the following benefits:—

Sl. No.	Type of employees		Sum Assured in lakhs	Period of coverage	Premium
1.	MCL Hqrs.	Executives	10.00	12 Yrs	2250.00
		Non-Executives	05.00	12 Yrs	1125.00
2.	Area	Executives	10.00	12 Yrs	1650.00
		Non-Executives	06.00	12 Yrs	990.00

Keeping in view of the above and also on the basis of the request received from Oriental Insurance Company, approx. Rs. 1.43 crore was advanced to cover maximum number of employees out of approx. 23,000 employees under the scheme. Accordingly, as per MoU, the employees were contacted by the representatives of the Oriental Insurance Company to obtain consent of individuals to be covered under the scheme individually. About 12,000 employees had given their consent and nearly 11,834 employees were covered. An amount of Rs. 1.28 crore out of an advanced amount of Rs. 1.43 crore has been adjusted.

Under the above scheme, 11 dependents of the deceased employees (who died due to accident) were paid the coverage amount as stated above. This scheme was widely accepted and appreciated by all the employees and the Unions. But, unfortunately, on 7.01.2002, Oriental Insurance Company, Bargarh Branch withdrew the Scheme unilaterally without entering into any dialogue with MCL".

10.6 When the Committee asked as to whether the Ministry of Coal took up the matter with the Ministry of Finance for unilateral withdrawal of 'Long Term Janata Personal Accident Insurance Scheme", they informed the Committee that the matter was not taken up by them with the latter because the scheme was introduced with mutual understanding between Mahanandi Coalfields Limited (MCL) and Oriental Insurance Companies. Ministry of Coal was not involved during introduction or stoppage of the scheme.

10.7 On this point, the Ministry of Finance, clarified as under:—

"Although the policy issued to workers of Mahanadi Coalfields Limited (MCL) was withdrawn, the scheme of Group Janata

Personal Accident Policy still exists. The only restriction imposed by the company because of very high 'loss experience' is that the Long Term Group Janata Personal Accident Policy cannot be granted beyond five years and the policy cannot cover any person for more than a sum insurance of Rs. 1 lakh. The revised guidelines also stipulate maximum discount of 30% of the premium depending upon the size of the group".

10.8 During the study tour of the Committee to various coal mines, they interacted with the representatives of various trade unions. On the point of insurance cover, the Committee was informed as under:—

"Orissa Collieries Mazdoor Sangh, a Trade Union in the Mahanadi Coalfield Limited (MCL), informed the Committee that in the event of death of an employee while in service, the amount fixed under the Life Cover Scheme is only Rs. 30,000/- which needs to be enhanced suitably".

10.9 The views expressed by Akhil Bhartiya Khadan Mazdoor Sangh are as follows:—

"It is found that in some of the companies, Group Insurance is not compulsory for each and every workman. In such cases, some workmen opt out of such insurance cover. Henceforth the cover of insurance should be made compulsory for each and every workman and it may be included in the wage negotiation as a term to be agreed by all.

Rashtriya Koyla Khadan Mazdoor Sangh operating in Western Coalfields Limited (WCL) went ahead in saying that "there is no general insurance for mine workers in coal industry. However, in WCL, we had an agreement with New India Assurance Company Limited giving blanket coverage of insurance of Rs. 5 lacs against accidental death of all employees".

10.10 The comments of Central Coalfields Limited (CCL) Colliery Karmachari Sangh furnished in writing to the Committee are given below:—

"CCL has insured its workers against any kind of accident through Group Insurance Scheme of GIC. However, it is expected on the part of the company to deposit the premium in time to GIC so that insurance cover may not lapse and the main moto of this

insurance is not marred. This is because a few such cases have been reported in which the dependents have been denied the insurance claim, else remedy should be provided to the grieved family through MoU with the insurer in such cases".

10.11 The Committee note that in the event of death of a mine worker, the benefits under Workmen's Compensation Act, 1923, Ex-gratia payment as per National Coal Wage Agreement, life cover scheme payment of Rs. 30,000/-, Provident Fund, Coal Mines Pension Scheme, etc. are admissible to a mine worker. The Committee further note that there is no insurance scheme for the Coal India Limited (CIL) as a whole. However, there are some Insurance Schemes/ Benevolent Schemes in the subsidiaries and payment made as per the schemes. Coal subsidiaries; namely MCL, WCL and SECL had insurance scheme for their workers and executives from Nationalised Insurance Companies. The Committee are pained to note that the Insurance Company unilaterally withdrew the scheme after some period in MCL. Insurance Schemes for WCL and SECL were also dispensed with. Whereas WCL and SECL had gone to the Court against the unilateral withdrawal of the scheme by Insurance Company, MCL's efforts to get the scheme re-started did not yield any result. The Ministry of Coal/Coal India Limited did not take up the matter with Ministry of Finance on the ground that the scheme was introduced with the mutual understanding between MCL and Oriental Insurance Company and they were not involved in any way under this scheme. The Committee do not approve of inaction on the part of Ministry of Coal in this regard. The Committee, therefore, recommend that Ministry of Coal should take up all the three cases with the Ministry of Finance at the highest level for an amicable solution. At the same time, the Committee strongly recommend that as coal mining is a hazardous occupation, an exclusive Group Insurance Scheme be arranged for the benefit of coal mine workers.

CHAPTER XI

WORKERS' PARTICIPATION IN SAFETY MANAGEMENT

The reduction of occupational injuries relies on a clear definition of working conditions/environment and the implementation of risk prevention strategies. Isolated initiatives and schemes often do not achieve the desired objective. Safety and prevention can only be achieved if such schemes/projects are pursued and carried out in close coordination with all the parties i.e. employer, employees and their representatives. It is, no doubt, an essential pre-condition for any integrated prevention policy covering all work-related factors that workers should become an active part of such a policy. In this context, the Trade Unions operating in the collieries have to play an important role in participating in the safety management for accident prevention in the coal mines.

11.2 When asked about level of participation of workers in the safety management. CIL in a note stated that safety operations has been a priority area for them. This is done through the following bodies:

1. Workmen's inspectors: Safety status of each and every mine is monitored by representatives of the workmen, one each in Mining, Electrical and Mechanical disciplines through inspectors, the reports of which and status of compliance of recommendations are forwarded to the local DGMS officer.

2. Safety Committee at mine level: The Safety Committee also monitor the safety status at each mine by inspection followed by a meeting for review of safety status of the mine. In this body too, workmen are represented equally as management.

3. Area Level Tripartite Committees: The Area Level Committee comprising workmen's representatives, DGMS representatives and management representatives also periodically monitor the safety performance of the Area.

4. Tripartite Safety Committee at subsidiary company level consists of representatives of workmen, DGMS and management for review and monitoring of safety measures.

5. Coal India Safety Board: This is headed by the Chairman, CIL with workers representatives, D(T) CIL, D(P) CIL, CMDs of Coal companies, the DGMS, a representative of the Ministry of Coal as members and E.D. (Safety & Rescue) CIL as member Secretary. The Board reviews the safety status of CIL, formulates policies and gives guidelines for improving safety standards.

6. Standing Committee on Safety in Coal Mines: This Committee is chaired by the Hon'ble Minister for Coal and acts as the apex policy formulation group for safety and reviews safety performance of coal companies.

11.3 The Committee have been apprised that with the amendment of the Mines Act, 1952 and the consequential amendment in the Mines Rules, 1955, a new Chapter (Chapter IV-B) on Workmen's Inspector and Safety Committee was added. As per this chapter, Workmen's Inspectors are required to be appointed by the management in consultation with the registered trade union in every mine where 500 or more persons are ordinarily employed. The Rules (Rule 29-Q to 29-R) require appointment of separate Workmen's Inspector for mining, electrical and mechanical installations and operations, their rank being that of an Overman or equivalent, with five years experience in mines including two years in the workings of the mine for which he is nominated. The management shall afford reasonable facilities to the Workmen's Inspector for making inspection, which he may carry out at any time and an official shall accompany him during inspections.

The management shall inform the concerned Workmen's Inspector whenever there is an accident or dangerous occurrences. The Workmen's Inspector shall make inspection on two days a week, and on the remaining days, perform his normal duties except in special circumstances. He has to undergo an orientation course of thirty lectures of two hours duration. He shall hold office for three years and shall be eligible for one re-nomination. His duties would include inspection of workings and installations and the would inform the management about urgent and immediate danger that comes to his knowledge and suggest remedial measures. He shall also accompany the inspector in course of his complete inspection of the mine, or any time called

upon by the inspector. The report of the Workmen's Inspector shall be in specified format and shall be signed by the accompanying official. The management shall report the status of compliance in the same report within a period of fifteen days.

11.4 Rule 29-T of the Mines Rules, 1955 provides for constitution of Safety Committee in every mine where more than 100 persons are ordinarily employed. Rule 29-U prescribes the composition of the Safety Committee. It consist of the Manager who is the Chairman, five officials nominated by the Chairman, five workman nominated by the Union, the Workmen's Inspectors and the safety officer who act as the Secretary. There is also provision for co-opting members by the chairman. The functions of the Safety Committee have been defined under Rule 29-U, which are as under:—

- discuss remedial measures against unsafe conditions and practices;
- consider proposed safety and health measures before commencement of new district or before installation of new machinery;
- to discuss report of enquiry into accident;
- to formulate and implement appropriate safety campaigns;
- to meet at least once in 30 days.

11.5 The management is required to indicate the Secretary of the Safety Committee the action taken to implement the recommendations made by it within a period of 15 days.

11.6 Taking into consideration that Workmen's Inspector can better raise violations boldly, if they are under the control of Areas Safety Incharge instead of the present system under which they are under Mine Manager, DGMS stated as under:—

> "The idea of appointment of Workmen's Inspector is based on participative management. The Workmen's Inspector points out the deficiencies to the mine management and also supposed to take immediate action to rectify these violations as he is also working as overmen".

11.7 The comments offered by the coal companies *i.e.* CIL, SCCL and NLC on the above point are as under:—

Coal India Limited (CIL)

"It would clearly diminish the authority of the mine manager as provided under The Mine Act, 1952. As Workmen's Inspectors are being deployed in the mines to apprise the details of the safety status to Manager who is responsible for production as well as safety aspects, any departure in the present reporting systems will lead to weakening of the present information systems with special reference to the safety of the mines which may culminate in disturbance of smooth functioning of the mines".

Singareni Coalfield Company Limited (SCCL)

"Output should not be segregated from safety, they should go together. If the services of Workmen's Inspectors are utilized effectively by the Mine Manager, it would be adequate. Safety Officer will work as Safety Auditors as regards safety of the mine is concerned. They are mainly on Advisory capacity but not the implementing authorities whereas the Workmen's Inspectors are the implementing authorities. As such, the present status is adequate. Instead, Area Safety Officer should be strengthened by giving assistance, in the form of Under Manager or Overmen".

Neyveli Lignite Corporation (NLC)

"As per Rule 29-Q(8) of the Mines Rules 1955, the Owner/Agent/ Manager shall not take any action against the Workmen's Inspector for any of actions in the discharge of his duties and functions laid down in these rules. The existing statute has already given him scope to raise the violations boldly, even though he is kept under the control of Mine Manager. So, this recommendation is not necessary".

11.8 Commenting upon the periodicity for conducting meetings of the various Safety Committees, Coal India Limited (CIL) in a written reply stated that generally meetings of Mine Level Safety Committee, Bipartite Committee and Tripartite Committee are conducted regularly. The periodicity of the above meetings are given below:—

(a) Mine level Safety Committee at each mine—monthly;

(b) Area level Bipartite/Tripartite Committee meetings at each area—Bi-annual;

(c) Company level Tripartite Committee meetings—Bi-annual; and

(d) CIL level CIL Safety Board meetings—Bi-annual.

11.9 In Singareni Collieries Company Limited (SCCL), the meetings of the Pit-Safety Committee is held once in a month at each mine. Bipartite and Tripartite Safety Review meetings are being conducted once in six months on regular basis.

11.10 On a point of achievement of these Safety Committees, the CIL informed the Committee as under:—

"Deliberations of mine level Safety Committee meetings relate to the individual safety related problems of individual mines. The Action Taken Report on the recommendations of the Safety Committee meetings are placed before the Committee in the next meeting and thereby constantly monitored. The major common recommendations of company level Tripartite Committee meetings relate to the points given below:—

1. Surveying.
2. Roof Bolting practice—training of workmen and supervisors.
3. Provision of small dia drill bits and rods for roof bolting.
4. Implementation of charge hand over and taken over by Overman and Mining Sirdars.
5. Training of contractors workers.
6. Improvement of ventilation.
7. Traffic Rules of transportation equipment in opencast mines.
8. Maintenance of haul roads.
9. Risk assessment.
10. Quality of footwear.
11. Specialised treatment facilities in hospitals".

11.11 Commenting upon the recommendations which have been taken up during the meetings of Tripartite Safety Committee, SCCL in a note stated that following issues were taken up and implemented:—

"(i) Procurement of Methanometers

(ii) Shortage of Supervisory staff i.e. Mining Sirdars and Overmen;

(iii) Establishment of escape routes;

(iv) Tie-up with Meteorological Department and Central Water Commission for taking adequate precautions during heavy downpour of rain;

(v) Periodical Medical Examination of the workmen;

(vi) Shortage of Doctors;

(vii) Precautions against noise levels; and

(viii) Protective equipment like earplugs, noise plugs, etc.

11.12 During the visit of the Committee to the various coal mines, the Committee met a number of Trade Unions to ascertain the ground reality in regard to workers' participation in safety management. The view points expressed by them, are as under:—

11.13 The representatives of the workers of Central Coalfields Limited (CCL) informed the Committee that though periodical meetings of the Safety Committees are held but not regularly and the resolutions passed therein are seldom implemented in their right earnest. They were of the view that the aims of workers' participation in safety will only be achieved through honest and openhearted discussions and implementation of valid and unanimous decisions.

11.14 Rashtriya Koyla Mazdoor Union, representing the workers of CCL further informed the Committee that no Safety Committee with the workers' right from floor level to area level is in existence factually nor any meeting of any such committee is ever called by management to discuss and obtain workers views on (1) communication system (2) manpower requirement and actual deployment for safety related activities, etc. or any refresher course in this context.

11.15 Similarly, one of the Trade Unions operating in Mahanadi Coalfields Limited (MCL) expressed their views to the Committee on the participation of workers in safety related activities, as under:—

> "Though there exists many forums where workers and their representatives participate in safety management but the ground reality is that the recommendations of these forums are not complied fully due to lack of commitment on the part of management".

11.16 When asked as to how the workers are motivated for achieving best safety standards and practices and what promotional schemes the mine management have for them (workers), CIL in a written reply informed the Committee as under:—

> "CIL and its subsidiaries have been the recipient of several National Safety Awards for best performance in the field of safety. 'Annual Safety Week' is held at each subsidiary company level every year. A number of activities are organized for instilling safety consciousness and motivation amongst miners. Placards and posters depicting safety related aspects are also put up during annual safety week. Inter company competitions are also conducted annually on safety and rescue operations and the best teams are awarded shields/prizes/mementos. Such annual events also help in maintaining the safety tempo".

11.17 On the same point, Western Coalfields Limited (WCL) stated that for achieving best safety standards and practices, the following promotional schemes are being implemented:—

(a) safe workers are suitably rewarded during the safety week celebrations.

(b) Best overman's award is given every year at company level during the final day function of safety week.

(c) Safest area and safest mine are suitably rewarded at mine level.

(d) Good suggestions given by PSC members are suitably rewarded at mine level.

(e) Persons giving innovative ideas in furthering the cause of safety are given special awards.

(f) Quality circles on safety are functioning in all areas of the company.

(g) We have conducted safety conferences at area level in which participants from grass root level were solicited to give their views on safety and the effective suggestions are being implemented in the mines. These safety Conferences are attended by PSC members, Workmen's Inspectors, Safety Officers, Colliery Managers, Agents, Area General Managers, area TSC members, company level TSC members, ISO officials, DGMS officials and Directors of the company. Such conferences at group of mines level are being conducted for similar cause".

Singareni Collieries Company Limited (SCCL)/Neyveli Lignite Corporation (NLC)

11.18 The following are the systems in SCCL and NLC to motivate the workers and employees of these companies to achieve best safety standards and practices:—

SCCL

"There is a cash awarding system for best innovative suggestions towards safety. The workmen with best safety record every year are honoured along with their family during Independence Day Celebrations on 15th August by the Chairman and Managing Director of the company by giving mementos. A mine having no fatality during the year is given, a cash award of Rs. 2,000/- (or) number of employees in a mine multiplied by Rs. 5.00/- per head, whichever is more, for community function at the mine".

NLC

(a) Apart from regular motivation through Safety Week Celebration, awards are given every year during Republic Day and Independence Day by NLC to the workmen for their outstanding and safe activity as a motivation.

(b) The following safety promotional schemes are introduced to create safety awareness among the employees.

- Safety competitions are conducted in various trade/ discipline to create safety awareness among the

employees. Contract workmen during National Safety Day and Safety Week celebrations.

- Safety week celebrations are observed in NLC every year in order to promote safety.
- Safety stickers/slogans and posters are displayed in the strategic locations to inculcate safety work culture among workmen.
- Special lecture programmes are conducted to develop positive mind set and safe work attitude among workmen."

11.19 The miners and executives are required to observe Safety Rules and Regulations, while working. The practices and usages of mining operations need to be codified. When asked whether all the important mining operations have been codified, Western Coalfields Limited (WCL) in a note stated that code of practices for different mining operations have been drawn and are implemented in letter and spirit. Details of some of them are broadly given below:—

(a) Working on overburden dumps

(b) Heavy Earth Moving Machinery

(c) Traffic and dump rules, etc.

(d) Withdrawal of supports

(e) Working in shaft

(f) Roof bolting

(g) Conveyors and haulages

(h) Material loading and handling

(i) SDL and LHD operations

(j) Working on overhead lines

11.20 They further stated that it is ensured that all the employees wear necessary safety gadgets and equipments, wherever required. Surprise inspections are made by the officials for any lapse on the part of employees. Appropriate action is taken against the defaulters on the merit of the case.

11.21 In SCCL and NLC, the following is the position in respect of practices and usages:—

Singareni Colliery Company Limited (SCCL)

11.22 Code of practice has been established for all important activities both in underground and opencast mines as well as for surface work. Awareness programmes are being organized explaining the use of safety appliances. Safety instructions are being announced through public address system at the beginning of each shift. System of administering safety pledge by each workman is being followed at the beginning of the shift. Safety gadgets and equipments are worn/ used by all workmen. Regular follow up action is being taken including disciplinary action against offender like suspending them etc.

Neyveli Lignite Corporation (NLC)

(a) All the important operations have codified practices approved by Directorate General of Mines Safety (DGMS). Some of them are listed below.

- Operation of SMEs;
- Drilling and Blasting operations;
- Ground water control operations;
- Track shifting of conveyors;
- Fire fighting; and
- Transport of men and materials.

(b) The workmen observe and follow various orders instructions, etc., in both letter and spirit so far as far safety related activities are concerned. They also use/wear necessary safety gadgets. Much importance is also attached to contract workers and provision is made in the contract/agreement itself for providing safety wear such as Helmet and Shoes periodically. In case of failure, the management supplies to the contract workers, the safety gadgets, at the cost of contractors.

(c) Persons who do not adhere to safe practices are warned. In case of serious lapses disciplinary action is initiated. For minor lapses nature, employees are counselled and advised.

11.23 The Committee note that adequate provision has been made for participation of workers in the management of safety through Workmen's Inspectors, Safety Committees at Mine level, Bipartite, Tripartite Safety Review Committees, Coal India Safety Board and Standing Committee on Safety in Coal Mines etc. The meetings of these Committees are required to be held from time to time to discuss various issues concerning occupational health and safety of workmen and also to increase production of coal safely. The Committee note that the meetings of Pit Safety Committees are required to be conducted once in a month at each Mine. Further, the meetings of the Bipartite and Tripartite Safety Review Committees are to be conducted once in six months on regular basis. It has been brought to the notice of the Committee by some of the Trade Unions that the meetings of Pit Safety Committee, Bipartite and Tripartite Safety Review Committee are not conducted regularly as required and where such meetings are conducted, the recommendations of these Committees are not implemented in letter and spirit. The Committee acknowledge the role of Pit Safety Committee and Bipartite and Tripartite Safety Review Committees in ensuring safety in Coal Mines. The Committee do not approve of this action on the part of coal subsidiaries in not conducting meetings at regular intervals and also showing scant respect to the recommendations of these Committees. The Committee, therefore, recommend that regular meetings of these Committees should be conducted and their recommendations implemented in letter and spirit. At the same time, the Committee would like to be apprised of the details of meetings of Pit Safety, Bipartite and Tripartite Safety Review Committees and the extent to which the recommendations made by these Committees were accepted by each of the coal subsidiary and SCCL during the last 5 years. The reasons for delay, in conducting such meetings may also be furnished for the consideration of the Committee.

11.24 The Committee note that the institution of Workmen's Inspector has been created to promote participative management of safety in mines. The Workmen's Inspectors point out the deficiencies to the mine management and suggest remedial measures necessary to avoid the danger. The Workmen's Inspector reports about the safety status of the mine to the Manager who is responsible for production as well as safety aspects. The Committee feel that the Workmen's Inspector plays a pivotal role between the workers and the management. The Committee, therefore, desire that the services of Workmen's Inspector should be utilized adequately. The violations

pointed out by him should be given due attention and rectified without any delay by the management.

11.25 The Committee find that at present Workmen's Inspector, is appointed in a mine, wherein 500 or more miners are employed. The Committee feel that in view of heavy mechanization of mine, there is a need to revise this ceiling of 500. At times, there are many mechanized mines particularly opencast operations, where the total employment is not more than 500. Further, the Safety Committees are constituted, wherein more than 100 mines are employed. The Committee do not find any rationale/justification, in not revising the ceiling to 100. The Committee, therefore, recommend that any mine, with 100 or more miners, should appoint a Workman Inspector.

11.26 The Committee note that Workmen Inspectors have been charged with the inspection of mines from workers side. They are a link between workmen and management as far as safety is concerned. Recognizing their vital role the Government made a provision for Workmen Inspector in the year 1986 and accordingly, the Mines Rules were amended. As per statute, Workmen Inspectors are required to be appointed in all the mines and inspect all shafts, inclines, roads, workplaces and the equipments and threat including the equipment for conveyance and transport of workers. They have also been assigned the duty of informing the Manager and Inspector of any urgent and immediate danger that comes to their notice and suggest the remedial measures therefore. Workmen Inspector is also required to accompany the inspector in the course of complete inspection of mine and also during such other inspections as may be considered necessary by the inspector. It has been brought to the notice of Committee that although Workmen Inspector inspect the Mines and send his report to the Management yet DGMS is not associated in this task. The Committee also recommend that in order to inculcate a sense of belongingness in Workmen Inspectors, an award may be instituted for best Workmen Inspector at company level and at Nat.nal level. This will recognize the service rendered by Workmen Inspector and motivate him to give his best for the safety. The Committee also recommend that the Workmen Inspector should be exposed to various mining methods and fields to keep him abreast with the latest development. It is in this context, the Committee recommend that the Workmen Inspector should be trained are given extensive trainings in and out side the country for ditferent

mining methods, etc. The Committee feel that the Workmen Inspector should also give a copy of his report to the recognized union in the mine/area so that the workers are aware of the impending dangers and can take suitable steps to protect themselves.

11.27 The Committee find that as per Rule-29-T of the Mine Rules 1955, the Safety Committees are set up in a mine wherein more than 100 persons are employed. In the opinion of the Committee, the Safety Committee can play a very constructive and useful role in shaping safety performance of the mine. At times, it has been observed that the Safety Committees are functional only for a year and then disbanded. The Committee are of the view that this practice limits the effectiveness of the Safety Committees. Therefore, there is need to ensure a fixed tenure for such Committees for obtaining better results. The Committee, therefore, recommend that a tenure of 2 to 3 years may be prescribed for any duly appointed Safety Committee.

11.28 The Committee find that there is a need to have sectional/ departmental Safety Committees so as to focus precisely in a particular area of work. This is all the more necessary because of the fact that these days mining operations are being highly specialized. In a big mechanized mine, there may be areas which technically are so sophisticated that only specialized workers who are continuously engaged in such work, will have the proper understanding of the job concerned. The sectional/departmental Safety Committees can yield fruitful results for ensuring safety in work. The Committee, therefore, recommend that Sectional/Departmental Safety Committee be constituted, under Safety Committee.

11.29 The Committee feel that the effectiveness of any operation increase manifold with proper monitoring. It has been seen that at times the schemes do not yield better results due to inadequate monitoring. In order to make the institution of Safety Committee more effective, strong monitoring of its functions, activities and follow up measures will go a long way in improving the safety status of mines. The Committee, therefore, recommend that necessary mechanism for monitoring at various level should be put in place by the coal companies. The Committee further desire that to improve the safety status in various Coal companies, one of the agenda for periodical Board Meetings should be "Safety Performance Appraisal" of the company concerned.

11.30 The Committee find that a Workman Inspector is required to undergo orientation training before he is appointed for such a post. However, such a stipulation is not made applicable to the Members of the Safety Committee. The Committee are of the view that since the twin statutory institutions of Workmen Inspector and Safety Committees have ensured reasonable standards of safety in coal mines, there is a need to provide not only orientation training to Workmen Inspector and Members of the Safety Committee but also refresher training programme beside need based short term training. There is also a need to develop awareness among the coal miners about the latent force of these two institutions for their greater involvement in improving safety in mines. The Committee desire that appropriate action should be taken for training of Workmen Inspector/Members of the Safety Committee and awareness of workmen about the role of Workmen Inspector/Safety Committees.

11.31 The Committee observe that in order to motivate the workers for achieving best safety standards and practices, the management has already initiated various promotional schemes. Annual Safety Week is held at each subsidiary company level every year. Inter-company competitions are also conducted annually on safety and rescue operations and the best teams are awarded shields/ prizes/mementoes. Safe workers are suitably rewarded, best overmen's award is given, safest area and safest mine is suitably rewarded, etc. The Committee appreciate the efforts made in this direction by CIL with the result of which CIL and its subsidiaries have been the recipient of several National Safety Awards, for best performance in the field of safety. The Committee recommend that for further improving safety in coal mines, safety incentive be enhanced suitably and implemented by the management, for motivating the workers towards occupational safety and health.

11.32 The Committee observe that code of practices for different mining operations have already been laid down by the coal companies. The Committee recommend that the workmen should observe and follow various safety practices both in letter and spirit. Surprise inspections, thus should be conducted at regular intervals and erring employees be penalised.

11.33 It has been brought to the notice of the Committee that senior officials from MoC, CMDs of coal subsidiaries seldom visit

coal mines, especially under ground. As a result, they are not aware of the ground realities in coal mines. The Committee recommend that senior officials in the rank of Joint Secretary and above in the MoC should undertake surprise visit of underground mines, at least once a month and thereby keep themselves abreast with the latest mining status in the mine. Similarly, all CMDs should also conduct surprise visit of underground lines on same periodicity.

CHAPTER XII

TRAINING

Minerals and mineral products are the backbone of any economy and their exploitation is, therefore, essential for the all round development and prosperity of the nation. At the same time, it is also essential to mine these minerals safely and without loss of precious human lives.

12.2 It is an accepted fact that most of the accidents (about 85%)—are caused due to human errors. Out of this, about 35% accidents are caused either by the fault of person(s) affected by those accidents or by the fault of their co-worker(s) or by both. The rest is caused by the fault/failure of machine, management, etc. Most of these accidents occur due to the unskilled/untrained labour. Therefore, the need for imparting training and retraining to the coal mine workers and executives has been emphasized at various levels. The importance of keeping the executives and inspectors abreast with the latest developments has been well recognized by the industry. Their role being pivotal in the coal mining, they are required to be adequately trained for the proper performance of their duties.

12.3 Ministry of Coal in a brief note submitted to the Committee informed that every person working in mines is statutorily bound to undergo Mines Vocational Training before taking up employment in mines and refresher training once in every five years thereafter. The subject of vocational training and other related aspects are covered under Mines Vocational Training Rules, 1966.

12.4 Asked about training being imparted in CIL, SCCL and NLC, the Ministry of Coal in a note furnished the following information:—

Coal India Limited (CIL)

Training is imparted to workmen and some classes of supervisors are imparted training as per the Mines Vocational Training Rules (MVTR), 1966. Different types of training for different categories of workers are imparted, as prescribed in the MVTR, 1966, as per their job requirements. Basic introductory training is provided to all workers at the time of their entrance to the industry. Refresher training is also provided as per requirement of VTC rules.

To cover the safety oriented training needs of workmen working in the modern opencast mines, Training Modules for opencast and surface workers have been prepared and training is being imparted.

CIL has taken up a programme of preparation of 58 video films on CDs for imparting standardized safety oriented training to workmen, supervisors and executives through its VTCs, Central Excavation Training Institutes and other training facilities.

Workshops, seminars and conferences are being held at regular intervals to inculcate knowledge and skills. Outside agencies are also involved to impart specialized job-oriented training to the workers, supervisors and executives of the different disciplines working in the mines.

12.5 As regards training and retraining of workers and executives for safety related activities both in-house and abroad, during the last five years, the funds constraint, if any, to undertake such training and the utilization of budgeted amount for the purpose, the position prevailing in different coal PSUs is as under:—

(i) Bharat Coking Coal Limited (BCCL)

In Company Training Programmes:

Year	Executives	Supervisors	Workers	Total
1998-99	1101	1234	22097	24432
1999-00	727	1205	20946	22878
2000-01	1167	1434	19291	21812
2001-02	1180	1464	16041	18685
2002-03	1055	1339	14147	16541

External Training Programmes within India

Year	Executives	Supervisors	Workers	Total
1998-99	325	480	556	1361
1999-00	296	276	419	991
2000-01	286	246	404	936
2001-02	182	150	279	511
2002-03	60	202	211	473

Training Abroad

Year	Executives	Supervisors	Workers	Total
1998-99	5	—	—	5
1999-00	—	—	—	Nil
2000-01	—	—	—	Nil
2001-02	2	—	—	2
2002-03	1	—	—	1

Details of Finance incurred during last Five Years:

Fig. in '000

Year	Amount Budgeted	Actual Utilisation
1998-99	13219	8985
1999-00	10298	9823.694 (approx)
2000-01	11651	11045.954 (approx)
2001-02	14281	12207.760
2002-03	14847	14685.647

Chief General Manager (Safety), BCCL was sent to China during October, 2002 for participating in International Workshop on Safety.

US experts are imparting training to DGMS officials and officials of Coal Company. From BCCL, two mines have been selected. One of the mines is Nudkhurkee Open Cast Project and the other is Dobari Underground Mine. GM/CGM of concerned areas with Project Officer, Safety Officer, Engineer and Training Officer were provided training at different locations in India. Training to Project Officer and Engineer is still continuing.

(ii) Western Coalfields Limited (WCL)

Workmen and executives are being imparted training and retraining for safety. The details of training imparted for the purpose during last 5 years, in house and abroad is as under:

Training in House

Category		98-99	99-2000	2000-01	2001-02	2002-03
Workers	Initial training	808	390	381	210	308
	Refresher training	11287	10171	10121	10922	10644
	Special training	1412	1243	1539	1444	1764
	Pit Safety training	349	311	286	236	288
Supervisors	Trg. as per recommendation of 8th/9th Safety conference	328	543	774	556	557
	Workmen Inspector training	22	70	51	94	52
	Total	14206	12728	13152	13462	13616
Training	Abroad					
	Executives	1	5	1	0	9
	Supervisors	0	0	0	0	2
	Worker	0	0	0	0	2
	Total	1	5	1	0	13
Amount Budgeted & utilised						
(Rs. in lakh)		243.08	244.04	239.33	261.43	281.27

(iii) Mahanadi Coalfields Limited (MCL)

Every worker before employment is imparted with initial training in VTC and refresher training as per norms laid down in Vocational Training Rules. They are also imparted special training as per actual need. There is separate provision for training of executives also. No one has been sent abroad for training during last 5 years. There is no fund constraint to understand such training.

The training details of last 5 years have been given below:

TRAINING FOR DEPARTMENTAL WORKERS

Year	Basic Training	Refresher Training	Special Training
1998	141	3021	1958
1999	442	2641	2428
2000	322	2607	1515
2001	321	2908	1664
2002	269	2626	849
2003 (upto Sept.)	234	1700	816

Training Expenditure (Rs. in Lakhs)

Year	Expenditure
1998-1999	276.77
1999-2000	274.67
2000-2001	264.69
2001-2002	285.69
2002-2003	332.44

(iv) Eastern Coalfields Limited (ECL)

Safety related Training & Re-training is imparted to workmen, supervisory staff and executives in safety related activities.

(i) Special excluding Vocational Training:

Year	Executives	Supervisors	Workmen	Total
1998-99	1278	1446	2792	5536
1999-2000	1470	1907	2182	5459
2000-2001	833	1133	4751	6717
2001-2002	1067	1659	4226	6952
2002-2003	937	936	2087	3960

(ii) Vocational Training:

(a) Basic/Initial Training

(b) Refresher Training

Year	Basic	Refresher	Total
1998-99	1142	8529	9671
1999-2000	311	11718	12029
2000-2001	1004	9572	10576
2001-2002	202	10672	10874
2002-2003	402	7297	7699

(iii) Special & Injured Workmen's Training

Year	Special	Injured workmen Training	Total
1998-99	1037	252	1289
1999-2000	1219	109	1328
2000-2001	1655	247	1902
2001-2002	345	185	520
2002-2003	1296	68	1364

There has not been any foreign training abroad during last 5 years. There is no fund constraint for imparting such training.

The amount budgeted and actually utilised for the purpose of HRD and training for the last 5 years, year-wise is as given below:

(Amount Rs. in lakhs)

Year	Budget	Expenditure
1998-99	150.05	149.85
1999-2000	143.89	133.03
2000-2001	141.45	169.26
2001-2002	319.68	166.75
2002-2003	187.98	205.09

In addition to above expenditure budget @ Rs. 0.50 per te. of production is spent by ECL for training in IICM, Ranchi.

(v) South Eastern Coalfields Limited (SECL)

Apart from statutory training being provided to employees of SECL under Vocational Training Rules, 1966 at the time of intake and at regular interval, need based training is also imparted at area level and at Management Development Institute of SECL, Bilaspur. The details of specialised training imparted to employees of SECL in 2000-01, 2001-02 and 2002-03 are given below:

TRAINING IMPARTED TO EMPLOYEES OF SECL

	2000-01	2001-02	2002-03
Work Persons			
(i) Basic	716	537	1240
(ii) Refresher	15219	14450	8703 (Against target of 7319)
(iii) Special	1334	1732	1847
Training of Supervisory Staff	1441	957	1006
Training of Contractors workers	3979	2062	2177
Training of Roof Bolters	1103	496	154
Training of Support Personnel	733	415	49
Training of HEMM Operators	477	321	291

However, a broader classification of in-house training imparted to executives, supervisors and workers of SECL is outlined as under:

	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Executives	1310	2490	2490	3059	3017	3030
Supervisor	2791	1405	1369	1441	0957	1006
Workers	15941	16512	15083	19582	17951	14461
Total	20042	20407	18942	24082	21925	18497

There are no fund constraints to undertake the above said training.

(vi) Northern Coalfields Limited (NCL)

30 persons have been imparted training abroad for safety and operational related activities. There is no fund constraints for safety related training.

Training imparted at CETI/Singrauli as per the recommendations of 8th Safety Conference

Two Weeks' structure training for Supervisors from 1998 to 2002

Sl. No.	Year	No. of Supervisors Trained
1.	1998	707
2.	1999	411
3.	2000	518
4.	2001	536
5.	2002	575
	Total	2749

Training for Health Safety and Productivity from 1998 to 2002

Sl. No.	Year	Executives	Supervisors	Workers	Total
1.	1998	0	13	45	58
2.	1999	5	27	76	108
3.	2000	5	35	48	88
4.	2001	15	26	53	94
5.	2002	5	38	63	106
	Total	30	139	285	454

Training in HEMM from 1998 to 2002

Sl. No.	Year	Operator	Maintenance			Total
			Executives	Workers	Supervisor	
1.	1998	204	35	25	306	570
2.	1999	216	25	33	280	554
3.	2000	188	43	45	260	536
4.	2001	225	48	35	350	658
5.	2002	250	65	77	379	771
	Total	1083	216	215	1575	3089

Training for Workman Inspectors from 1998 to 2002

Sl. No.	Year	Executives	Supervisors	Workers	Total
1.	1998	0	46	5	51
2.	1999	0	55	15	70
3.	2000	0	68	28	96
4.	2001	0	48	65	118
5.	2002	0	50	85	135
	Total	0	267	198	465

Training for Pit Safety Committee Member from 1998 to 2002

Sl. No.	Year	Executives	Supervisors	Workers	Total
1.	1998	0	15	49	64
2.	1999	0	18	56	74
3.	2000	0	25	68	93
4.	2001	0	28	72	100
5.	2002	0	33	85	118
	Total	0	119	330	449

Training Imparted at Vocational Training Centres

	2001-2002	2000-2001	1999-2000
Basic	17	105	25
Refresher	1875	2235	2650
Special	1600	2100	1875
Contractor worker	1585	1351	2450
	5077	5791	7000

(vii) Central Coalfields Limited (CCL)

Training and retraining is imparted to the workmen by way of basic & refresher courses in a established Vocational Training Centre under VT Rule for improving workmenship and also at BTTI Bhurkunda, and CETI Barkakana. Supervisory official including workmen Inspectors are also imparted training at CETI, Barkakana, BTTI, Bhurkunda and MTC, Ranchi under GM (HRD) for abreastment of the latest technological advancement and familiarise with to use of sophisticated equipment. Executives are provided Training and retraining at MTC, Ranchi under GM (HRD), HCM and participation is seminar/workshop at outstations. There is no fund constraint.

Training Budget (revenue) from 1998-99 to 2002-03

(Fig. Rs. in '000)

Sl. No.	Year	Budget	Expenditure
1.	1998-99	3912	3912
2.	1999-2000	3250	3250
3.	2000-2001	2570	2570
4.	2001-2002	2495	2495
5.	2002-2003	2605	2605

NB.: These figures are for BTTI, Bhurkunda, CETI, Barkakana and MTC, Ranchi and does not include VT centre in colliery.

12.6 When asked, whether training and retraining of workmen and executives for safety related activities, both in-house and abroad is undertaken by CIL also, they informed as follows:—

"We do impart training/re-training to workmen and executives for safety related activities, through various training programmes organized by the Management Development Institutes (MDI), which has been set up at all the subsidiary companies of CIL and at Vocational Training Centers and Supervisory Training Institutes set up at subsidiary companies of CIL. We have, however, not so far imparted any Foreign Training specifically related to safety activities for our officers/workmen. There are no fund constraints for imparting training for safety-related activities".

12.7 Details, pertaining to training imparted in-house and the number of persons exposed to such training programmes during the last five years in the coal producing subsidiaries of M/s Coal India Limited (CIL) are furnished as under:—

Particulars	1998-99	1999-00	2000-01	2001-02	2002-03
Basic training on safety	4826	6385	6331	4350	4866
Refresher training on safety	50395	55130	49969	48364	42728
Special/other training for safety	19759	18707	17883	17613	13814
Total	74980	80222	74183	70327	61408

Singareni Collieries Co. Ltd. (SCCL)

There are Eight Mines Vocational Training Centres imparting initial, change of job and statutory training to 94626 employees of the company. The training centres have been equipped with staff and equipment as required.

- In addition to the above statutory training, coal cutters, timbermen/support persons are provided with special training once in two years.

- Training galleries have been provided at each mine and necessary hands on training is provided to the workmen especially to timbermen on supporting activity.
- Video-cassette has been developed on roof bolting activity to improve the workmen skills on supporting.
- 'Animation' video is being developed to impart training to workmen and supervisors in depillaring activity by caving.
- There is a Technical Training Centre at Manuguru to impart training to all the workmen of opencast mines.
- 'Bodhini' booklets have been developed for timbermen and coal cutters and copy of the booklet has been supplied to each timberman/supportman and coal cutters.
- All safety committee members are being imparted special training on safety matters through HRD.
- Workmen Inspectors have been extended special training for 6 days on safety related activities once in two years.
- Safety committee members—one week training once in two years.
- Structured training for frontline supervisors 20% every year.

12.8 Commenting upon training and retraining of workers and executives for safety related activities both in-house and abroad, the funds made available and utilized for the purpose, the SCCL in a note furnished to the Committee stated as under:—

(a) Training and Re-training of workmen—

(i) Refresher training as per MVTC Rule No. 9 to all time workers.

(ii) Structural training for Supervisors as per Recommendation No. 1.5 of 9th Conference on Safety.

(iii) Apart from the above, special training is imparted to supportmen and supervisors on special safety measures. Supportmen guide was prepared in Telugu and supplied free of cost to all Supportmen. It contains methodology, law and description of fatal accidents related to roof supports.

(iv) A Telugu copy of Coal Mines Regulations is distributed to all Mining Sirdars and Overmen free of cost.

(b) Training and Re-training of Executives

(i) In-house training was arranged for executives with special emphasis on safety by taking into account the accident pattern.

(ii) Special programmes on safety awareness for safety officers and Ventilation Officers were conducted during June 2003.

(iii) An in-house programme on 'Optimization of Mine Ventilation' was conducted by Retd. Prof. Dr. G.V. Krishna Rao during July 2003.

(c) There is no constraint of funds to undertake safety related training. Budget details pertaining to the last 5 years are furnished hereunder:—

(Rs. in crore)

Particulars	1998-99	1999-2000	2000-2001	2001-2002	2002-2003
HRD budget	3.87	4.26	5.06	5.78	6.55

12.9 During the period from 1997-1998 to 2002-2003, 86 executives and 9 non-executives attended various programmes conducted on safety in the country. There were 650 executives given in-house training. During the same period, 6 executives were trained in foreign countries on mine safety. However, none went sent from worker side to foreign country. Executives and non-executives were also sponsored to safety/health training programmes during the year 2003. In this programme, 28 executives attended various programmes. In-house 91 executives attended safety/health training programmes and the number of non-executives attending such programme were 225. During the year 2003, one executive attended training in a foreign country. Besides, HRD department also organized in-house seminars, workshops for the benefit of workers and executives on different safety related programmes.

(d) Neyveli Lignite Corporation (NLC)

"Every workmen of the mine has to undergo a periodic training after every five years as per the IV Schedule of MVTR.

Every year one-fifth (20%) of the workmen is imparted this training.

As per the provisions of Rule 12 of MVTR 1996, special categories of workmen, when any new system or machine or new practice is introduced, persons who are likely to be engaged in such system, practice or machine, are imparted special training. The revised training modules formulated by DGMS are implemented in training programme."

12.10 When asked about the position of training and retraining of workers and executives for safety related activities in NLC, they submitted as under:—

(a) In-house training

Vocational training

Year	Basic	Refresher	Induction	Special	Contract	Total
1999	285	803	—	201	1352	2641
2000	887	533	11	140	627	2198
2001	793	763	72	233	1093	2954
2002	186	1034	137	355	610	2322
2003 upto September	817	708	184	369	1284	3362

Training Complex

Special training, specific training, seminars, workshops, etc. are conducted to workers, staff and executives. Some of the programmes are conducted for the family also.

(b) Abroad training

As per the curriculum activities of Management Development Institute, Delhi, Administrative Staff College of India, Senior Executives of the company are imparted training abroad.

12.11 On the point of undertaking mock exercises/drills to assess the level of preparedness amongst workmen and executives

and the periodicity of such drills, CIL informed the Committee as under:—

"Mock rehearsals/drills of Emergency Action Plan are conducted in underground mines from time to time. Deficiencies noticed during mock rehearsals/drills from mine to mine. These are observed and corrective instructions are communicated through loud speakers at pit top at the beginning of shift, through discussions in safety Committee meetings and through subsequent display of hoardings in Hindi and local language".

12.12 During discussions with the subsidiaries of CIL, one of the companies; namely Western Coalfields Limited (WCL), on the same point of mock rehearsals/drills, informed the Committee in a written reply as under:—

"Mock exercises/drills are conducted on quarterly basis to assess the level of preparedness and also refresher practice is imparted eight times in a year to every rescue trained person. Deficiencies observed during the last five years are as under:—

(a) response time to emergency needed improvement;

(b) fire fighting preparedness is to be improved;

(c) escape route to be improved;

(d) lab functioning to improve; and

(e) for escape through smoking atmosphere, blind man sticks and smoke goggle, etc. to be provided.

The following follow-up action have been taken to overcome the above deficiencies:—

(1) Number of Rescue Centres have been increased to seven against one in 1985 to improve response time to within half an hour.

(2) (a) emergency organization drive are planned and executive jointly by safety and rescue department.

(b) help of Australian expert taken and intensive emergency simulation exercise conducted at one mine namely Silewara with their assistance and ten additional simulation exercises conducted in consultation with DGMS in various mines.

(3) Escape routes are planned and demarcated with provision of glow/fluorescents sign with marker in escape routes.

(4) Proposal is under way to provide a mobile lab for testing air samples where required.

(a) Underground Rescue Galleries constructed for improving training and for mock rehearsals, etc.

(b) Blind man sticks and goggles, etc. are being provided to escape through possible smoky atmosphere.

12.13 When the Committee asked as to what role DGMS discharge with respect to training and whether they monitor the training programmes, the Ministry informed the Committee under:—

"DGMS monitors statutory safety oriented training and training programmes in VTCs, training programme for workmen inspectors and has also conducted workshops for workmen inspectors, supervisors, ACMs in regard to use of roof bolting/stitching for underground support".

12.14 A purposeful training can deliver the meaningful results. In pursuit of it, all the basic facilities, are required to be provided at the training centres. Commenting on the training imparted, one of the Trade Unions informed the Committee that there is no proper planning for training of mine workers during the last five years as per Vocational Training Rules. Proper infrastructural facilities are not provided in the Vocational Training Centres (VTCs). Training Officer/Instructor deputed in VTCs are not interested in training.

12.15 CCL Colliery Karmchary Sangh was also not satisfied with the quality of training so imparted. In a written note submitted by them to the Committee, they stated as under:—

"All the areas, projects and also at the corporate level, there are training centres imparting training on various trades. But it is painful to say that training centre on safety, which we basically call and understand as Vocational Training Centre (VTC), are not fully equipped so as to fulfil the aspirations of the incumbents whether new or refresher".

12.16 The comments of Rashtriya Koyla Khadan Mazdoor Sangh (INTUC) were no different than the above two Trade Unions. They submitted to the Committee as under:—

"It is a regular phenomenon being carried out but fruitful results are not coming. The training module and syllabus requires updating".

12.17 One of the Trade Unions operating in Mahanadi Coalfields Limited (MCL) informed the Committee that those who have failed to achieve results in mines are posted at the VTCs as instructors to impart training to the workers. The Union desired that it should be stopped forthwith and all training centres/institutes be properly equipped with modern training aids, the instructors be properly qualified and trained to impart training. Apart from in-house training, workmen should also be trained at specialized external training centres for effective training. The Union, further informed that presently, training of contractual workers is a real eye wash and it should be taken up regularly and religiously.

12.18 The Committee note that Mines Vocational Training Rules, 1966, (MVTR) amply provide for the training and retraining of the workers and executives of coal companies. At the time of entry to the industry, the Executive and Workmen including the contractual workers, are imparted basic introductory training. Refresher training is also provided as per requirement of MVT Rules. The faculty imparting training at VTCs/Area Training Centres, are basically Area Safety Officers or Area Training Officers, who are Mine Engineers and also are trained under trainers programmes. External faculty members like experienced DGMS officers are also inducted for imparting safety oriented training to workers/supervisors/field officers. There are three categories of training that is being imparted at VTCs; namely basic training, refresher training and special/other types of training. To make the training more interesting and fruitful, facilities for audio-visual training are being provided and standardized training films are being circulated to all coal companies. The Committee are, however, sad to note that the workers and the executives are still deprived of quality training imparted in coal industry. At times there is no proper planning for training of mine workers as required under Vocational Training Rules, 1966. The Committee have been apprised that the proper infrastructural facilities do not exist in many of the Vocational Training Centres. What is more disheartening to note is that the training to contractor's labour is just an eye wash. The Committee, therefore, recommend that quality of training should be improved. Adequate infrastructure facility should be made available to Vocational Training Centres (VTCs). At the same time, the Committee recommend that training for contractual workers, need to be reoriented, so that the skill of the coal workers can be upgraded. Further, training programmes should also be drawn in a planned manner for the workmen and

executives. It should not be merely for the sake of completing formalities. The training ought to be broad based which should permit substantial exposure to mine safety practices and technology and facilitate the development of enhanced occupational health and safety standards and procedure, codes of practices, legislative standards and mine safety information systems. The Committee, therefore, recommend the deficiencies pointed out by them be rectified immediately, as to make the training programme, a meaningful and purposeful vehicle of change.

12.19 The Committee note that there does not exist a separate cadre for training in any of the coal companies. Officials from all disciplines are posted in Training Centres without any yardstick to see whether they can impart any meaningful training. The Committee, therefore, recommend that CIL should review its policy and post only trained and qualified personnel at the VTCs or other training centres run by the CIL or its subsidiaries and set up a separate/ cadre for training. It should be staffed by qualified professionals in mining and allied disciplines like electrical/mechanical engineering, occupational health, law, mine surveying and statistics. Taking into consideration that a trained manpower is hope for the future, special dispensation, monetary or otherwise, should be thought for the instructors. The Committee also recommend that the CIL should set up a Unified Vocational Training School/College for all its subsidiaries so that a standardized training can be imparted to different categories of mine personnel.

12.20 There is also a need to develop clear cut curriculum for different training being imparted at VTCs so that level of training can be raised. At the end of training some type of examination can be held so that miners take it seriously. Those who pass the examination be given increments, etc. as an encouragement. The Committee also find that VTCs are not being inspected by DGMS due to shortage of staff. The Committee do not approve this and recommend that DGMS should inspect VTCs once in a year without fail.

12.21 The Committee feel that it is important to keep abreast of current international developments in relevant specialist fields to ensure that standards, guidelines and legislation are appropriate and represent the best current practice. To achieve these goals, Committee believe that it is essential to expose the Executives and Workmen to

the new technologies, modern developments in mining practices and the application of computers and overall mine safety management systems employed in advanced mining environments. With the introduction of state-of-the-art technology and in increase in the level of mechanization in coal mining, the Committee recommend that CIL should focus training of Executives and Workmen in these fields and especially in the areas like; longwall face support; equipment testing standards and approved procedures; underground coal mine roadway support pillar extraction; new technology in hard rock mining; mine safety management systems; and environment management.

12.22 The Committee feel that with the rapid changes in the technology, the prescribed period of 5 years for undertaking training as per MVTR, 1966, needs to be re-examined. The Committee desire that the appropriate period of training ought to be 2-3 years, instead of 5 years. The Committee would like to be apprised of the action taken by Ministry of Coal in this regard.

12.23 It has been brought to the notice of the Committee by some of the Trade Unions that the Mining Sirdars, Overmen and Safety Officers who are statutorily concerned with the safety of mines, are required to be trained on the subject of geological changes/ disturbances by experts, at regular intervals. The Committee see merit, in their contention and desire that such training should be organized for them. Further, they should continue to be imparted Refresher Trainings at MVTCs.

CHAPTER XIII

OCCUPATIONAL DISEASES

Coal mining involves higher probabilities of death due to occupational hazards and disabling injury than any other trade. Today, safety includes not only protection of workers against accidents at work but also against occupational diseases. Indeed, with the growth and diversification of coal industry, the safety and health of workers goes beyond mere measures of prevention. It is equally important to improve the environment since safe and healthy working conditions are the best protection for the worker and best guarantee for increasing the production.

13.2 Safety in industrial establishment is primarily the concern of the State Governments. However, safety, welfare and health of the workers employed in mines are the concern of Government of India and in coal mines, these aspects are looked after by the management of the coal companies on behalf of the Central Government. This objective is regulated by the Mines Act, 1952 and the Rules and Regulations framed thereunder. In addition, Directorate General of Mines Safety (DGMS) is the enforcement authority. Moreover, various bodies like Standing Committee on Safety, Conferences on Safety in Mines, CIL Safety Board, Tripartite Committees at subsidiaries company level, Bipartite Committee at Area Level, Mine Level Safety Committees monitor the safety in coal mines. All suggestions/guidelines in regard to safety measures given by these bodies are supposed to be implemented by each mining company. Despite all these provisions and arrangements, the situation in respect of occupational diseases in the coal mining is very poor.

13.3 Occupational health is concerned with health in relation to work and working environment. Originally the scope of occupational health was limited to the occupational diseases or injuries attributable to the work itself. However, gradually the scope has broadened as the effect of occupational factors on non-occupational diseases and other deviation from health are understood.

13.4 As suggested by ILO/WHO Committees, occupational health should aim at promotion and maintenance of the highest degree of physical, mental and social being of the workers in all occupations, the prevention amongst workers of departures from health caused by their working conditions, the protection of workers in their employment

from risks resulting from factors adverse to health, the placing and maintenance of the workers in an occupational environment to his physiological and psychological ability and to summarise, the adaption of work to man and of each man of his job.

13.5 Dust related occupational disease is very common among Indian coal miners. Prolonged exposure to coal dust causes coal miners pneumoconiosis (CMP). It is a very unpleasant disease. The lungs loose their natural flexibility and it becomes difficult to breathe. Simple tasks like walking up stairs become impossible. It is a slow but painful death from suffocation. There is no cure of it. The only step is to remove the patient from exposure to dust in the early stages to prevent more serious damage.

13.6 Dust related lung-diseases are generally diagnosed as tuberculosis (TB) and its link with dust at work is not made. However, it is a fact that a mine worker with pneumoconiosis is much more vulnerable to T.B.

13.7 In India, effective dust control measures have not been made and are not now, as vigorous as they should be, with the result, the number of patients affected with this disease are increasing day by day.

13.8 When asked about the general diseases other than pneumoconiosis arising out of occupation in coal mining, Mahanadi Coalfields Limited (MCL), informed the Committee that Allergic Bronchitis and Low backache have commonly been seen.

13.9 In a brief note submitted to the Committee by Western Coalfields Limited (WCL), it has been stated that periodical medical examination of employees is done at regular intervals, in compliance with Mines Rules. The status of the medical examinations conducted in WCL during the last five years are as under:—

Year	Target	Actual
1999	17,727	17,773
2000	14,618	14,665
2001	10,059	14,146
2002	13,026	13,722
2003*	8,488	7,931

*The figures are upto August, 2003.

13.10 On the point of periodicity of health check-up of workmen, the Mahanadi Coalfields Limited (MCL) informed the Committee that every worker is examined once in five years. By doing Periodical Medical Examination (PME), it is possible to detect occupational diseases and other diseases at its early stages and preventive measures are taken. On the basis of PME conducted, diseases profile is prepared. Thereafter, the patients are advised for preventive measures and curative treatment. This has resulted in better quality of the life of miners.

13.11 When the Committee pointed out that the periodicity of five years for conducting Periodical Medical Examination (PME) of workers is a long period. In view of the fact that all coal companies have their own clinics/hospitals, where it can be conducted every year, Ministry of Coal informed the Committee as under:—

"Most occupational diseases take a long time for manifestation. That is why each worker is examined once in a five years to detect development of any occupational disease.

Examination every year of each worker will lead to wastage of time and money. This will not serve any additional purpose.

As per the Mines Rules, PME of 1/5th of number of persons employed in the mines has to be conducted every year which translates to a medical examination once in five years".

13.12 On the point of conducting study to identify and detect any new emerging occupational health hazards, the Ministry of Coal informed the Committee that the following diseases have been identified as occupational health hazards:—

(i) Pneumoconiosis;

(ii) Silcosis;

(iii) manganese poisoning (nervous types);

(iv) Asbestosis; and

(v) Cancer of lungs/stomach/pluora.

13.13 Apart from above, the following tests are carried out to find out if certain other diseases will fall under the category of occupational health hazards:

(i) Study on chest diseases/pneumoconisis

(ii) Study on noise induced deafness

(iii) Study on diabetest hyper tension musculo skeletal disorder etc.

(iv) Study on accident

13.14 When asked about special dispensation for OD, they further added:

"in the cases of Pneumoconiosis and Bronchial Asthma, the employee is shifted to a place having minimum dust concentration, similarly, for noise induced diseases the workmen is shifted to lesser noisy work places. For skin diseases gloves are provided where the employee is prone to such skin disease. The employees are also prescribed/provided nasal plug, ear plug. In case of Pneumoconiosis compensation is also pair to employee as per WC Act, 1923. The employee suffering from OD is properly treated in company dispensary and hospital and is also referred for outside treatment as per requirement".

13.15 Dust control measures in coal mining areas are not rigorous, dust is posing occupational safety and health threats. When asked about it, Ministry of Coal in a written reply informed the Committee as under:—

"Dust control measures as per CMR 1957 under clause 123 stipulates exhaustively the mandatory dust control measures to be taken for all mines and maximum permissible limits of dust concentration of 3 mg/cu.m has been specified for Indian mines. Organization for dust survey has been established in different subsidiary for periodical dust survey and monitoring dust concentration. Equipment have been provided like Gravimetric Dust Sampler (GDS), Personal Dust Samplers (PDS) for the purpose.

CIL does not have any proposal for making these standards any more strict as the standards are fair enough".

13.16 On a point of underground environmental monitoring, WCL informed the Committee that sufficient number of gas monitoring equipments have been provided to monitor the presence of any gas in mines. The ventilation of these mines are constantly monitored for

quick evacuation of mine gases/dust. The following gas monitoring instruments have been provided in the WCL's mines:—

(i)	Bn-22 (multi-gas monitors)	16 nos.
(ii)	Oxymeters	55 nos.
(iii)	Toximeters	65 nos.
(iv)	Co-detectors	98 nos.
(v)	Methanometers	520 nos.
(vi)	Digital Methanometers	23 nos.
(vii)	Flame safety lamps	1548 nos.
(viii)	Micro-guards (for CH4 & 02)	1548 nos.
(ix)	Continuous environmental tele-monitoring system	03 nos.

13.17 Western Coalfields Limited (WCL) further informed the Committee that regular study of dust concentration in mine atmosphere is undertaken by Gravimetric Dust Sampler and Personal Dust Samplers. There are 13 Gravimetric Dust Samplers and 92 Personal Dust Samplers available in the WCL for the purpose. Sufficient number of water tankers and water sprinkling arrangements are provided in opencast mines for control of dust.

13.18 During the course of its discussion with WCL, the Committee were informed that after the nationalization of coal mine industry in 1971 and 1973, 524 cases have been identified suffering from occupational diseases (about 17 employees per year). Persons identified for occupational disease are again subjected to scrutiny by medical board at company level and then settled accordingly.

13.19 The Committee have noted that coal miners continue to be exposed to harmful dusts and fumes. The prolonged exposure of miners to coal dust causes pneumoconiosis which has been identified as occupational disease prevalent in coal mines. Besides this, Silcosis, Manganese poisoning, Asbestosis and Cancer of lungs, stomach and pluora, have been identified as occupational health hazards. In WCL alone, 524 cases of occupational diseases have been identified, after the Nationalization of coal mine industry in 1971 and 1973. Similarly,

in other subsidiaries also, a good number of patients have contracted occupational diseases. The Committee have noted that the Periodical Medical Examination (PME) of workers is conducted at an interval of five years. The Committee are of the view that this period is too long. The Committee, therefore, desire that the matter should be re-examined in consultation with the experts/specialized hospitals in the country and the time limit should be refixed. For this purpose, the help of Ministry of Health should be taken. CIL should also undertake a survey for comprehensive study of the Occupational Diseases in collaboration with the reputed institutes like National Institute of Occupational Health, Ministry of Health, ILO, UNDP, Educational and Research Institutes in India. In the opinion of the Committee, this will help in taking preventive measures so that the workers are not affected any further.

13.20 The Committee also desire that CIL should set up a Occupational Disease Board/Authority/Council, consisting of Health Physician, Radiologist and General Physician, which can deal with the cases from all subsidiaries. Such a board should detect Occupational Disease (OD) at an early stage. The Occupational Disease Board is also needed for formulating guidelines for referral, re-evaluation, classification of cases of Occupational Disease and necessary remedial action at work place as well as rehabilitation of affected persons. The Medical Officers at each Periodical Medical Examination Center should also be trained in occupational health. The Committee also recommend that Occupational Health Surveillance-Medical and Environment be set up, for containing Occupational Disease in the coal mines.

13.21 The Committee are not satisfied with the present facilities for treating occupational diseases in hospitals run by CIL and its subsidiaries. The Committee recommend that these facilities should be augmented and hospitals which need the modern and other state-of-the-art equipments for better patient care should be identified and such items be procured in a phased manner. Adequate funds should be made available to the coal companies for the purpose.

13.22 The Committee further note that dust control measures in the coal mines are not as rigorous as they should have been. Methane gas ignition and coal dust clouds are commonly noticed in the underground mines. The Committee, therefore, recommend that Government (Central/State) at the time of giving lease of land for

coal mining, whether opencast or underground, should impose a complete ban on dry drilling. Necessary amendments may be made in Mines Rules for use of water on cutter bars of all mining machines while cutting rock or coal in the mines and on all Jackhammer drills while drilling in the mines either coal or rock. Latest gas monitoring equipment should always remain in order to constantly monitor the presence of gases.

CHAPTER XIV

BUDGETARY PROVISIONS FOR SAFETY

The safety budget in Coal India Limited (CIL) contains separate head for capital and revenue expenditures. The items/activities under both capital and revenue heads have been grouped under various subjects like ventilation, occupational safety and health, fire control and fire fighting, dust suppression, measures rescue and first-aid, personal protective equipments, safety awareness/training, internal safety organization, support, transport equipments in mines, lighting, communication, emergency equipment and water management.

14.2 The capital head contains the capital expenditure under the subjects listed above whereas the revenue head contains activities/ items like repair, maintenance, servicing, running power cost, stores re-filling cost, compensation, salaries and wages, allowances, cost of materials, sand stowing, dewatering, conducting safety audit, etc., There exists separate budget for safety in ECL, MCL, NCL, SECL, unlike BCCL where safety budget is provided from company's overall capital and revenue budget for items covered in the safety.

14.3 When asked as to whether it is not possible to have a separate Safety Head of Account for all the subsidiaries, CIL in a written reply informed:

"Almost all mining related activities have a safety component. The Budget for each company has heads for items like materials, power salary and wages etc. These very items are also covered in the Safety Budget for safety related items. Thus having a separate head for safety would mean duplication of items and budgeted amounts, etc.

It is fact that there is no Uniform Accounting Heads in the subsidiaries of Coal India Ltd. For this CIL is formulating a Uniform Accounting Code. The said Uniform Accounting Code will take care of the head of accounts for safety in all the subsidiaries. It will be implemented in all subsidiaries within a year".

14.4 As regards budgetary provisions for safety in coal mines, Coal India Limited (CIL) has stated that in order to draw a safety budget, a detailed exercise is carried out to identify and codify the safety component of items to feature in the safety budget. This is necessary as almost all items of operational expenditure have an associated safety component.

14.5 The safety budget is drawn up based on the requirements of the Annual Operation Plan and is finalized when Annual Plans of subsidiary companies have been drawn up.

14.6 Coal India Limited (CIL), in a written reply furnished the details of budgetary allocation for safety related activities and its utilization for different safety activities during the years 2000-2001, 2001-2002 and 2002-2003 as under:

(Rs. in lakh)

Year	Safety		Rescue	
	Budget	Expenditure	Budget	Expenditure
2000-2001	35,342.46	29,220.19	1,756.76	1,388.76
2001-2002	46,260.17	44,987.24	1,752.36	1,834.65
2002-2003	46,791.62	41,295.64	2,463.98	2,007.53

14.7 The budgetary allocation made by NCL, WCL, BCCL and CCL and its utilization are as under:

Budget and expenditure for safety in NCL.

(Rs. in crores)

Year	Budget		Expenditure	
	Capital	Revenue	Capital	Revenue
2000-2001	1.31	3.32	0.31	3.27
2001-2002	2.40	2.50	0.80	2.50
2002-2003	1.72	4.30	1.72	4.30

Budget and expenditure for safety in WCL

(Rs. in crores)

2000-2001		2001-2002		2002-2003	
Budget allocation	Utilization	Budget allocation	Utilization	Budget allocation	Utilization
51.00	46.13	45.51	43.18	70.44	53.20

Budget and expenditure for safety and rescue in BCCL

(Rs. in lakhs)

Year	Safety				Rescue			
	Budget		Expenditure		Budget		Expenditure	
	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue
2000-01	943	12549	592	10700	1.36	204.55	1.22	268.50
2001-02	1243	17301	715	17211	40.75	318.78	32.40	335.97
2002-03	1499	14494	1058	11120	254.91	356.57	150.47	350.25

Budget and expenditure for safety and rescue in CCL

(Rs. in lakhs)

Year	Safety		Rescue	
	Budget	Expenditure	Budget	Expenditure
2000-2001	934.00	825.00	185.01	190.80
2001-2002	1140.3	1061.00	232.71	225.43
2002-2003	1200.12	1168.00	287.81	279.26

14.8 When asked about the percentage of budget normally expended on the safety related activities, the CIL furnished the following figures:

Year	Total budget (Rs. crs)	Budget on Safety (Rs. crs)	%age of safety on total	Total expenditure (Rs. crs)	Expenditure on safety (Rs. crs)	%age of safety on total
			Capital			
2000-01	1767.00	53.04	3%	1059.32	30.72	2.90%
2001-02	1540.00	69.02	4.48%	1146.69	40.21	3.51%
2002-03	1700.00	76.98	4.53%	1192.18	41.29	3.46%
			Revenue			
2000-01	14685.03	317.96	2.17%	15317.63	275.38	1.80%
2001-02	15484.61	411.11	2.65%	15955.58	428.00	2.68%
2002-03	16820.42	415.57	2.47%	16616.48	391.74	2.36%

14.9 The following table shows the percentage of safety expenditure of the total budget allocation of each subsidiary of CIL during the last three years:

Name of the subsidiary	2000-2001		2001-2002		2002-2003	
	Capital	Revenue	Capital	Revenue	Capital	Revenue
NCL*	2.4	—	2.4	—	2.4	—
SECL	5.85	2.03	5.70	2.47	5.47	2.35
BCCL	4.2	4.7	4.8	6.6	6.00	4.4
ECL*	1.83	—	3.17	—	3.05	—
MCL*	1.07	—	1.19	—	1.39	—
WCL*	3.77	—	3.71	—	4.02	—

*include both capital and revenue budget.

14.10 So far as adequacy of budget/finances for safety related activities or otherwise is concerned, the Committee has been apprised by CIL as under:

"There is no constraint of funds regarding safety in operations. Budgetary allocation for safety is made on the basis of Annual Operation Plans prepared for each mine, area and company. The requirement for safety is assessed at mine level, area level and company level and finalized. Thereafter the finalized requirement is allocated funds in the safety budget."

14.11 It has further been informed that utilization of the capital budget has suffered due to various reasons as given below:

(a) "Many of the equipment to be purchased are not available indigenously and global tenders have to be floated. Many of these equipment are required to have DGMS approval before they can be used in mines. This is a time taking exercise. Sometimes DGMS issues provisional approval. However, sometimes before the order can be executed, the DGMS approval lapses and the approval has to be taken afresh.

(b) Non-supply of the ordered equipment within the financial year."

14.12 The Committee are constrained to note that during the year 2000-01, the budget allocation for safety and rescue activities was Rs. 53.4 crore whereas the expenditure was Rs. 30.72 crore. Similarly, during the couple of the last years i.e. 2001-02 and 2002-03, the allocation for the same activities was Rs. 69.02 crore and Rs. 79.68 crore respectively whereas the corresponding expenditure was Rs. 40.21 crore and Rs. 41.29 crore. Likewise, CIL's subsidiaries namely; NLC, WCL, BCCL, and CCL have also failed to fully utilize the capital budget allocation during the aforesaid period. It is pertinent to mention here that although the percentage of safety budget in the Capital Head of total budget allocation during the above mentioned three years has been 3.00, 4.48 and 4.53 respectively, yet CIL has been unable to expend it. As a result, CIL and its subsidiaries are unable to procure many of the safety related equipments and machineries, inspite of the fact that these are required for safe working, simply due to under utilization of safety budget. The reasons advanced by CIL for under utilization of safety budget i.e. non-availability of indigenous equipment, cumbersome DGMS approval procedure, non-supply of the equipment in time, are not acceptable to the Committee in view of the fact that such rigmaroles can easily be overcome with simplification of the approval

procedure and timely placement of orders. The Committee, therefore, impress upon the Ministry and CIL to take measures for full utilization of budget by the management so that the very purpose of safety budget is not defeated. The Committee would like to be apprised of the action taken in this regard.

14.13 The Committee found that in ECL, MCL, NCL and SECL, there is separate Head of Account for Safety whereas in BCCL and SECL, it does not exist. The Committee also observe that due to non-provision of separate budget provision in some of subsidiaries of CIL, safety related equipment are not supplied on time which is a matter of regret. However, the Committee is happy to note that of late, CIL is formulating a Uniform Accounting Code for this year, which will take care of the head of account for safety in all the subsidiaries. The Committee hope that it will be implemented in all subsidiaries within a year without fail as assured by CIL.

14.14 The Committee note that all aspects of mining operations have a safety component. Coal India Limited had undertaken a detailed exercise under which they have identified and codified the safety components of a item to be featured in Safety Budget. The Committee note that Safety Budget plan in CIL is drawn up based on the requirement of the Annual Operation Plan and finalized when Annual Plans of subsidiary companies have been drawn up. The Committee have further found that almost all the subsidiaries of Coal India Limited have separate Budget for Safety related activities. However, there is no uniformity over booking of expenditure under this head. The Committee are of the view that when Safety Component have been separated and codified in CIL, there is a need to have uniformity in this regard in various Coal PSUs. The Committee, therefore, recommend Coal India Limited should impress upon their subsidiaries to adhere to the codified Safety Component featuring in a Safety Budget. The Committee further find that there is no separate Safety Head in SCCL and NLC. It has been brought to the notice of the Committee that SCCL do not operate separate Head for safety on the grounds that the requirement of safety related items are being procured/obtained on priority basis. On the other hand, NLC have informed that as all the major equipments have in-built safety devices/mechanism and the cost thereon form part of the equipment, separate head for safety had not been earmarked. NLC has further informed the Committee that operation and maintenance form part of the overall revenue expenses of the

company. The Committee do not concur with the views of NLC and SCCL in regard to not having separate Safety Budget. The Committee, therefore, recommend that NLC and SCCL should undertake an extensive exercise in order to identify and codify the Safety Component of an item which can be featured in Safety Budget and have a separate budget for the purpose.

NEW DELHI;
February 3, 2004
Magha 14, 1925 *(Saka)*

SONTOSH MOHAN DEV,
Chairman,
Standing Committee on Energy.

STATEMENT OF CONCLUSIONS/RECOMMENDATIONS CONTAINED IN THE REPORT

Sl.No.	Reference/ Para No. of the Report	Observation/Recommendation
1	2	3
1.	2.20	The Committee note that the principal responsibility for the safety of coal mine workers and all those who are directly engaged in the mining rests entirely with the management of that mine. The Committee have noted that safety system in coal mines is regularly monitored through intensive and quality inspection by DGMS, Internal Safety Organisation (ISO) of Coal India and its subsidiaries and line management of coal companies. ISO not only undertakes inspections for monitoring safety status of the mines but also recommends precautionary measures to be taken to avoid dangers to the line management. Apart from these, there are also safety forum both statutory and non-statutory to monitor safety in coal mines. The Committee is unhappy to note that in spite of having a large contingent of managers and other supporting staff in each subsidiary of Coal India Ltd., no positive changes in the safety scenario are visible. The Committee note that one of the functions of the management is to ensure that mining is undertaken as per safety norms and compliance of various provisions of the Mines Act, 1952, Rules, Regulations and Orders made thereunder. The Committee have also been apprised

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		that while conducting inspection of coal mines, the major deficiencies found by DGMS are; non-maintenance of statutory records, non-maintenance of mine plans, non-compliance of systematic support rules, non-provision of dust suppression and coal dust treatment arrangement, non-provision of adequate ventilation arrangement, non-maintenance of Heavy Earth Moving Machine (HEMM) in opencast mines, high benches in opencast mines and not adhering to prescribed method of work. The Committee have taken note of the deficiencies pointed out by DGMS and are not satisfied with the status of compliance of the statutes by the management. So much so that even mine plans are not being maintained, as per the Statutes. The Committee is equally concerned to note that adequate provision does not exist for ventilation and dust suppression. The deficiencies observed by DGMS clearly shows callousness on the part of the coal management in not adhering to the prescribed Rules and Regulations framed under various statutes. The Committee, therefore, recommend that Government should overhaul the safety environment in coal mines. A Study Group/Committee can also be constituted for the purpose, if need be.
2.	2.21	The Committee also find that whenever there is a lapse in respect of safety, the worker(s) and at the most, mine level officials are invariably held responsible for the same and the top management left scot-free. In the opinion of the

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		Committee, the top management is equally responsible for such incidents. The Committee, therefore, strongly recommend that top executives of coal companies, who are solely responsible for formulation and implementation of safety policy, should also be held accountable for failure to ensure safety in coal mines. Such an action will undoubtedly improve the safety environment in the mines.
3.	2.22	The Committee also suggest that the role of ISO, Safety Committees and Workmen's Inspector should be activated and modern management practices like safety management plan for occupational safety and health should be prepared with the risk assessment study and implemented.
4.	2.23	The Committee also observe that although safety audit is required to be conducted once in two years, yet there is no uniformity in undertaking the safety audits by the subsidiaries of CIL and other coal companies. The Committee find that the periodicity for conducting safety audit varies from one month to three years in coal subsidiaries. The Committee, therefore, recommend that CIL should review their orders and frame guidelines for conducting regular safety audit at uniform interval of time.
5.	2.24	The Committee feel that the Coal India Limited should explore the possibility of creating a separate Directorate for conducting Safety Audit in all the subsidiaries and a separate cadre of

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		trained personnel should man such a Directorate. It can then directly report to the Chairman, Coal India Limited.
6.	2.25	The Committee note that supervisory staff, surveyors, overman, mining sirdars, etc. play very vital role in ensuring safety at the mine level and advises the management on all these aspects. The Committee are perturbed to note that on the one hand, there is an acute shortage of these staff in some of the coal subsidiaries, who are crucial for enforcing safety in coal mines and on the other hand, there are surpluses. The Committee, therefore, recommend that pending the creation of a separate Directorate, need based adequate safety staff be provided and shortages be met either by conducting open examinations or through inter-company and intra-company transfers etc.
7.	3.28	Roof and side fall accidents still continue to be a major cause of fatality in underground coal mines inspite of introduction of steel supports in such workings. The Committee note that roof/ side falls account for 35% of all the fatal accidents in underground coal mines of CIL. In SCCL, the rate of fatalities due to roof and side falls is alarming. During the last five years from 1998 to 2002, about 51% fatalities in SCCL occurred due to roof and side falls. The Committee feel that deficiencies in most of the accidents were avoidable. The Committee note that various circulars have been issued by DGMS to prevent roof/side fall from time

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		to time. However, they are not being complied with all the seriousness which they deserve. The Committee, therefore, strongly recommend that management of the coal companies should ensure that the guidelines issued by DGMS in this regard are followed in letter and spirit.
8.	3.29	It has been brought to the notice of the Committee that roof bolting, roof stitching, triangular/square chalk, high set and steel props, are not made available and where available, are not of desired standards. Jacks of high set props run out of order frequently. The Committee desire that these should be enquired into and appropriate corrective action taken in the matter.
9.	3.30	The Committee further observe that vibration produced due to blasting disturbs the existing geo-mining conditions. The freshly exposed roof/ green roof is most prone to the fall of roof/side. Handling of explosives/ blasting is done is underground mines as per the provision of the regulation as laid down in Coal Mines Regulations, 1957 and Indian Explosive Act/Rules. As such every care should be taken to ensure that these are duly followed with all seriousness. The Supervisory staff should be made accountable for every lapse in following DGMS guidelines. Serious action may be taken against such officials for repetitions.
10.	3.31	The Committee are glad to know that induced blasting is in vogue in some

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		mines of CIL. Adequate precautions are being taken including suspension of work till falling of stone parting, where induced blasting method is being practiced to regularize the fall overlying hard strata in case of depillaring with caving.
11.	3.32	The Committee observe that the mixture of some inflammable gases, mainly methane along with some other hydrocarbons can explode with disastrous consequences and result in loss of lives and considerable damage to the mine. Mine coal dust has also been responsible for explosions in the coal mines. The coal dust clouds have also been responsible for low visibility in the coal mines. The Committee, therefore, recommend that to flush out the gases from the underground coal mines, sufficient ventilation facilities with high capacity exhaust fans should be provided in each and every mine. To monitor the presence and nature of the gases in the mines, multi gas detectors and also computerized gas/environmental monitoring system should be established especially in highly gassy mines.
12.	3.33	The Committee further observe that the highly gassy mines are identified through a statistical exercise based on the accident statistics for the previous five years of each and every mine. The Committee feel that identification, merely based on the statistics, is a very primitive method to identify such mines. There is a need to develop some machines/equipments for continuous monitoring of degree-III gassy mines and those having active

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		underground fire in a phased manner. At the same time, the Committee recommend that necessary facilities for monitoring the environmental parameters in respect of Methane and Carbon Monoxide should be provided at mines. The Committee note that to make the underground environment more eco-friendly, CIL has taken up a programme to drain out methane (CH_4) from a few working mines under the programme called CMM (Coal Mine Methane) and CBM (Coal Bed Methane). The Committee recommend that coal bed methane should be extracted and commercialized in collaboration with Gas Authority of India Limited (GAIL) and other experts/group/firms. Sufficient funds may also be provided for this purpose.
13.	3.34	The Committee note that the coal companies at times, do not pay attention to the protection of the environment, as it deserves. It has been brought to the notice of the Committee that many of the opencast mines, leave the land degraded after completion of the mining operations. Also Trucks/Dumpers loaded with coal pass through residential areas, causing dusty conditions. In this context, the Committee desire that filling up of opencast excavation and reclamation of the degraded land should be made mandatory under the law. The Trucks/ Dumpers after loading coal should be suitably covered so as to avoid dust being raised in the environment. At the same time, the Committee desire that adequate arrangements and infrastructural facilities

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		be made available to carry out dust surveys in the mines and corrective action taken thereon.
14.	3.35	The Committee observe that one of the major hazards associated with the coal mining is inundation from underground water bodies and/or from surface water. Most of the mines are old. They are filled with water due to which it is dangerous to work in the underground seams or adjacent mines. Moreover, mines are provided old maps which are not reliable. The Committee are of the view that to avoid accidents due to inundation whether major or minor, proper planning of the mines is the best solution. The Committee, therefore, desire that updated mine plans should be prepared and maintained and mining should be carried out strictly as per plan. Correlation of survey, periodical check survey, boring/ drilling to connect with exact location, etc. should be carried out frequently. It has been brought to the notice of the Committee that if holes are made at regular intervals for proving partition, then the extent of water can be known. The water can then be removed, before faster working. The Committee feel that in order to minimize the accidents on account of inundation latest geo-physical methods of proving barriers/partings developed and tested by CMRI, Dhanbad and NIRM, KGF should be made use of in the coal mine areas susceptible for inundations.
15.	3.36	The Committee note that mine fires are a serious and widespread problem and

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		result in loss of coal reserves and add to the cost of production. It is estimated that in Jharia Coalfields alone, about 1864 million tonnes of coal might have been blocked and about 37 million tonnes of coal might have been damaged due to these fires. The measures for controlling coal mine fires, in case of Jharia coalfields include bull dozing, levelling and covering with soil to prevent the entry of oxygen and to stabilize the land for vegetation. Efforts made so far in this regard could only prevent the spreading of fires but their complete extinction in most of the cases was not possible. The Committee are of the view that the problem of fire and subsidence control especially in the Raniganj and Jharia coalfields should be treated as a "National Problem" and adequate funds be allocated by the Government to tackle this problem.
16.	3.37	The Committee feel that very little has been done to tackle serious economic and environmental problems arising out of the coal fires. Today coal fires are mainly under control in developed countries, but effective techniques for fire fighting are missing in newly industrializing countries. It has been brought to the notice of the Committee that a US Mining Engineer had invented high tech means of putting out coal fires. Under this technique, the heat resistant grout, a mixture of sand, cement, water and foam is pumped around the burning coal and shut off its oxygen supply. This has been used to quench 25 fires in the western US. The

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		Committee desire that the Ministry of Coal/CIL should evaluate this technology to access its effectiveness. If found suitable in terms of cost and effectiveness, it should be replicated for use in our country in phased manner in order to save further damage to the valuable coal reserves.
17.	3.38	The Committee have recognised the urgent need for making the emergency plan responsive, speedy and effective in each mines. The Committee, therefore, recommend that each mine should review the existing emergency plan at higher level keeping in view the risk from fire. There is also a need of stablishing rescue rooms in coal mines having risk of fire where more than 350 persons have been employed in a shift in underground mine. The feasibility of storing oxygen type of rescuer at strategic places in underground mine with the risk of fire in an emergency situation should also be explored. The coal companies should also formulate and implement structured training programmes for the miners, officials and management to develop awareness and increasing effectiveness of emergency response in case of fire.
18.	3.39	The Committee note that like any industry, the use of machines cause many accidents in mines. In opencast mining, accidents associated with Heavy Earth Moving Machines (HEMM) and trucks, are on the rise. The Committee feel that accidents on account of vehicular traffic of men and machines are purely due to

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		gross negligence. The Committee desire that coal companies should take preventive measures such as separate lane properly fenced off from haul roads for pedestrians and vehicular traffic, banning of plying of trucks and other heavy vehicles in the mine premises without valid passes issued by competent authority, checking of road worthiness of vehicles, observance of traffic rules and regulations meticulously. The Committee find that in underground mines incidents of men being trapped in fly wheels and by moving parts on cornish pumps are common. As inclines and underground haulages are developed, men are run over, crushed and entangled. The Committee find that the major earth moving machines and transport equipments through meet the requisite standards, at the time of their procurement/installation but degrade due to lack of proper maintenance, during their use. The Committee, therefore, recommend that Heavy Earth Moving Machines (HEMM) should be used only when they are in perfect working condition. Only trained persons should be allowed to operate such machines.
19.	3.40	The Committee, further note that a potential hazard also exists on roof bolting machines with machine controls that are not protected against unintentional activation. The Committee recommend that to prevent accidents due to roof bolting machines, the Automated Temporary Roof Support (ATRS) and other machine controls should be

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		protected from accidental activation that may result in the machine or machine component coming in contact with the operator.
20.	4.12	The Committee have observed that there exists an elaborate system for preparation and updating of mine maps and plans. Detailed directions have been given in this regard in the Coal Mines Regulations, 1957. Besides, DGMS issues circulars from time to time for preparing and updating the mine maps for working under some specific conditions. The Committee have been apprised that modern surveying instruments are being introduced for acquiring survey data and for preparing Mine models with the help of information technology. Further, Mines Act, 1952 empowers the DGMS to examine and take possession of any plan, section, register, other records, etc. If the DGMS or Chief Inspector of Mines or Inspector feels that the plan/map is inaccurate, he is empowered to get the plan or section prepared correctly by any other agency. The Committee are perturbed to note that despite all these initiatives, the ground reality has not changed. At times, the maps and plans are prepared using unscientific and unreliable old methods. Moreover, where such maps and plans are prepared, their updation, as required under Coal Mines Regulations, is not undertaken regularly. The Committee take a serious view of this. The Committee are of the opinion that accurate and scientific survey of mine maps are pre-requisite for mining coal safely.

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		Unscientific and wrong mapping can lead to disasters. Bagdigi tragedy is a glaring example in this regard. The committee, therefore, desire that mine maps and plans should be prepared scientifically and updated as required under the statute using modern techniques like satellite imageries, global positioning system, etc. and also with the help of trained manpower/surveyors to ensure the correctness of such maps and plans. At the same time, check and recheck survey be undertaken to ensure correctness of maps and plans. The Committee also desire that Government should fix personal responsibilities of top management in the event of failure to ensure correctness of maps and their updation. The Committee are of the view that until and unless the plans are approved by DGMS, no mining activities should be carried out.
21.	4.13	The Committee find that in order to ensure correctness of maps, digitization of maps has been taken up, recently, as a part of new plan scheme. The Committee welcome this and recommend that all the mine maps and plans be digitalized in a phased manner, during the 10th Plan itself. The Committee also recommend that adequate funds be made available for the purpose.
22.	4.14	The Committee express its concern over the fact that updated maps are not displayed at the prominent places and also are not made available to the supervisors, inspectors, mine sirdars and

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		trade unions on the plea that mining safety statutes, as embodied in the Mines Act, 1952 and the Coal Mines Regulations, 1957 framed thereunder, do not specifically provide for display of mining maps at prominent places. The Committee recommend that updated maps should be displayed at the prominent places and given to representatives of Trade Unions as a number of Trade Unions working in various subsidiaries have desired the same before this Committee. If need be, the amendment of Mines Act, 1952 may be carried out for the purpose.
23.	5.20	The Committee note that basically DGMS was started as the Bureau of Mines Inspections in 1902 to take care of safety in mining activities. However, over the period, a large number of other functions have been assigned to the Directorate General of Mines Safety (DGMS). This coupled with perennial shortage of staff has affected, DGMS capacity to oversee the safety standards in various mines and especially in coal mines where the material is always combustible. Even various functions assigned to DGMS may adversely affect its capacity to oversee safety in mines. For example, one of the functions of DGMS is to grant statutory permissions and exemptions under the Mines Act, 1952 and review project reports and mining plans. It later on, a mishap occurs in a mine where no mining should have been allowed in the first place, it is doubtful whether DGMS would ever accept this fact while investigating the case of accident in such

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		a mine. In most of the cases, it has been noted that the blame is put on the persons who lost their lives in an accident and the case is closed. Rarely, action is taken against senior persons in management. The Committee feel that there is a need to review the working of DGMS and examine as to which of the functions should be entrusted to them and which can be better handled by some other organization. For example, whether holding of examinations for grant of statutory certificates can be transferred to UPSC or any other organization like Indian School of Mines, etc., can also be considered. DGMS is also responsible for development of safety equipment, material and safe work practices, etc. However, as it is under the control of Ministry of Labour it can hardly be expected to get any support and guidance in these matters from Ministry of Labour. The Committee desire that DGMS should be put under Ministry of Science and Technology and also closely associated with the Council of Scientific and Industrial Research as it is one of the Science and Technology Organisation and de-linked from the Ministry of Labour. The shortage of manpower in DGMS, has affected the periodicity of conducting inspection of mines. In this context, the Committee recommend that cadre review of DGMS be undertaken immediately and need based manpower provided to them. The Committee also desire that an Authority should be established which can hear the appeals against the decisions taken by the DGMS.

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24.	5.21	The Committee find that DGMS does not part with copy of enquiry report conducted by them in the aftermath of the fatal coal mine accidents either to Trade Unions or its representative/ Members of Tripartite Safety Review Committee. In fact, the Report of the DGMS is never made public. On the other hand, the ISO enquiry report is made available to the management and/ or Trade Unions and is discussed in the Tripartite Safety Committee. The Committee are of the view that when Reports of Enquiry Committee constituted in the aftermath of Rail/Air accidents, etc. are made public, there is no justification or rationale, whatsoever, in withholding the DGMS Enquiry Committee Reports from public. The Committee, therefore, recommend that inquiry reports of DGMS should be made public and copies thereof should be made available to concerned Trade Unions.
25.	5.22	The Committee find that one of the institutions to strengthen safety apparatus in the mining industry is in organizing mine conferences from time to time. The aim of these conferences are to review and implement safety in mines in a spirit of mutual cooperation and trust. At these conferences, problem of Mine Owners, Managers, Supervisors, Workmen, Ministry of Labour, DGMS and other Government agencies, Educational and Research Institutions, Professional bodies are addressed with a view to enhance the status of safety in mines. The Committee note that first conference was held in the

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		year 1958, 2nd in 1966, 3rd in 1973, 4th in 1978, 5th in 1980, 6th in 1986, 7th in 1998, 8th in 1999 and 9th, which is the last, in the year 2000. The Committee further find that these mine safety conferences have made far reaching contribution for promoting safety of mines by suggesting useful measures to improve the standard of health and safety in mines. Many of the recommendations have been incorporated in the legislation as well. The Committee find that the periodicity of organizing this conference is not regular. The Committee recommend that a period of 3 to 4 years is desirable for conducting such a conference. The Committee, therefore, recommend that a fixed periodicity be assigned for holding this conference.
26.	5.23	The Committee find that in the event of a mine accident, there is a tendency of multiple disciplinary action simultaneously emanating from different authorities like ISO/DGMS and local police. The Committee are of the view that there is a need to curb disciplinary action by multiple agencies and only one authority should be authorized for taking action, as in the case of the Railways. Further, multiple outside interventions affects timely rescue operations and cause demoralization to the workers and officers. The Committee note that in case of Railway, enquiry after accident is conducted by a single agency *i.e.*, Commissioner of Railways, where officers are on deputation from Railway. The police or other authorities do not come

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		into picture, except in case of sabotage. It is in this context, the Committee recommend that DGMS, which is empowered by the Mines Act, 1952, to fix responsibility and prosecute person held responsible in a Court of Law for awarding punishment, should be the sole authority for fixing responsibility of awarding punishment in case of mine accidents. This is all the more important as a person appointed by the Central Government to hold Court of Enquiry has all the powers of Civil Court (Section 24 of the Mines Act, 1952). The Committee also recommend that Mines Act, 1952 be amended, if need be for ensuring protection to a miner in this regard.
27.	5.24	The Committee note that at present the Directorate General Mines Safety's role is limited to investigations into fatal mine accidents only. Serious accidents are not being enquired into by DGMS. The Committee desire that DGMS should not only investigate the fatal accidents but also serious ones. They should then analyse them in detail and issue guidelines and develop appropriate legislation to keep pace with time.
28.	5.25	The Committee find that the present Mines Act was enacted in the year 1952 for regulating the working conditions in mines by providing for measures to be taken for the safety of the workers employed therein and to provide certain amenities to them. The Mines Rules, 1955, Mines Vocational Training Rules, 1966 and Coal Mines Regulation were framed

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		under the Act. The Committee further find that the Coal Mines Regulations primarily deal with the underground mining only. At present, there is no regulations for opencast mining and regulations for underground mining are made applicable to them. Taking into consideration that more than 75% of coal is extracted from the opencast mines, there is a need for separate Regulations for opencast mines also. At the same time, the Committee are of the view that there is a need for change in the Mines Act, 1952. Similarly, the Rules/Regulations have not kept pace with the development taking place in the coal mining sector. Thus there is also a need to examine these Rules/Regulations/Orders afresh. The Committee, therefore, desire that Government should review the Mines Act, 1952 and the Rules/Regulations/ Orders made thereunder in the light of latest developments taking place in the mining sector and amend the relevant Act, Rules, Regulations, etc.
29.	6.14	The Committee note that miners are required to wear equipments which help them to be safe, whether they work in an opencast or an underground mine. The surface miners wear hard hats, steel toed boots and safety glasses. Underground miners are equipped with self rescuers which allow them to breath in the event of a mine fire. Underground miners also carry gas detectors which is used to measure gases in the air. Surface miners are also required to use hearing protection when working in high noise areas. The

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		Committee are of the opinion that the equipments, machineries, tools and materials used in mines need to be safe, robust, reliable and capable of working safety under hostile environment.
30.	6.15	The Committee note that although sufficient arrangements are there to procure and use latest equipments such as audio-visual alarms in dumpers and tippers to give alarm while reversing, manuals/automatic fire suppression systems in heavy earth moving machinery, emergency steering used in case of engine failure, parking and emergency brakes for preventing accidents, safety belt, etc., yet the number of accidents due to fall of machines, fall of persons from machines and failure of machines are on the increase. The Committee feel that major machines and equipments used by the various subsidiaries of CIL do meet requisite standards at the time of commissioning, but due to lack of proper service and maintenance, their standards degrade. Further, at times, sub-standard spares are used to repair the equipments. The Committee, therefore, recommend that while placing the orders for supply of equipments especially those which are to be imported, a clause may be entered into the agreement, for supply of spares by the same manufacturer for a minimum period of five years so as to ensure the requisite quality of spares and their availability at all the times. The management of coal companies should also ensure that Annual Maintenance

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		Contracts (AMCs) in respect of all the machines, whether imported or indigenous, be entered into with the manufacturer or its authorized distributor for rendering timely service for the smooth the fault-free functioning of the equipments.
31.	6.16	The Committee is unhappy to note that sometimes inordinate delay takes place while procuring the equipments. The reasons furnished for such delay are (i) non-supply of the ordered equipments within the financial year; (ii) floating of global tenders for the equipment required to be imported; and (iii) late approval of DGMS to procure these equipments. The Committee are not convinced with the reasonings adduced by the Government. The Committee, therefore, recommend that the management should streamline and simplify the procurement process in such a way so that the delivery of equipment/machineries is not delayed by the manufacturer so much that DGMS approval expire.
32.	6.17	The Committee find that many of the activities have been outsourced. For instance, over burden removal, coal/sand transportation activities are outsourced by hiring of equipment. The Committee desire that for any lapse in safety of the persons deployed by the agencies engaged for hiring of equipments, a suitable penal provision against such agencies should be provided in the agreement.

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33.	6.18	The Committee are also not satisfied with the standard/quality of machines/ equipments used by contractors. They are not upto the mark and lack safety devices. The Committee, therefore, recommend that a panel at CIL level may be established to study/review afresh the norms for the safety requirements to hire equipments and machines and deployment of contractor labour in coal mining activities. This will avoid procurement of sub-standard quality of machines and safety equipments by contractors.
34.	6.19	Whereas it is mandatory to wear helmet in coal mines whether opencast or underground, it has been observed that in many of the coal fields, miners do not use the protective gadgets and other equipments during duty. The Committee take serious view of it and desire that nobody should be allowed to enter into mining areas without having protective wears such as helmet, safety shoes, safety belt, dust mask (wherever necessary), etc. Failure to use such safety items should be dealt with serevely.
35.	6.20	The Committee is glad to know that the equipments procured/used have DGMS approval and conform to European/US standards. The Committee hope and trust that the present standard would not fall below the international safety norms. It has been brought to the notice of the Committee that of late poor quality gumboots/shoes and helmets are being supplied to the miners. These are

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		uncomfortable to wear. The wear and tear of the equipments is also very high. The Committee desire that coal companies should review the procurement of there items. The Committee are of the view that lowest price should not always be the criteria for procurement of safety wears. Appropriate quality/standards have to be ensured for the purpose.
36.	6.21	The Committee find that the quality of equipments and machinery supplied in coal subsidiaries do not conform to the desired standards. In this context, the Committee recommend that the coal companies should set up quality control cells, identify critical items which require testing for quality assurance at the time of procurement and during use and arrange testing of the same. Testing facilities should be set up wherever, it is techno-economically feasible.
37.	7.22	The Committee have taken note of the State-of-the-Art Technology being used in Coal Sector. These include scientific support system in underground mines based on Rock Mass Rating (RMR) studies, roof bolting/roof stitching, introduction of modern drills like Universal Drilling Machine (UDM), reduced exposure of workers to mining hazards by use of SDLs, & LHDs, Power Support Longwall (PSLW), multi-gas detector, vibration analyzer, GPR to determine the thickness state, etc. The Committee are satisfied with the level of new technologies employed. Almost all the coal subsidiaries are in the process of upgradation of their technologies for improving production under safer

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		environment. In this context, ECL have pleaded for upgradation of technology like proving of barrier with certainty, provision of forewarning before impending roof-fall, etc. and continuous monitoring system for mine gases. Similarly, BCCL have desired further upgardation in their technologies, especially for underground mines and asked for (i) introduction of more longwall basis; (ii) introduction of continuous miners for more production and less exposure of persons; (iii) introduction of more SDLs, LHDs and roof bolter machines; and (iv) introduction of remote control SDLs. SECL and MCL wanted more continuous mining technology. In this context, the Committee recommend that the Ministry of Coal should play a proactive role in inducting appropriate technologies for these coal subsidiaries. One time need based Grants should be given to them for the purpose.
38.	7.23	The Committee are also perturbed to note that despite introduction of all these latest technologies/techniques in mining operations, accidents like Bagdigi in BCCL, Ramagundam in SCCL, both due to inundation and Godavarikahani (SCCL) due to roof fall are still happening. The Committee, therefore, recommend that latest technology like seismic/radar based techniques may be developed for location of the actual partings/separation between the workings and the water bodies to further bring down the rate of accidents and fatalities. The Committee feel th

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		zero level accident can be reached apart from increase in production and productivity with the use of latest technology and mechanisation. The Committee, therefore, recommend that the workers' exposure to mining hazards should be restricted as much as it can be by maximum use of improved technology and mechanisation.
39.	7.24	The Committee observe that the level of technology being implemented in the Indian coal industry seems to be adequate since the equipments are of high capacity and safety features are incorporated in the equipment. However, the Committee feel that the process of technology upgradation should continue. The Committee further desire that coal companies should identify the thrust areas for mechanization.
40.	7.25	The Committee, however, feel that there is a need for more R&D efforts to deal with the local geo-physical conditions of mining so that appropriate type of technologies can be introduced. The Government should, therefore, earmark and spend more money on R&D efforts.
41.	7.26	The Committee are unhappy to note that the coal producing subsidiaries of CIL, especially loss making companies are facing constraints to have latest technology in underground mines like hiring of technical know-how, procurement of equipments, training of personnel in latest technology, development of infrastructure, adequate

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		spares and their maintenance. The Committee observe that the two companies *i.e.* BCCL & ECL of CIL are still incurring heavy losses. The reasons attributed for such losses are old underground mines, deployment of large workforce, etc. There is, thus a need for mechanization of mines for which heavy investment is required. Taking into consideration, the pruning of manpower, the Committee recommend that Power Support Long Wall (PSLW) technology should be introduced in the underground mines wherever it is technically feasible. The Committee further observe that since coal reserves from the upper seams in opencast mines are depleting fast, coal companies would be required to extract the coal from the deeper seams to meet the growing demand. As such, coal for the future needs, will have to come from underground mines. The Committee, therefore, recommend that the underground mines should be mechanized at the earliest and Ministry of Coal/Coal India Limited should provide adequate financial assistance for the purpose. The Committee are of the view that the administrative/procedural rigmarole should not come in the way of coal companies in introducing latest technology and its upgradation.
42.	7.27	The Committee express their deep concern over disasters which continue to take place, particularly in underground coal mines. A glance over safety statistics reveals that fatality rate per thousand persons employed is practically constant

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		for the last two decades *i.e.* 0.34 and 0.33 for the period 1981-90 and 1991-2000 respectively. Although opencast mining operations are considered safe all over the world, accidents rates in open cast coal mines. In our country, is as high as in the underground, in spite of the fact that only 17% of the coal is extracted from underground mines and 83% from open cast. The Committee are of the considered view that contract operations are causing more accidents due to various reasons like ill trained manpower, frequent change of work force, longer working hours, use of smaller machineries, equipments and vehicles, which are not compatible to the size of opencast operations. In fact, the rate of accidents of contract workers have been reported to be much higher than regular workers. It is in this context, the Committee recommend that new initiatives like 'Risk Assessment' and Safety Management Plans need to be introduced in all the coal mines on priority basis, in order to reduce accidents and disasters. Besides, intensive training of the contract workers, irregular and unsafe practices in contract operations, need to be strictly curbed.
43.	7.28	The Committee note that long and arduous journey is required to be undertaken by the miners, before they actually start extracting coal. The Committee are of the view that this not only causes undesirable fatigue, but also retards productivity of the coal miners. The Committee, therefore, recommend that where long and arduous journey is

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		involved and working faces exist at long distances in underground mines, man riding system or any other appropriate arrangements, for transport of miners, should be introduced. This will not only improve output per man per shift (OMS) but also relieve a miner from unavoidable fatigue.
44.	8.18	The Committee have taken note of various communication systems installed in opencast and underground mines. The Committee are of the view that elaborate communication systems do exist but there is need to augment it further. It has been brought to the notice of the Committee by some of the Trade Unions that the communication system which exist in mines is not satisfactory and proves to be almost ineffective in case of emergency due to shortage of equipments with supervisors. In this context, the Committee desire that system of communication should be further upgraded and latest equipment be made available with every supervisor and line manager. The Committee also desire that use of V-SAT should also be considered for introduction in underground mines at the earliest.
45.	9.16	The Committee note that as per the provision of Mines Rescue Rules, 1985, it is the responsibility of the owner to establish and ensure functioning of rescue room or rescue station and also to provide rescue equipments and apparatus as may be necessary for compliance of these Rules. The Committee further note

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		that coal subsidiaries have well elaborated and structured rescue organization manned by trained personnel and equipped with modern state-of-the-art equipments. However, the past experience have shown that whenever any accident has taken place, the rescue operations have been delayed considerably leading to loss of lives of workers which otherwise could have been saved. It has been brought to the notice of the Committee that the system of keeping rescue teams always alert is not visible and members of the Rescue Team are assigned day-to-day mine work. Further, at the time of emergency, the Rescue Teams have failed to counter emergency as they were ill-equipped. The Committee express their displeasure over this and recommend that a totally dedicated work force at the site be raised for the purpose. The Committee also desire that special perks and pre-requisite for rescue operation should be introduced. At the same time, the response time for undertaking rescue operations be further reduced from the present level of 30 minutes. The Committee also recommend that for curtailing delays in starting of rescue operations at emergency sites, periodical integrity emergency stimulation exercise be conducted at least twice a year and the reasons for delay identified and corrective action taken thereon. The Committee further recommend that the rescue equipments and accessories such as high capacity dewatering pumps, gas masks, fire extinguisher, etc. should always remain in readiness especially in

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		underground mines and periodically checked to ensure their preparedness. the Rescue Team should be imparted extensive and rigorous training and given accommodation closer to rescue station/ rescue room so that they could report at the time of emergency without loss of time.
46.	9.17	The Committee find that there is a shortage of equipment and other accessories/gadgets used for rescue operation. Further these are not of international standards. The Committee desire that shortage of these equipments and gadgets should be met and the existing equipments be upgraded/ updated conforming to international standards. The Committee also desire that a promotional scheme be introduced for further upgrading the status of rescue operations.
47.	9.18	The Committee note that there is consensus that disorientation and low visibility in the aftermath of fires and explosions are major considerations in underground escape and rescue strategies. But the practical and proven solution of these problems, with the requisite degree of flexibility to permit general application, are not readily available with the coal companies. The Committee feel that escape routes could help the trapped persons to save their life. The Committee, therefore, recommend that escape routes in all the underground mines be provided and demarcated properly and mock rehearsals conducted periodically, at least twice a year, to familiarize workmen with the same.

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48.	9.19	It has been brought to the notice of the Committee that the escape routes, wherever provided, are ill maintained. In most of the cases, jungle crop have grown and it is not possible for the trapped persons to come out through this route. The Committee take strong note of this and recommend that escape routes should be well maintained, painted with fluorescent paint and properly cleaned so as to make it fit for use by the workers at the time of emergency. Wide publicity through sign bills, banners, posters, etc. should be made of the escape routes, so as to familiarize the workmen with such exist routes.
49.	10.11	The Committee note that in the event of death of a mine worker, the benefits under Workmen's Compensation Act, 1923, Ex-gratia payment as per National Coal Wage Agreement, life cover scheme payment of Rs. 30,000/-, Provident Fund, Coal Mines Pension Scheme, etc. are admissible to a mine worker. The Committee further note that there is no insurance scheme for the Coal India Limited (CIL) as a whole. However, there are some Insurance Schemes/Benevolent Schemes in the subsidiaries and payment made as per the schemes. Coal subsidiaries; namely MCL, WCL and SECL had insurance scheme for their workers and executives from Nationalised Insurance Companies. The Committee are pained to note that the Insurance Company unilaterally withdrew the scheme after some period in MCL. Insurance Schemes for WCL and SECL

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		were also dispensed with. Whereas WCL and SECL had gone to the Court against the unilateral withdrawal of the scheme by Insurance Company, MCL's efforts to get the scheme re-started did not yield any result. The Ministry of Coal/Coal India Limited did not take up the matter with Ministry of Finance on the ground that the scheme was introduced with the mutual understanding between MCL and Oriental Insurance Company and they were not involved in any way under this scheme. The Committee do not approve of inaction on the part of Ministry of Coal in this regard. The Committee, therefore, recommend that Ministry of Coal should take up all the three cases with the Ministry of Finance at the highest level for an amicable solution. At the same time, the Committee strongly recommend that as coal mining is a hazardous occupation, an exclusive Group Insurance Scheme be arranged for the benefit of coal mine workers.
50.	11.23	The Committee note that adequate provision has been made for participation of workers in the management of safety through Workmen's Inspectors, Safety Committees at Mine level, Bipartite, Tripartite Safety Review Committees, Coal India Safety Board and Standing Committee on Safety in Coal Mines etc. The meetings of these Committees are required to be held from time to time to discuss various issues concerning occupational health and safety of workmen and also to increase production of coal safely. The Committee note that

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		the meetings of Pit Safety Committees are required to be conducted once in a month at each Mine. Further, the meetings of the Bipartite and Tripartite Safety Review Committees are to be conducted once in six months on regular basis. It has been brought to the notice of the Committee by some of the Trade Unions that the meetings of Pit Safety Committee, Bipartite and Tripartite Safety Review Committee are not conducted regularly as required and where such meetings are conducted, the recommendations of these Committees are not implemented in letter and spirit. The Committee acknowledge the role of Pit Safety Committee and Bipartite and Tripartite Safety Review Committees in ensuring safety in Coal Mines. The Committee do not approve of this action on the part of coal subsidiaries in not conducting meetings at regular intervals and also showing scant respect to the recommendations of these Committees. The Committee, therefore, recommend that regular meetings of these Committees should be conducted and their recommendations implemented in letter and spirit. At the same time, the Committee would like to be apprised of the details of meetings of Pit Safety, Bipartite and Tripartite Safety Review Committees and the extent to which the recommendations made by these Committees were accepted by each of the coal subsidiary and SCCL during the last 5 years. The reasons for delay, in conducting such meetings may also be furnished for the consideration of the Committee.

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51.	11.24	The Committee note that the institution of Workmen's Inspector has been created to promote participative management of safety in mines. The Workmen's Inspectors point out the deficiencies to the mine management and suggest remedial measures necessary to avoid the danger. The Workmen's Inspector reports about the safety status of the mine to the Manager who is responsible for production as well as safety aspects. The Committee feel that the Workmen's Inspector plays a pivotal role between the workers and the management. The Committee, therefore, desire that the services of Workmen's Inspector should be utilized adequately. The violations pointed out by him should be given due attention and rectified without any delay by the management.
52.	11.25	The Committee find that at present Workmen's Inspector, is appointed in a mine, wherein 500 or more miners are employed. The Committee feel that in view of heavy mechanization of mine, there is a need to revise this ceiling of 500. At times, there are many mechanized mines particularly opencast operations, where the total employment is not more than 500. Further, the Safety Committees are constituted, wherein more than 100 miners are employed. The Committee do not find any rationale/justification, in not revising the ceiling to 100. The Committee, therefore, recommend that any mine, with 100 or more miners, should appoint a Workman Inspector.

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53.	11.26	The Committee note that Workmen Inspectors have been charged with the inspection of mines from workers side. They are a link between workmen and management as far as safety is concerned. Recognizing their vital role the Government made a provision for Workmen Inspector in the year 1986 and accordingly, the Mines Rules were amended. As per statute, Workmen Inspectors are required to be appointed in all the mines and inspect all shafts, inclines, roads, workplaces and the equipments and threat including the equipment for conveyance and transport of workers. They have also been assigned the duty of informing the Manager and Inspector of any urgent and immediate danger that comes to their notice and suggest the remedial measures therefore. Workmen Inspector is also required to accompany the inspector in the course of complete inspection of mine and also during such other inspections as may be considered necessary by the inspector. It has been brought to the notice of Committee that although Workmen Inspector inspect the Mines and send his report to the Management yet DGMS is not associated in this task. The Committee also recommend that in order to inculcate a sense of belongingness in Workmen Inspectors, an award may be instituted for best Workmen Inspector at company level and at National level. This will recognize the service rendered by Workmen Inspector and motivate him to give his best for the safety. The Committee also recommend that the

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		Workmen Inspector should be exposed to various mining methods and fields to keep him abreast with the latest development. It is in this context, the Committee recommend that the Workmen Inspector should be trained and given extensive trainings in and out side the country for different mining methods, etc. The Committee feel that the Workmen Inspector should also give a copy of his report to the recognized union in the mine/area so that the workers are aware of the impending dangers and can take suitable steps to protect themselves.
54.	11.27	The Committee find that as per Rule-29-T of the Mine Rules 1955, the Safety Committees are set up in a mine wherein more than 100 persons are employed. In the opinion of the Committee, the Safety Committee can play a very constructive and useful role in shaping safety performance of the mine. At times, it has been observed that the Safety Committees are functional only for a year and then disbanded. The Committee are of the view that this practice limits the effectiveness of the Safety Committees. Therefore, there is need to ensure a fixed tenure for such Committees for obtaining better results. The Committee, therefore, recommend that a tenure of 2 to 3 years may be prescribed for any duly appointed Safety Committee.
55.	11.28	The Committee find that there is a need to have sectional/departmental Safety Committees so as to focus precisely in particular area of work. This is all the

1	2	3
		more necessary because of the fact that these days mining operations are being highly specialized. In a big mechanized mine, there may be areas which technically are so sophisticated that only specialized workers who are continuously engaged in such work, will have the proper understanding of the job concerned. The sectional/departmental Safety Committees can yield fruitful results for ensuring safety in work. The Committee, therefore, recommend that Sectional/Departmental Safety Committee be constituted, under Safety Committee.
56.	11.29	The Committee feel that the effectiveness of any operation increase manifold with proper monitoring. It has been seen that at times the schemes do not yield better results due to inadequate monitoring. In order to make the institution of Safety Committee more effective, strong monitoring of its functions, activities and follow up measures will go a long way in improving the safety status of mines. The Committee, therefore, recommend that necessary mechanism for monitoring at various level should be put in place by the coal companies. The Committee further desire that to improve the safety status in various Coal companies, one of the agenda for periodical Board Meetings should be "Safety Performance Appraisal" of the company concerned.
57.	11.30	The Committee find that a Workmen Inspector is required to undergo orientation training before he is appointed for such a post. However, such a

1	2	3
		stipulation is not made applicable to the Members of the Safety Committee. The Committee are of the view that since the twin statutory institutions of Workmen Inspector and Safety Committees have ensured reasonable standards of safety in coal mines, there is a need to provide not only orientation training to Workmen Inspector and Members of the Safety Committee but also refresher training programme beside need based short term training. There is also a need to develop awareness among the coal miners about the latent force of these two institutions for their greater involvement in improving safety in mines. The Committee desire that appropriate action should be taken for training of Workmen Inspector/Members of the Safety Committee and awareness of workmen about the role of Workmen Inspector/ Safety Committees.
58.	11.31	The Committee observe that in order to motivate the workers for achieving best safety standards and practices, the management has already initiated various promotional schemes. Annual Safety Week is held at each subsidiary company level every year. Inter-company competitions are also conducted annually on safety and rescue operations and the best teams are awarded shields/prizes/ mementoes. Safe workers are suitably rewarded, best overmen's award is given, safest area and safest mine is suitably rewarded, etc. The Committee appreciate the efforts made in this direction by CIL with the result of which CIL and its

1	2	3
		subsidiaries have been the recipient of several National Safety Awards, for best performance in the field of safety. The Committee recommend that for further improving safety in coal mines, safety incentive be enhanced suitably and implemented by the management, for motivating the workers towards occupational safety and health.
59.	11.32	The Committee observe that code of practices for different mining operations have already been laid down by the coal companies. The Committee recommend that the workmen should observe and follow various safety practices both in letter and spirit. Surprise inspections, thus should be conducted at regular intervals and erring employees be penalised.
60.	11.33	It has been brought to the notice of the Committee that senior officials from MoC, CMDs of coal subsidiaries seldom visit coal mines, especially underground. As a result, they are not aware of the ground realities in coal mines. The Committee recommend that senior officials in the rank of Joint Secretary and above in the MoC should undertake surprise visit of underground mines, at least once a month and thereby keep themselves abreast with the latest mining status in the mine. Similarly, all CMDs should also conduct surprise visit of underground lines on same periodicity.
61.	12.18	The Committee note that Mines Vocational Training Rules, 1966, (MVTR) amply provide for the training and

1	2	3
		retraining of the workers and executives of coal companies. At the time of entry to the industry, the Executive and Workmen including the contractual workers, are imparted basic introductory training. Refresher training is also provided as per requirement of MVT Rules. The faculty imparting training at VTCs/Area Training Centres, are basically Area Safety Officers or Area Training Officers, who are Mine Engineers and also are trained under trainers programmes. External faculty members like experienced DGMS officers are also inducted for imparting safety oriented training to workers/supervisors/field officers. There are three categories of training that is being imparted at VTCs; namely basic training, refresher training and special/other types of training. To make the training more interesting and fruitful, facilities for audio-visual training are being provided and standardized training films are being circulated to all coal companies. The Committee are, however, sad to note that the workers and the executives are still deprived of quality training imparted in coal industry. At times there is no proper planning for training of mine workers as required under Vocational Training Rules, 1966. The Committee have been apprised that the proper infrastructural facilities do not exist in many of the Vocational Training Centres. What is more disheartening to note is that the training to contractor's labour is just an eye wash. The Committee, therefore, recommend that quality of training should be improved.

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		Adequate infrastructure facility should be made available to Vocational Training Centres (VTCs). At the same time, the Committee recommend that training for contractual workers, need to be reoriented, so that the skill of the coal workers can be upgraded. Further, training programmes should also be drawn in a planned manner for the workmen and executives. It should not be merely for the sake of completing formalities. The training ought to be broad based which should permit substantial exposure to mine safety practices and technology and facilitate the development of enhanced occupational health and safety standards and procedure, codes of practices, legislative standards and mine safety information systems. The Committee, therefore, recommend the deficiencies pointed out by them be rectified immediately, as to make the training programme, a meaningful and purposeful vehicle of change.
62.	12.19	The Committee note that there does not exist a separate cadre for training in any of the coal companies. Officials from all disciplines are posted in Training Centres without any yardstick to see whether they can impart any meaningful training. The Committee, therefore, recommend that CIL should review its policy and post only trained and qualified personnel at the VTCs or other training centres run by the CIL or its subsidiaries and set up a separate/cadre for training. It should be staffed by qualified professionals in

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		mining and allied disciplines like electrical/mechanical engineering, occupational health, law, mine surveying and statistics. Taking into consideration that a trained manpower is hope for the future, special dispensation, monetary or otherwise, should be thought for the instructors. The Committee also recommend that the CIL should set up a Unified Vocational Training School/ College for all its subsidiaries so that a standardized training can be imparted to different categories of mine personnel.
63.	12.20	There is also a need to develop clear cut curriculum for different training being imparted at VTCs so that level of training can be raised. At the end of training some type of examination can be held so that miners take it seriously. Those who pass the examination be given increments, etc. as an encouragement. The Committee also find that VTCs are not being inspected by DGMS due to shortage of staff. The Committee do not approve this and recommend that DGMS should inspect VTCs once in a year without fail.
64.	12.21	The Committee feel that it is important to keep abreast of current international developments in relevant specialist fields to ensure that standards, guidelines and legislation are appropriate and represent the best current practice. To achieve these goals, Committee believe that it is essential to expose the Executives and Workmen to the new technologies, modern developments in mining practices and the application of computers and

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		overall mine safety management systems employed in advanced mining environments. With the introduction of state-of-the-art technology and in increase in the level of mechanization in coal mining, the Committee recommend that CIL should focus training of Executives and Workmen in these fields and especially in the areas like; longwall face support; equipment testing standards and approved procedures; underground coal mine roadway support pillar extraction; new technology in hard rock mining; mine safety management systems; and environment management.
65.	12.22	The Committee feel that with the rapid changes in the technology, the prescribed period of 5 years for undertaking training as per MVTR, 1966, needs to be re-examined. The Committee desire that the appropriate period of training ought to be 2-3 years, instead of 5 years. The Committee would like to be apprised of the action taken by Ministry of Coal in this regard.
66.	12.23	It has been brought to the notice of the Committee by some of the Trade Unions that the Mining Sirdars, Overmen and Safety Officers who are statutorily concerned with the safety of mines, are required to be trained on the subject of geological changes/disturbances by experts, at regular intervals. The Committee see merit, in their contention and desire that such training should be organized for them. Further, they should

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		continue to be imparted Refresher Trainings at MVTCs.
67.	13.19	The Committee have noted that coal miners continue to be exposed to harmful dusts and fumes. The prolonged exposure of miners to coal dust causes pneumoconiosis which has been identified as occupational disease prevalent in coal mines. besides this, Silcosis, Manganese poisoning, Asbestosis and Cancer of lungs, stomach and pluora, have been identified as occupational health hazards. In WCL alone, 524 cases of occupational diseases have been identified, after the Nationalization of coal mine industry in 1971 and 1973. Similarly, in other subsidiaries also, a good number of patients have contracted occupational diseases. The Committee have noted that the Periodical Medical Examination (PME) of workers is conducted at an interval of five years. The Committee are of the view that this period is too long. The Committee, therefore, desire that the matter should be re-examined in consultation with the experts/specialized hospitals in the country and the time limit should be refixed. For this purpose, the help of Ministry of Health should be taken. CIL should also undertake a survey for comprehensive study of the Occupational Diseases in collaboration with the reputed institutes like National Institute of Occupational Health, Ministry of Health, ILO, UNDP, Educational and Research Institutes in India. In the opinion of the Committee, this will help in taking preventive measures so that the workers are not affected any further.

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68.	13.20	The Committee also desire that CIL should set up a Occupational Disease Board/Authority/Council, consisting of Health Physician, Radiologist and General Physician, which can deal with the cases from all subsidiaries. Such a board should detect Occupational Disease (OD) at an early stage. The Occupational Disease Board is also needed for formulating guidelines for referral, re-evaluation, classification of cases of Occupational Disease and necessary remedial action at work place as well as rehabilitation of affected persons. The Medical Officers at each Periodical Medical Examination Center should also be trained in occupational health. The Committee also recommend that Occupational Health Surveillance--Medical and Environment be set up, for containing Occupational Disease in the coal mines.
69.	13.21	The Committee are not satisfied with the present facilities for treating occupational diseases in hospitals run by CIL and its subsidiaries. The Committee recommend that these facilities should be augmented and hospitals which need the modern and other state-of-the-art equipments for better patient care should be identified and such items be procured in a phased manner. Adequate funds should be made available to the coal companies for the purpose.
70.	13.22	The Committee further note that dust control measures in the coal mines are not as rigorous as they should have been. Methane gas ignition and coal dust clouds are commonly noticed in the underground mines. The Committee,

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		therefore, recommend that Government (Central/State) at the time of giving lease of land for coal mining, whether opencast or underground, should impose a complete ban on dry drilling. Necessary amendments may be made in Mines Rules for use of water on cutter bars of all mining machines while cutting rock or coal in the mines and on all Jackhammer drills while drilling in the mines either coal or rock. Latest gas monitoring equipment should always remain in order to constantly monitor the presence of gases.
71.	14.12	The Committee are constrained to note that during the year 2000-01, the budget allocation for safety and rescue activities was Rs. 53.4 crore whereas the expenditure was Rs. 30.72 crore. Similarly, during the couple of the last years *i.e.* 2001-02 and 2002-03, the allocation for the same activities was Rs. 69.02 crore and Rs. 79.68 crore respectively whereas the corresponding expenditure was Rs. 40.21 crore and Rs. 41.29 crore. Likewise, CIL's subsidiaries namely; NLC, WCL, BCCL, and CCL have also failed to fully utilize the capital budget allocation during the aforesaid period. It is pertinent to mention here that although the percentage of safety budget in the Capital Head of total budget allocation during the above mentioned three years has been 3.00, 4.48 and 4.53 respectively, yet CIL has been unable to expend it. As a result, CIL and its subsidiaries are unable to procure many of the safety related equipments and machineries, inspite of the fact that

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		these are required for safe working, simply due to under utilization of safety budget. The reasons advanced by CIL for under utilization of safety budget i.e. non-availability of indigenous equipment, cumbersome DGMS approval procedure, non-supply of the equipment in time, are not acceptable to the Committee in view of the fact that such rigmaroles can easily be overcome with simplification of the approval procedure and timely placement of orders. The Committee, therefore, impress upon the Ministry and CIL to take measures for full utilization of budget by the management so that the very purpose of safety budget is not defeated. The Committee would like to be apprised of the action taken in this regard.
72.	14.13	The Committee found that in ECL, MCL, NCL and SECL, there is separate Head of Account for Safety whereas in BCCL and SECL, it does not exist. The Committee also observe that due to non-provision of separate budget provision in some of subsidiaries of CIL, safety related equipment are not supplied on time which is a matter of regret. However, the Committee is happy to note that of late, CIL is formulating a Uniform Accounting Code for this year, which will take care of the head of account for safety in all the subsidiaries within a year without fail as assured by CIL.
73.	14.14	The Committee note that all aspects of mining operations have a safety component. Coal India Limited had undertaken a detailed exercise under

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		which they have identified and codified the safety components of a item to be featured in Safety Budget. The Committee note that Safety Budget plan in CIL is drawn up based on the requirement of the Annual Operation Plan and finalized when Annual Plans of subsidiary companies have been drawn up. The Committee have further found that almost all the subsidiaries of Coal India Limited have separate Budget for Safety related activities. However, there is no uniformity over booking of expenditure under this head. The Committee are of the view that when Safety Component have been separated and codified in CIL, there is a need to have uniformity in this regard in various Coal PSUs. The Committee, therefore, recommend Coal India Limited should impress upon their subsidiaries to adhere to the codified Safety Component featuring in a Safety Budget. The Committee further find that there is no separate Safety Head in SCCL and NLC. It has been brought to the notice of the Committee that SCCL do not operate separate Head for safety on the grounds that the requirement of safety related items are being procured/obtained on priority basis. On the other hand, NLC have informed that as all the major equipments have in-built safety devices/ mechanism and the cost thereon form part of the equipment, separate head for safety has not been earmarked. NLC has further informed the Committee that operation and maintenance form part of the overall revenue expenses of the company. The Committee do not concur

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		with the views of NLC and SCCL in regard to not having separate Safety Budget. The Committee, therefore, recommend that NLC and SCCL should undertake an extensive exercise in order to identify and codify the Safety Component of an item which can be featured in Safety Budget and have a separate budget for the purpose.

PART II

ANNEXURE I

(*Vide* Para No. 3.24 of the Report)

MINES WITH POTENTIAL FOR INUNDATION AS IDENTIFIED BY SUBSIDIARY COMPANIES OF CIL

Company	Mines with potential for inundation (as on 1.7.2003)
ECL	1. Madhabpur
	2. Lachhipur
	3. Jambad OCP
	4. Sangramgarh
	5. Mandman
	6. Badjna
	7. Champapur
	8. Hariajam
BCCL	1. Kankee
	2. Loyabad
	3. Sendra Bansjora
	4. Basdeopur
	5. Bassuriya
	6. Alkusa
	7. Lodna
	8. Bararee
	9. Jealgora
	10. Bhowrah (N)
	11. Bhowrah (S)
	12. Sudamdih Shaft Mine

13. Begunia
14. Gopalichak
15. Hurriladih
16. Simlabahal
17. Burragarh
18. Katras Choitudih
19. Joyrampur
20. East Bhuggatdih

CCL

1. Bhurkunda
2. Saunda-AK
3. Saunda 'D'
4. Central Saunda
5. Sayal 'D'
6. Churi
7. Topa
8. Urimari
9. Gobindpur
10. Sirka
11. Laiyyo

NCL

NIL

WCL

1. Silewara UG
2. New Majri-3 UG
3. Sasti UG
4. Dhoptala OC

SECL

1. Balgi
2. Surakachhar

ANNEXURE II

(*Vide* Para No. 9.7 of the Report)

EQUIPMENT TO BE KEPT AT A RESCUE STATION

		Nos.
A.	BREATHING APPARATUS	
1.	Two-hours self-contained breathing apparatus	54
2.	Short duration self-contained breathing apparatus	6
3.	Absorbent charges	2,000
B.	RESUSCITATING APPARATUS	
1.	Resuscitating Apparatus	12
2.	Spare cylinders	8
C.	TUBE APPARATUS	
	(a) Pressure type with bellows	2
	(b) Spare helmets	2
	(c) Pressure type with fan	1
D.	ANCILLARY EQUIPMENT	
1.	Oxygen cylinders	12
2.	(a) Oxygen pump (hand driven)	4
	(b) Oxygen pump (power driven)	2
3.	Bobin meter	3
4.	Flow meter	2
5.	Universal tester	2
6.	Pressure gauge testing device	2
7.	Oxygen testing apparatus	1
8.	Apparatus testing tool kit	8
E.	LAMPS ETC. AND GAS TESTING DEVICE	
1.	Flame safety lamps with maintenance kit	8
2.	Electric safety lamps	

ANNEXURE III

MINUTES OF SECOND SITTING OF THE STANDING COMMITTEE ON ENERGY (2001) HELD ON 19TH FEBRUARY, 2001 IN COMMITTEE ROOM 'D', PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee sat from 15.30 hrs. to 17.30 hrs.

PRESENT

Shri Santosh Mohan Dev—*Chairman*

MEMBERS

2. Shri Basu Deb Acharia
3. Shri Prakash Yashwant Ambedkar
4. Shri Trilochan Kanungo
5. Shri P.R. Khunte
6. Shri Sanat Kumar Mandal
7. Shri Ravindra Kumar Pandey
8. Shri Amar Roy Pradhan
9. Shri Harpal Singh Sathi
10. Shri Tilakdhari Prasad Singh
11. Shri Manoj Sinha
12. Prof. Ummareddy venkateswarlu
13. Shri Gandhi Azad
14. Shri Santosh Bagrodia
15. Shri Dara Singh Chauhan
16. Shri Manohar Kant Dhyani
17. Shri Rama Shanker Kaushik
18. Shri V.V. Raghavan
19. Dr. Akhtar Hasan Rizvi
20. Ven'ble Dhamma Viriyo

SECRETARIAT

1. Shri P.K. Bhandari — *Deputy Secretary*
2. Shri R.S. Kambo — *Under Secretary*

WITNESSES

1. Shri N.K. Sinha, Secretary, Ministry of Coal
2. Shri C.D. Arha, Additional Secretary, Ministry of Coal
3. Shri M.K. Thapar, Advisor (Projects), Ministry of Coal
4. Shri N.K. Sharma, Acting Chairman, Coal India Limited
5. Shri C.H. Kishty, Director (Personnel), Coal India Limited
6. Shri Ashok Mehta, CMD, Eastern Coalfields Limited
7. Shri B.N. Pan, CMD, Bharat Coking Coal Limited
8. Shri S.K. Saha, TS to Chairman, Coal India Limited
9. Shri S.N. Mukherjee, GM (Safety), Coal India Limited
10. Shri K.C. Mishra, Supdt. Engineer, Coal India Limited

2. At the outset, the Chariman welcomed the representatives of Ministry of Coal, Coal India Limited (CIL) and Bharat Coking Coal Limited (BCCL) to the sitting of the Committee and apprised them of the provision of Direction 58 of the 'Directions by the Speaker'.

3. Thereafter, the acting Chairman of CIL gave a presentation covering broad details of the Bagdigi Colliery accident.

4. Then, the Chairman and Members of the Committee asked certain clarificatory questions on the incident.

5. The following points were discussed during the meeting:—

(i) Delay in starting rescue operations

(ii) Welfare and relief measures undertaken for the benefit of the affected family

(iii) Action taken against erring officials of BCCL

(iv) Using the services of professional divers for rescue purpose

(v) Non-provision of pumps at underground mines sites and consequent delay in installation of hired pumps and pipes

(vi) Closing down of unsafe mines

(vii) Steps to prevent the recurrence of such incidents

(viii) No action taken to check seepage of water despite complaints made to this effect during the last three months

(ix) No survey of the Jairampur mine after it was closed down as far back as in 1962

(x) No safety audit of coal mines even though it is mandatory

(xi) Issue of 'All Safe' certificate by the Directorate General of Mines Safety (DGMS) in respect of the Bagdigi Colliery

6. A copy of the verbatim proceedings of the sitting of the Committee has been kept on record.

The Committee then adjourned.

ANNEXURE IV

MINUTES OF THE FIRST SITTING OF THE SUB-COMMITTEE ON COAL OF THE STANDING COMMITTEE ON ENERGY (2003) HELD ON 2ND JULY, 2003 IN COMMITTEE ROOM 'D', PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee sat from 15.00 hrs. to 17.30 hrs.

PRESENT

Shri Santosh Mohan Dev—*Chairman*

MEMBERS

2. Shri Basu Deb Acharia
3. Shri Prasanna Acharya
4. Shri Ravindra Kumar Pandey
5. Shri E. Ponnuswamy
6. Shri Tilakdhari Prasad Singh
7. Prof. Rita Verma
8. Shri Devdas Apte
9. Shri Ajay Maroo
10. Shri Santosh Bagrodia
11. Shri Prakash Yashwant Ambedkar

SECRETARIAT

1. Shri P.K. Bhandari — *Director*
2. Shri R.S. Kambo — *Under Secretary*

REPRESENTATIVES OF MINISTRY OF COAL

Sl.No.	Name	Designation
1.	Shri P.K. Mishra	Secretary
2.	Shri Lakshmi Chand	Addl. Secretary/CMD, Coal India Ltd.
3.	Shri K.P. Varma	Advisor
4.	Shri S. Choudhary	Director
5.	Shri R. Sharma	DGMS
6.	Shri R.H. Khwaja	CMD, SCCL
7.	Shri G.N. Sharma	Director, SCCL
8.	Shri G.S.G. Ayyangar	Director, SCCL
9.	Shri P. Vasudeva Rao	Director, SCCL
10.	Shri A. Kalam	Director, CIL

2. At the outset, the Chairman, Standing Committee on Energy welcomed the representatives of the Ministry of Coal to the sitting of the Sub-Committee on Coal and apprised them of the provision of Direction 58 of the Directions by the Speaker.

3. The Committee, thereafter discussed the following important points:—

(i) Causes of accidents in the underground coal mine of SCCL;

(ii) Rescue and recovery operations;

(iii) Compensation to the kin of the deceased;

(iv) Budgetary provision for the safety in coal mines;

(v) Readiness of the equipments;

(vi) Updating of Maps in coal mines;

(vii) Sand stowing;

(viii) Implementation of the recommendations of earlier Enquiry Reports which went into the causes of coal mine accidents;

(ix) Communication system in mines;

(x) Fixation of responsibilities, especially of senior officials in mine accidents;

(xi) Shortage of surveyors.

4. The Committee appreciated the gesture of State Government of Andhra Pradesh in announcing ex-gratia and other benefits over and above statutory dues and desired that such magnanimity should also be shown by other States where such unfortunate accident takes place.

5. The Committee took note of deficiencies in updating of mine maps and desired that Director General Mines Safety (DGMS) should verify the mine maps of SCCL and furnish the same for the consideration of the Committee.

6. A copy of the verbatim proceedings of the sitting of the Sub-Committee has been kept on record.

The Committee then adjourned.

ANNEXURE V

MINUTES OF THE SECOND SITTING OF THE CUB-COMMITTEE 'E' ON COAL OF THE STANDING COMMITTEE ON ENERGY (2003) HELD ON 17TH DECEMBER, 2003 IN COMMITTEE ROOM '139', PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee met from 15.00 hrs. to 16.40 hrs.

PRESENT

Shri Santosh Mohan Dev—*Chairman*

MEMBERS

2. Shri Basu Deb Acharia
3. Shri Ramachandra Khuntia
4. Shri Ravindra Kumar Pandey
5. Shri E. Ponnuswamy
6. Shri Chandra Pratp Singh
7. Shri Tilakdhari Prasad Singh
8. Shri Santosh Bagrodia
9. Shri Jayanta Bhattacharya
10. Shri B.J. Panda

SECRETARIAT

1. Shri P.K. Bhandari — *Director*
2. Shri R.S. Kambo — *Deputy Secretary*
3. Shri R.K. Bajaj — *Under Secretary*

WITNESSES

1.	Shri P.K. Mishra	Secretary (Coal)
2.	Shri K.P. Varma	Advisor (Project)
3.	Shri Shashi Kumar	CMD, CIL
4.	Shri Ravindra Sharma	DGMS

5.	Shri B. Bhattacharjee	Dy. DGMS, Western Zone, Nagpur
6.	Shri A. Kalam	Director (Tech.), CIL
7.	Shri P.K. Haldhar	HOD, (S&R), CIL
8.	Shri R.H. Khwaja	CMD, SCCL
9.	Shri G.N. Sharma	Director (P&P), SCCL
10.	Shri P.S. Bhattacharya	CMD, BCCL
11.	Shri J. Kumar	Director (T), BCCL
12.	Shri M.K. Sinha	CMD, ECL
13.	Shri J.P. Sharma	CMD, CCL
14.	Shri B.N. Mishra	CMD, NCL
15.	Shri Ashok Mehta	CMD, WCL
16.	Shri M.K. Thapar	CMD, SECL
17.	Shri R.K. Chechani	CMD, MCL
18.	Shri M.N. Jha	CMD, CMPDIL
19.	Shri S. Jayaraman	CMD, NLC

2. At the outset, the Chairman, Standing Committee on Energy welcomed the representatives of the Ministry of Coal and Directorate General of Mines Safety to the sitting of the Sub-Committee on Coal of the Standing Committee on Energy and apprised them of the provision of Direction 58 of the Directions by Speaker.

3. Thereafter, Secretary Ministry of Coal gave a demonstration on the present safety scenario in the Coal Companies and future programmes to reduce the number of accidents.

4. The following important points were discussed by the Committee.

(i) Shortage of manpower in DGMS

(ii) Conducting of general inspections of coal mines by DGMS and promoting an atmosphere which will promote self-regulation in the industry.

(iii) Constraints of funds being faced by the coal companies especially by BCCL, ECL & CCL.

(iv) Mechanisation of the coal mines.

(v) Workmen's participation in safety related activities.

(vi) Implementation of the recommendations of various Committees.

(vii) Digitization of mine maps.

(viii) Preparedness of Coal companies to meet any eventuality effectively.

(ix) Identification of the occupational diseases and remedial steps therefore.

(x) Compensation to the deceased/injured workers/family.

(xi) Insurance cover for coal miners.

5. A copy of the verbatim proceedings of the sitting of the Sub-Committee has been kept on record.

The Committee then adjourned.

ANNEXURE VI

MINUTES OF THE SECOND SITTING OF THE STANDING COMMITTEE ON ENERGY (2004) HELD ON 29TH JANUARY, 2004 IN COMMITTEE ROOM 'D', PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee met from 15.00 hrs. to 15.45 hrs.

PRESENT

Shri Basudeb Acharia—*In the Chair*

MEMBERS

2. Shri Bikash Chowdhury
3. Shri Ali Mohmad Naik
4. Shri Dalpat Singh Parste
5. Shri Amar Roy Pradhan
6. Shri Chandra Pratap Singh
7. Shri Tilakdhari Prasad Singh
8. Prof. Rita Verma
9. Shri Bimal Jalan
10. Dr. K. Kasturirangan
11. Shri Ajay Maroo
12. Shri B.J. Panda
13. Shri Matilal Sarkar
14. Shri Gaya Singh
15. Shri Veer Singh

SECRETARIAT

1. Shri P.K. Bhandari — *Director*
2. Shri R.S. Kambo — *Deputy Secretary*
3. Shri R.K. Bajaj — *Under Secretary*

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2. In the absence of Chairman, the Committee chose, Shri Basudeb Acharia, M.P. to act as Chairman under Rule 258(3) of the Rules of Procedure and Conduct of Business in Lok Sabha.

3. Thereafter, the Acting Chairman, Standing Committee on Energy welcomed the Members to the sitting of the Committee.

4. The Committee then took up for consideration the following draft Reports:—

(i) Action Taken Report on the recommendations contained in the 38th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Department of Atomic Energy.

(ii) Action Taken Report on the recommendations contained in the 39th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Ministry of Non-Conventional Energy Sources.

(iii) Action Taken Report on the recommendations contained in the 40th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Ministry of Power.

(iv) Action Taken Report on the recommendations contained in the 41th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Ministry of Coal.

(v) Original Report on the subject "Safety in Coal Mines".

5. The Committee adopted the aforesaid draft Reports with minor additions/deletions/amendments.

6. The Committee also authorised the Chairman to finalise the above-mentioned Reports after making consequential changes arising out of factual verification by the concerned Ministries/Departments and to present the same to both the Houses of Parliament/Hon'ble Speaker, Lok Sabha.

The Committee then adjourned.

2. In the absence of Chairman, the Committee chose, Shri Basudeb Acharia, M.P. to act as Chairman under Rule 258(3) of the Rules of Procedure and Conduct of Business in Lok Sabha.

3. Thereafter, the Acting Chairman, Standing Committee on Energy welcomed the Members to the sitting of the Committee.

4. The Committee then took up for consideration the following draft Reports:—

(i) Action Taken Report on the recommendations contained in the 38th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Department of Atomic Energy.

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(iii) Action Taken Report on the recommendations contained in the 40th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Ministry of Power.

(iv) Action Taken Report on the recommendations contained in the 41th Report (13th Lok Sabha) on Demands for Grants (2003-04) of the Ministry of Coal.

(v) Original Report on the subject "Safety in Coal Mines".

5. The Committee adopted the aforesaid draft Reports with minor additions/deletions/amendments.

6. The Committee also authorised the Chairman to finalise the above-mentioned Reports after making consequential changes arising out of factual verification by the concerned Ministries/Departments and to present the same to both the Houses of Parliament/Hon'ble Speaker, Lok Sabha.

The Committee then adjourned.

ANNEXURE VII

THE LIST OF TRADE UNIONS

Sl.No.	Trade Unions	Address
1	2	3
1.	The Singareni Collieries Workers Union	Kothagudem-507101 Khammam Distt. Andhra Pradesh
2.	Colliery Mazdoor Sabha of Northern Coalfields Limited	Koyla Mazdoor Sabha (AITUC) NCL Singrauli Distt. Sidhi (MP)
3.	Akhil Bhartiya Mazdoor Sangh	Govinda Colliery PO Kotma Colliery Distt. Shahdol (MP)
4.	Dhanbad Colliery Karmachari Sangh	Vishwakarma Bhawan Police Line, Hirapur PO No. 68 Dhanbad-826001 Jharkhand
5.	Bihar Colliery Kamgar Union	Poddar Para Jharia (Dhanbad)
6.	Koyla Ispat Mazdoor Panchayat	At-Chhatabad No. 5 PO Katrasgarh Distt. Dhanbad Jharkhand
7.	Janata Mazdoor Sangh	Vihar Building PO Jharia-828111 Dhanbad Jharkhand
8.	Orissa Collieries Mazdoor Sangh	INTUC PO Gandghora IB Valley Area Distt. Jharsuguda

1	2	3
9.	Rashtriya Koyla Mazdoor Union	At & PO Dhori Pin-825102 Distt. Bokaro Jharkhand
10.	Akhil Bhartiya Khadan Mazdoor Sangh	Akhil Bhartiya Khadan Mazdoor Sangh Hospital Colony PO Bhurkunda Bazar Hazaribagh Jharkhand-829106
11.	Rashtriya Koyla Mazdoor Sangh (INTUC)	604, Giripeth, Nagpur-440010 Maharashtra
12.	CCL Colliery Karmachari Sangh	Ranchi Jharkhand
13.	Rashtriya Koyla Mazdoor Union	At & PO Dhori Pin 825102 Distt. Bokaro Jharkhand
14.	Colliery Mazdoor Sabha of India	Koyla Shramik Bhawan NSB Road, PO Raniganj Distt. Burdwan West Bengal
15.	Orissa Coal Labour Federation	At & PO Dera Colliery- 759103 Distt. Angul Orissa
16.	Colliery Mazdoor Union	27, GT Road Asansol West Bengal