

www.MINEPORTAL.in

(All Mining Solutions)

- **ONLINE TEST SERIES FOR**
 - **DGMS COAL/METAL FIRST & SECOND CLASS**
 - **GATE MINING**
 - **COAL INDIA EXAMS**
 - **OTHER MINING EXAMS**
- **ONLINE ORDER MINING BOOKS AT GREAT DISCOUNT**
- **FREE STUDY MATERIAL**
- **WHATSAPP CHAT SUPPORT FOR MINING EXAMS & QUERY RELATED TO MINING**

VISITING SITE- www.MINEPORTAL.in

CALL/WHATSAPP- 8804777500

fb- [www.fb.com/mineportal.in](https://www.facebook.com/mineportal.in)

EMAIL- INFO@MINEPORTAL.IN

NATIONAL SAFETY CONFERENCES IN MINES

BY

www.**MINEPORTAL**.in

RECOMMENDATION OF FIRST CONFERENCE ON SAFETY IN MINES**(HELD IN CALCUTTA ON 5TH & 6TH AUGUST, 1958)****A. General Management**

A.1 All persons taking part in the direction or management of a mine should carry their respective share of responsibility. The manager should be given a reasonably free hand in managing the mine.

A.2 The manager should be assisted by well-trained staff and should be reasonably sure of having his instructions carried out. He should get full co-operation from the workers in connection with all matters relating to safety.

B. General Technical Measures

B.1 The Regulations should be more specific about the standards of ventilation.

B.2 To improve the standards of track-laying, all track in the mine should be placed under the charge of a suitable qualified official. Similarly, the supply of tubs and should be in-charge of a competent person.

B.3 The precautions relating to the use of electricity in mines should be incorporated in the Mines Regulations. For this purpose 'the code of practice relating to the prevention of accidents due to electricity underground in coal mines' adopted by the Meeting of the I.L.O. Experts should be taken into consideration.

BA. Danger of Inundation

BA.1 The standard of surveyors should be improved. A Senior Surveyor's Certificate should be instituted. All correlation surveys and surveys of mines before abandonment etc. should be carried out by such surveyors - as also check-surveys (say every 5 years) of all workings belowground.

BA.2 Standards of accuracy of plans of different types may be prescribed.

BA.3 A Water Danger Plan should be prepared in respect of all underground workings; showing contours etc. and all reservoirs of water lying within 60 metres of any workings.

BA.4 Construction of water-dams should be carried out under the direction of a suitably qualified senior member of supervisory staff.

BB. Enforcement of new regulations etc

BB.1 A realistic view should be taken about the enforcement of new provisions of regulations. Sufficient time must be given to the managements - and to the workmen, where necessary to come up to new standards.

BB.2 Where provision has been made regarding the laying down of standards etc., this may be done in due course of time.

BB.3 The new regulations are generally enough for the present and, except for recommendations made here, should be generally left unaltered. The existing machinery of Mining Boards is adequate for dealing with any suggestions for further changes therein.

CA. The Problem of Inflammable Gas (in deep coal mines)

CA.1 There is need for greater awareness of the dangers of inflammable gas in general.

CA.2 Greater attention should be paid to advance planning of ventilation from the very inception of a project. The methods of work in such mines need special scrutiny from this point of view. Where possible, introduction of longwall methods should be considered.

CA.3 Research is necessary into the methods of properly ventilating the headings in bord and pillar workings.

CA.4 Only specially trained persons should be employed on the work of routine analysis of mine air. All gassy mines should have reliable gas-detectors and methanometers. No system of gas-detecting instruments can, however, remove the necessity of testing for gas by flame safety lamps.

CA.5 Only lamps designed for gas-testing should be used for the purpose. Only persons holding a gas-testing certificate should be issued such lamps. In every gassy mine, not less than one-tenth of the total workmen should be so trained.

CA.6 Lamps issued to overmen and superior officials should be relighter type.

CA.7 There is need for better standard of lighting in mines. The use of flame safety lamps and of 'mug' lamps for lighting purposes should be gradually stopped.

CA.8 The standard of safety lamps-cabins generally leaves much to be desired. More attention should be paid to the maintenance and cleaning of flame safety lamps.

CA.9 Research is necessary on the subject of fire-damp drainage, and the

cause of outbursts of gas etc.

CB. The problem of Coal dust (in coal mines)

CB.1 The vastness of the problem of coal dust does not appear to be generally realised. The organisation for the cleaning of coal dust and of treating with incombustible dust at most mines leaves much to be desired.

CB.2 Where the rate of deposition of coal dust is high, greater resort should be had to the consolidation of road-dust and to watering.

CB.3 Considerable research work on the various methods of suppression of dust, of roadway treatment and on the efficacy of different methods of watering is necessary. As also on the explosibility of dusts of various coal seams in India, and on the effectiveness of stone-dust barriers.

CC. The problem of head and humidity.

Where the head and humidity is above a specified level, the length of duration of shift should be reduced.

CD. Problems of Roof Control

CD.1 The problem of controlling strata stresses at greater depths requires detailed investigation.

CD.2 In deeper coal mines and for working thick seams, sand-stowing during depillaring operations should be compulsory.

CE. Problems of Mechanisation

CE.1 A properly equipped and staffed Mechanisation Training Centre should be opened without delay for training machine operators and maintenance-men.

CE.2 Institution of new statutory certificates of competency for mine engineers, mechanics and electricians etc. should be considered.

CE.3 The standard of supervision on the afternoon and night shifts should be improved. In gassy and mechanised mines, in particular, the percentage of officials should be raised.

CE.4 In mechanised mines, more attention should be paid to the support of roof.

CF. Greater use of explosives

CF.1 Constant effort should be made to raise the standard of handling and use of explosives.

CF.2 Persons to be appointed as shotfirers should be properly selected and intensively trained, so that safety habits are ingrained in their very nature.

CF.3 The fixation of the maximum number of shots to be fired by a shiftier needs very careful consideration.

CF.4 In every mine using more than a prescribed amount of explosives, the whole shotfiring staff should be under the charge of a superior officials on each shotfiring shift.

D. Organisation of large and/or mines

D.1 All large mines should employ separate senior supervisory staff ((on full-time basis) to look after each of the more important safety aspects, such as ventilation, sand-stowing, shotfiring, machinery maintenance etc.

D.2 Only experienced persons should be appointed as managers of large and/or gassy mines.

D.3 In all mines above a prescribed size, a suitably qualified persons should be employed as Safety Officer.

DA. Need for Research Work

DA.1 There is a special need for research work into the methods of working of thick seams.

DA.2 For success in its work, the Mining Research Station should work in close collaboration with the Mines Department and the Industry.

E. Management Practices

E.1 The definition of 'agent' in the Mines Act should be amended to include every person other than an owner or agent who takes parts or has an effective say in the technical management of the mine including -

- (i) Senior offices like Chief Mining Engineers, etc.;
- (ii) Specialist staff like Planning Engineers, Chief Surveyors, Chief Engineers etc.;
- (iii) Persons of the type of Local Supervisors, 'Master Babus' etc.

E.2 Where the owner himself directly supervises and directs the work at the mine he must carry direct responsibility for safe operation in every case.

E.3 Mines Act should clearly provide that all instructions regarding technical matters (even by an Owner or Agent) should be routed through the manager.

E.4 To enable the manager to devote more attention to safety matters, the non-technical obligations relating to building of canteens, crèches, pit-head baths etc., and of payment of bonus, provident fund etc. should be removed from the person of the manager and shared between the owner/agent, welfare/ personnel officer etc

E.5 The status of surveyors and other supervisory officials should be improved commensurate with their responsibilities and duties.

E.6 The status of winding engine-men should also be improved to attract persons of higher standard to this cadre.

E.7 A statutory provision similar to Coal Mines Regulation 113(2) should be made relating to the determination of the size of overmens' district.

E.8 No safety officials shall be dismissed unless his case has been discussed in the Pit Safety Committee.

F. The Role of Workmen

F.1 Workmen and their representatives should cooperate with the management in ensuring effective compliance with safety measures and precautions.

F.2 Workmen should have the right to get the mines inspected by their chosen representatives. Such representatives should be specifically excluded from dealing with matters relating to wages, wage-rates, labour disputes etc.

F.3 A copy of every violation letter received from the Mines Department should be posted on a special Notice Board.

F.4 At every large mine, a Safety Committee should be set up to discuss matters relating to safety. The Committee should be precluded from dealing with matters relating to wages, wage rates, labour disputes etc. The Committee may discuss the reports of inspection of workmen's representatives and also the violation letters received by the management from the Mines Department. {This study material has exclusively been provided by mineportal.in }It should also bring to the notice of the Mines Department any safety provision of direction that is not being observed or any other danger that comes to its notice.

F.5 Cases of disciplinary action arising out of non-observance of safety requirements may be referred to the Committee.

F.6 Discipline amongst workers is essential for conducting different operations in a mine in a safe manner. The problem of lack of discipline in mining areas requires a through enquiry by a properly-constituted body.

F.7 Where persuasion fails, deterrent action should be taken against violators of safety laws. Where a workman is punished for a breach of safety provisions of the law, he should not be shown any sympathy by the workmen's unions.

GA. Methods of Recruitment

GA.1 A established and permanent labour force is an asset to the Industry from all points of view, including safety.

GA.2 The present recruitment position is chaotic. The recommendations made elsewhere about the training of all new recruits to mining also imply the creation of a suitable Central Recruitment Agency.

GA.3 Recruitment through labour contractors and other private agencies should be abolished.

GB. Hours of work

- An investigation into the fatigue factor (by systematic time-studies of different categories of workers in different type of mines) is necessary.

GC Fitness of Workers

GC.1 All entrants to mining should be subjected to a physical test. All mine workers should also be medically examined at periodic intervals.

GC.2 Provision of housing for mine-workers should be given top priority.

GC.3 A system whereby men work in a regular team may be better than one in which new work-groups are formed frequently.

HA. Enforcement Agency

HA.1 Inspections should not be carried to the point at which inspector's responsibility begins to be substituted for the statutory responsibility of the owner. For the time being, the frequency of inspections may be based on the following general principles -

- (i) Two general inspections every year of all mines.
- (ii) In all larger mines, special inspections to be made with reference to a particular object in view e.g. general supervision, ventilation, coal dust, support in depillaring areas etc.
- (iii) Mines where conditions appear to be generally unsatisfactory or the standard of management inferior should be placed under frequent inspection until the mine has been brought upto a certain standard.
- (iv) A number of surprise inspections should be made on the afternoon and night shifts.

HA.2 As it is asking to much of any Inspector to 'bear in mind every detail of statutory requirements, or to have the power of observation to recognize in one comprehensive survey whether or not each one is order, there is an increasing need for the inspector's visits to be directed mainly to certain pre-selected objectives, subject to the general scheme of inspections.'

HA.3 On surprise inspections, the majority should be made on afternoon and night shifts.

HA.4 The enforcement of the Mines Rules should be taken away from the Mines Department to enable it to devote its full attention to safety and allied matters.

HA.5 Mines Department should have sufficient Inspectors of Mines for Special Duties, Electrical Inspectors, Mechanical Inspectors, Medical Inspectors etc.

HA.6 The general strength of the Mines Department should be increased to enable it to discharge properly the heavy burden placed on it as a result of the new legislations and sure to be considerably added to by these recommendations. It is obvious that unless the staff of the Mines Department is adequate, it cannot properly discharge the functions entrusted to it.

HA.7 The position regarding recruitment to the Mines Department is very poor. As Inspectors are to be drawn from the ranks of managers, there is need for some comparison between the salaries paid in the Department and those paid in the Industry. {This study material has exclusively been provided by mineportal.in }.The principle followed in the U.K. where the salary-grade of an Inspector starts where that of the manager in the nationalised industry ends, may be followed here with advantage.

HA.8 There should not be more than three Inspectors under one Regional Inspector. The number of senior officers should also be sufficient to properly guide, and keep check on, the work of regional offices.

HA.9 Adequate library facilities should be available to officers of the Mines Department including those posted at the regional and other outlying offices. Facilities should also be provided for Inspectors to obtain training in foreign countries.

HB. Problem of Enforcement

HB.1 For proper enforcement, it is necessary for every regional office the Mines Department to have regular legal assistance at its disposal.

HB.2 The possibility of appointing Special Mining Courts should be

explored to ensure that due importance is given to infringements of safety laws and that, for proved contraventions the penalty awarded is sufficient to act as a deterrent.

HB.3 The possibility of vesting the Inspectorate with powers of imposing fines in certain cases of contraventions should be explored.

HB.4 The Mines Act should be amended to provide that evidence recorded by Inspectors would be accepted by the Courts of Law.

HB.5 Section 22 of the Mines Act should be amended to include cases where, despite warnings, the managements do not show any improvement in regard to safety matters.

HB.6 Every mining lease should carry a clause to the effect that the lease may be cancelled if, due to the bad history of management, the Chief Inspector so recommends.

HB.7 Contravention of an order under Section 22(3) of the Act should be punishable with imprisonment only.

HB.8 Limitations of the enforcement agency should be realised. It should be appreciated that "inspite of all the authorities vigilance and severity, it is practically impossible to compel respect for safety obligation in all cases... Again, statutory regulations and inspections cannot prevent many of the accidents due to causes such as carelessness, faulty methods.., howsoever much the authorities may intervene."

HB.9 The Mines Department can function as an enforcement agency only for so long as it is independent of any authority responsible for the production of minerals.

HB.10 Holding of enquiries by police authorities into mine accident should be prevented to obviate undue harassment to mine managements and workers.

I. Avoidance of Dual Control on Safety in Coal Mines

I.1 Such work of the Coal Board as related to safety (including stowing) should be placed under the direction and control of the Chief Inspector; and the funds of the Coal Board should be placed at the disposal of the Mines Department.

I.2 Expenditure incurred on stone-dusting (or other dusttreatment) should be a legitimate charge on the funds of the Coal Board.

I.3 The rate of assistance granted in cases of conservation should not exceed that in cases of voluntary stowing for safety.

I.4 In cases of compulsory stowing for safety assistance should be granted at the full (100%) rate.

J. Education and Training

J.1 Unless competent and dependable workmen, operators and officials are available in mines, no programme of promotion of safety can make any real headway.

J.2 Immediate steps should be taken to train all new entrants to mining. The scheme may start with gassy mines and should gradually be extended to cover all mine workers. The Mines Welfare Commission appears to be the best agency to undertake such a scheme.

J.3 Further Accident Prevention courses for all workers should be arranged at periodic intervals.

J.4 The provision of training facilities for mining supervisory staff should be expedited. Special attention should be paid to the training of mine surveyors.

J.5 One-year specialisation courses for qualified engineers for employment in mines should be instituted.

J.6 A suitable scheme of directed practical training for mining engineers should be evolved.

J.7 Arrangements should be made for holding of refresher courses for older officials and technicians etc. Training in the principles of TWI should be included in every curriculum of training of officials and technicians etc.

KA. Safety Education

KA.1 "Every one who works in the mine, from the manager to the youngest worker must be installed with the right attitude, which consists in a sincere belief in the possibility of accident prevention, in bearing safety in mind, and a resolve to put into practice everything which can contribute to preventing accidents."

KA.2 For senior managerial staff, a Safety Bulletin (quarterly) should be put out by the Department of Mines; and, occasional Safety Conference should be held.

KA.3 For other officials, 'Accident Prevention Courses' should be established, making full use of audio-visual methods and safety 'tracts' with suitable illustrations should be prepared and distributed.

KA.4 It is also necessary to hold periodic refresher courses.

KA.5 'First Aid Training' amongst mine workers should be intensified.

KB. Safety Competitions and Incentive for Safety

KB.1 Safety weeks should be held occasionally in the whole industry. Safety Campaigns, aimed at reducing accidents of a particular type of during a particular period, may also be useful.

KB.2 Suitable safety awards (for good safety records) may be instituted by a Governmental agency, amongst -

- (i) large companies;
- (ii) individual mines;
- (iii) individual miners.

KB.3 Large mines or group of mines should institute awarding systems of safety prizes to district officials, individuals etc. for low-accident performance.

KB.4 Institution of a suitable scheme of Incentive Safety Bonus deserves serious consideration.

KB.5 Officials' Safety meetings at the mine-level are also a useful medium for promoting safety.

LA. Rescue in cases of inundation

LA.1 Every mine should send to the Regional Inspector, once a year, a list of all pumping equipment (including pipe-ranges etc.) which can be readily spared and dismantled. The list should contain certain detailed specifications of the equipment. From these lists, classified lists giving location of each type of equipment should be prepared.

LA.2 Similar classified lists may be prepared of heavy load carriers in the locality.

LA.3 In case of an emergency existing at any mine requiring the help of outside workers, it should be the statutory responsibility of the mine-management concerned to immediately provide free and adequate canteen and resting facilities for all such workers. It should also be required to pay reasonable charges for the loan of equipment and for the employment of workers belonging to other concerns.

LB. Rescue from behind Irrespirable Atmosphere

LB.1 A statutory provisions should be made requiring payment of prescribed allowances to all rescue workers and, in case of emergency at a mine requiring their services, also for requiring the managements concerned to provide free and adequate canteen and resting facilities.

LB.2 It should be the statutory obligation of every rescue trained

worker to turn out when a call is sent out.

M. Health Hazards in Mining

A medical inspectorate should be set up early, within the Mines Department, to undertake regular industrial hygiene surveys in mining areas.

NA. Compensation for Accidents

NA.1 There is a case for increasing the rates of compensation.

NA.2 There are also strong ground for the payment of some supplementary compensation to mine workers. Any such scheme should also provide for the recuperation of persons who have escaped from disasters etc., and for the education of children of accident victims. The scheme can best be operated through a Mines Welfare Commission.

NB. Compensation of Industrial Diseases

The miners' industrial diseases notifiable under the Mines Act should be compensable.

NC. Rehabilitation of Injured Miners

The arrangements being made to rehabilitate the permanently injured coal-miners should be extended to cover all mines.

O. Collection of statistics

O.1 The definition of "serious injury" may be amended to conform with the recommendations of the I.L.O., if any.

O.2 The manshift basis is the most representative basis for calculating accident-rates. Rates based on production basis may however be used for comparisons over short periods.

O.3 For the proper scrutiny and examination of statistics, the statistical section of the Mines Department should be strengthened. Statistical assistance should also be provided to the regional offices.

P. The Price of Coal

In the policy of coal price fixation and coal control, due weightage should be given to the cost of observing additional safety measures in the deep and/or gassy mines.

QA. Protective Equipment

Further statistical studies are required to indicate the necessity for the

use of protective equipment other than hats and shoes.

QB. Safety material and Equipment

QB.1 Steps should be taken for the manufacture, within the country, of essential safety material like fire-proof brattice cloth and incombustible dust etc.

QB.2 A standing committee should be set up to assess the industry's requirements for safety equipment, and to promote the manufacture of such equipment in India. Till, however, the indigenous production can meet the total requirement, imports should be permitted to meet the balance of requirements in full.

RECOMMENDATIONS OF THE SECOND CONFERENCE ON SAFETY IN MINES

(Held in Calcutta on 9-10th July, 1966)

GENERAL

The Conference agreed with the suggestion made by the Chief Minister of West Bengal in his inaugural address that there was need to ensure close cooperation and coordination between the Central Government and the State Governments in respect of all matters connected with the exploitation and conservation of minerals and safety of residents in the mining areas. The Conference recommended that a small coordinating committee comprising representatives of the Central Government and State Governments concerned and other interests should be set up to look into such matters and ensure this co-ordination.

Condolence Resolution:

The Conference observed one minute's silence in memory of the miners who had lost their lives in the Dhorī Disaster and other mining accidents since the First Safety Conference and adopted the following condolence resolution:-

"This Second Conference on Safety in Mines places on record its deep sense of sorrow and grief over the tragic loss of life the Dhorī mine disaster and other accidents since the First Safety Conference and conveys its heart-felt sympathies to the member of the families of the deceased workers."

Items 1 and 1A - Review of Progress made in the implementation of various recommendations of the First Safety Conference in Mines and General Considerations:

There was a general discussion and the members had an exchange of views about the action taken on the recommendations of the First Safety Conference, set out in the memorandum on this item. Suggestions were put forward during the course of discussion on : (a) rehabilitation of the disabled workers, (b) adequate compensation in the event of disablement, (c) the need for strengthening the agency for enforcement of safety laws, (d) the operation of the CRO, (e) taking over by Government of mines which close down due to violation of laws/mismanagement, (f) expeditious implementation of the First Safety Conference recommendations which had not yet been implemented, (g) greater association of workers in safety measures etc. It was considered that as most of these subjects were covered by the different items on the agenda

of the Conference, formulation of recommendations might be taken up during the discussion on these items.

The Statement on Action Taken, placed before the Conference was noted.

Items 2, 2A & 3 - Action taken/to be taken on the recommendations made by the Dhori Court of Enquiry.

Mine Disasters : Prevention, Enquiry and other connected factors. Report of the Russian Experts on Mines Safety.

These items were taken up for discussion together. The Conference reviewed the progress of action taken on the recommendations of the Dhori Court of Enquiry, the comments of Chief Inspector of Mines on the suggestions made by Mr. K. Saunders, Safety Expert of the National Union of Mines Workers. U.K., and the ILO Experts on Mines Safety. The Chief Inspector of Mines gave a brief account of action already taken and the steps proposed to be taken in regard to:

- (a) provisions of safety lamps, (b) conducting of surveys by managements to check up the presence of gas, (c) ventilation standards, (d) installation of mechanical ventilators, (e) clearance of coal dust etc. He pointed out that the recommendations had by and large already been implemented or steps were being taken to give effect to them. The position would also be reviewed from time to time and suitable measures taken to effect improvements, wherever necessary.
- (ii) Attention was drawn by some of the workers' representatives to the findings of two Courts of Enquiry that attendance register were not being properly maintained by the managements. It was recommended that all possible steps should be taken to improve the state of affairs.
- (iii) There was a demand for the workers' side that 'violations' of a serious nature should be displayed on the Notice Boards and those of a minor nature should be placed before the Pit Safety Committees. The employers did not agree to the proposal. The Chairman said that he would look into the matter to find out which types of 'violations' could not be communicated or displayed on the Notice Board.

Some of the workers' representatives further suggested that the workers should be associated with the inspection work. It was explained that Government had already accepted a proposal for inspection by workers' representatives and that the Mines Act, 1952, was being suitably amended.

It was agreed that the Standing Safety Committee should review the position concerning implementation of safety standards from time to time and make suitable recommendations for improvements

in this respect.

- (iv) The question of research on mining problems was discussed, and it was agreed that research should play a more positive role in safety matters.

Item 4 - Promotion in indigenous manufacture of Mines Safety Equipment:

- (i) It was recommended that adequate foreign exchange should be made available for importing such essential safety equipment as is not manufactured within the country.
- (ii) It was agreed that the possibility of manufacturing further items of safety equipment within the country should also be explored. For this purpose, a small Committee should be set up to go into all aspects of the question and suggest which of the equipments could be manufactured indigenously. {This study material has exclusively been provided by mineportal.in }. The proposed Committee may consist amongst others, of representatives of the Development Wing of the Ministry of Industry, industrialists, mine owners, Chief Inspector of Mines Organisation, the Ministry of Mines and Metals etc.

Item 5 - Payment of compensation for Pneumoconiosis.

Though Pneumoconiosis was fairly common in the mining areas, the major reason why workers failed to report the disease to the medical authorities was their fear of losing employment on being found medically unfit. It was considered that the question essentially was one of laying of suitable rehabilitation scheme for this category of workers.

It was also agreed that doctors should be adequately trained for proper diagnosis of this disease. A committee should be set up to go into all aspects of this problem, including those of compensation and rehabilitation.

The question of rehabilitation and re-employment of other disabled mine workers was also discussed. It was agreed that a training institute for these persons should be set up soon. A Committee should also be set up to examine all aspects of the problem, assess the requirements of the mining industry of such equipment and material as could be produced by centres manned by such disabled workers, and take such other steps to set up industries to absorb them as might be practicable.

Item 6 and Item 12 - Vocational Training of Mine Workers. Recruitment and Training:

- (i) These two items were taken up for discussion together. A point was made that a number of workers had been retrenched on account of redundancy whereas new mines were coming up, creating new job opportunities. It was urged by the Conference that the recommendation of the First Safety Conference whereby retrenched workers were to be given preference for absorption should be fully implemented. For this purpose better coordination between the industry and the Employment Exchange should be ensured.
- (ii) The Chairman stated that all new entrants including the C.R.O. workers are covered by the Vocational Training Rules.

The Chairman agreed to consider the suggestion that the chainmen and engineering staff employed in the mine should be given suitable training.

The position explained in the memorandum regarding over production of mining engineers and technicians was noted.

Item 7 - Translation of the Mines Act, Regulations and Rules made there under into Hindi and other regional languages.

The progress made in the translation of the Mines Act and the Regulation into Hindi and other regional languages was noted. It was, however, suggested that the translations should be in simple language, easily understood by the workers.

Item 8 - Cancellation of mining leases in case of extremely bad management.

The workers' representatives suggested that mining leases should be cancelled in case of mismanagement. The Chairman explained that the Industries (Development and Regulation) Act contained certain provisions concerning investigation and taking over of units in case of mismanagement and that it might be desirable to examine in the first instance whether these provisions would cover mines also.

Item 9 - Police enquiries into mining accidents:

It was agreed that the question together with the difficulties being experienced in this regard would be pursued with the State Governments.

Item 10 - Payment of supplementary compensation to workers employed in mines and to mine managers.

It was explained that Government had not found it possible to accept the proposal for supplementary compensation for injured underground mine workers. It was, however, decided that the Committee suggested under item 5 for considering the whole question of rehabilitation of medically unfit and disabled mine workers might consider what further benefits could be given to such underground workers. The Chairman also agreed to consider the suggestion as to how such managers and mine officials as are not covered by the Workmen's Compensation Act or any insurance scheme could be compensated in case of accidents.

Item 11 - Mine Surveying:

The position explained in the memorandum on the subject was noted.

Item 12 - Recruitment & Training:

(Already covered along with item 6).

Item 13 - Safety organisation and training:

Regarding the constitution of the Pit Safety Committees, it was agreed that the recognised Unions of the Mines may prepare a panel of names of workers from which the management may nominate members on the Pit Safety Committee. It was also agreed that suitable steps should be taken to activate the Pit Safety Committees. It was further agreed that more Rescue Stations, equipped adequately, should be opened at suitable places to cover the mining areas.

Item 14 - Labour and management practices:

It was felt that, for the safety of the mine, it was essential that a sense of discipline should be developed at all levels in the mine.

Regarding the allegation that certain safety officials had been victimized for pointing out safety defects in a mine, the Chairman suggested that such cases should be brought to the notice of the Inspectorate for inquiry and suitable action. The Chairman suggested that, whenever any workman or official of a mine came across a dangerous situation, he should bring it to the notice of the management. The Chairman also suggested that all mines should have a 'Suggestions Scheme' whereby mine workers who made suggestions for improving the efficiency and safety in the mine could be suitably rewarded. The employers accepted the proposal.

The question of vicarious responsibilities at present borne by the managers was raised, and it was suggested that a Committee may be set up to examine the issue. The Chairman agreed to consider the suggestion.

Item 15 - Working conditions, health and special considerations:

The various suggestion made were noted.

It was agreed that continuous efforts should be made to improve the living conditions in the interest of safety, and that there was room for further improvement in the working conditions although these were generally good.

It was agreed that the Mines Inspectorate should be adequately strengthened for the better enforcement of safety laws.

Item 16 - Other considerations :

The statements made in the memorandum were noted. The Chairman stated that the implementation of the recommendation of the Committee on Miners' Boots was under Government's consideration.

Item 17 - Development of safety standards:

The need for continuing development of safety standards was underlined. In this connection, it was suggested that the Central Mining Research Station should re-orient its investigation programmes to include specific safety problems in the field and make the data available to the Chief Inspector of Mines who would take it into consideration while setting standards. The Chairman agreed to examine the suggestion that the services of the postgraduate practical trainees might be utilised in making investigations into matters like study of geological structures underground and gassiness of seams.

Item 18 -Legislative Measures and their Enforcement:

The position explained in the memorandum was noted. Regarding a complaint made at the Conference that in some mines suitable surveying equipment was not being provided to enable surveyors to undertake the work properly, the Chairman suggested that if the concerned surveyor failed to get necessary equipment from the management, the matter might be taken up with the Mines Inspectorate.

It was agreed that the proposed Coordination Committee would consider the safety of surface structure in mining areas.

Item 19 - Development Schemes for Safety in Mines for the Fourth Plan:

The memorandum on this subject was noted and the need for the various development schemes mentioned therein endorsed.

Regarding the suggestion to constitute a Mines Development Board, Shri AC Bose, the Coal Controller, pointed out that development of a mine concerned not only safety but also production and that therefore the question of mine development concerned the Ministry of Mines and Metals as well. The Chairman mentioned that all important concerned interests would be associated with the work of the proposed Mines Development

Board.

Item 20 - Memorandum forwarded by All India Khan Mazdoor Federation (HMS) and Indian Mine Workers Federation (AITUC):

While there was no discussion on this item, it was stated by a representative of the workers that the issues raised in the two memoranda which had not been covered by the discussion on the earlier items should be considered by Government.

Concluding Remarks:

In concluding the deliberations of the Conference the Chairman referred to a suggestion made earlier that the safety and production wings should be under the same Ministry, and stated that in the interest of independent thinking in respect of safety, it was necessary that the Mines Inspectorate should not be a part of a Ministry which is responsible for the working of the mines. This principle was being followed in respect of safety in Railways and Factories also, and no change was called for. {This study material has exclusively been provided by mineportal.in }.He added that safety in mines was a continuous process, and for this purpose, safety standards and safety practices should be kept under constant review. He thanked all those attending the Conference for the cooperation extended during the deliberations of the Conference, and expressed the hope that the good spirit showed during the Conference would also be forthcoming at the time of implementation. Such co-operation was essential for early implementation of the decisions taken at the Conference.

RECOMMENDATIONS OF THE THIRD CONFERENCE ON SAFETY IN MINES

(Held in Calcutta on 14 - 15th July, 1973)

GENERAL

1. (a) Suitable legislation should be made in the Coal Mines (Safety & Conservation) Act for ensuring safety of persons residing on the surface of underground workings which are unsafe.

(b) There should be a suitable legislation prohibiting new constructions in mining areas without permission from a competent authority.

Item No.1

1. Steps should be taken to complete the action on the recommendations of the Second Safety Conference within a year.
2. (a) The consensus of opinion was that the recommendations of the National Commission on Labour in respect of wage limit for eligibility under the Workmen's Compensation Act should be implemented.

(b) It was also agreed that the payment of compensation by itself should not entitle an employer to remove a workman from service.
3. It was agreed that any person who is rendered medically unfit as a result of Pneumoconiosis or any other occupational disease or permanent disablement due to injury arising out of and in the course of employment shall be treated at the cost of the management with full pay and if found unsuitable for the present job, the management shall provide him with suitable alternative job.

In this context the following recommendations of the Committee on disabled miners should also be immediately implemented :

- (a) For permanent disabilities upto 50% the disabled workman should be rehabilitated in his previous occupation or in an alternative job without loss in wages. Only when the permanent disability exceeds 50% the management may be given the option of either retaining him in employment without loss in wages or retrenching him from service after paying him compensation equivalent to retrenchment compensation in addition to the disablement compensation.
 - (b) Those workers or supervisory officials, who are considered unfit on medical grounds, should either be provided with jobs in mines suited to their ability or paid adequate compensation not less than that payable as retrenchment compensation before their services are terminated
- 4. The Mines Safety Equipment Advisory Board should be reconstituted immediately. The Government should take necessary steps to ensure that the industry is supplied with all necessary and essential equipment, apparatus and materials for proper and safe running of mines. For this purpose, till adequate indigenous capacity is built up, adequate foreign exchange should be released, where required, on the recommendations of the MSEAB, without further technical scrutiny.
 - 5. The standard of implementation of welfare amenities in general and drinking water in particular should be improved.
 - 6. Until approved type of protective footwear becomes available in the market, any suitable type of footwear may be provided to workers on the condition that it shall be replaced by approved type as and when it becomes available.
 - 7. The Annual Reports of the Director-General of Mines Safety should be published not later than one year of the year to which they relate.

Item No.2

- 1. (i) The frequency of inspections by officers of DGMS should continue to be regulated in accordance with the recommendations of the First Conference on Safety in Mines.
- (ii)(a) In the changed character of the mining industry with the recent nationalisation of all coal mines, the role and functions of the DGMS needs to be redefined, its responsibilities more precisely stated and its cadre staffed with persons of the required calibre and experience.

(b) In order to increase the frequency of inspections according to set norms, the present staff strength of the DGMS is not adequate. Early steps should be taken to strengthen the organisation suitably.

(iii) For effective discharge of their functions, the officers of DGMS should command respect in the industry. To ensure this, their salary structures and status at all levels including the Director-General of Mines Safety should be on par with the higher technical personnel in the industry so as to attract to and retain in the organisation persons of high calibre and of adequate experience.

(iv) There are currently too many levels of officers in the DGMS which delays decisions unnecessarily. The number of levels should be reduced in order to speed up implementation of decisions.

(v) The Safety standards should be backed by or based on scientific research and investigations. To ensure this, it is necessary that the DGMS should have its own R&D unit.

(vi) The violations detected during the inspections made by DGMS officers should be pointed out on the spot and entered in a register kept at the mine. A copy of the violations shall be sent to the recognised union, State Government concerned, and registered trade unions on request. A copy of the same shall also be displayed on the notice board. For this purpose, the law should be suitably amended.

2. The consensus was that the Report of the Expert Committee and the recommendations made therein were not acceptable. However, consideration can be given to have a separate set of regulations for all opencast mines, irrespective of their size or the mineral mined.

Item No.3

- (a) The Mine Mechanization Training Institutes should be set up in all major mining areas. Immediate steps should be taken to set up the institutes in Jharia and Raniganj Coalfields, to start with.
- (b) To ensure proper training of workers and implementation of Vocational Training Rules, the training should be imparted during working hours.
- (c) Special mines management training courses should be organised for the managers and senior officials by the mine managements.
- (d) The post-graduate and post-diploma training of degree and diploma students respectively should be reorganised and reoriented on the basis of the needs of the industry. Their training schemes should have a greater practical bias on the general

principle that every future official must himself have performed every kind of underground job.

Proper accommodation should be provided to the trainees at or near about the mine.

The institution of unpaid apprentices should have no place in the mining industry.

Item No.4

- (a) The recommendations made in this item are generally acceptable. Suitable steps should be taken for amendment of Mines Act and Regulations, Rules framed there under as may be required.
- (b) The recommendations of the National Commission on Labour regarding compensation to workers for loss of wages when the mines are ordered to be closed on account of violations of safety provisions etc. should be implemented. Suitable amendments to Section 22 of the Mines Act should be made in this respect.

Item No.5

- (a) Research and Development units should be established in the public sector undertakings.
- (b) The proposal to set up a Central Mine Planning and Design Institute is a welcome development. DGMS should be closely associated with the Institute.
- (c) The recommendations of the Jitpur Court of Enquiry regarding setting up of safety department should be implemented.
- (d) The Mines Act should be suitably amended to provide for defining the duties and responsibilities of senior managerial positions above the rank of manager. Pending this, the public sector undertakings should do this on their own accord.
- (e) Raising contract system in relation to mines should be abolished.
- (f) Occupational Health Service at mine level should be established as early as possible.

Item No.6

- (a) Pit Safety Committees should be suitably activated so that they play a positive role and make a fruitful contribution to accident prevention at mines.
- (b) Trade Unions should be actively associated with all schemes of

Vocational Training of workers and safety campaigns of mines.

- (c) A code of safety conduct should be evolved by the constituent members of the Trade Unions.

The proposed Code of Safety Conduct may, include matters like extending co-operation to mine managements in enforcing safety and discipline at mines, defining obligations of mine-workers on safety and welfare measures provided by mine owner, and promoting schemes of rationalisation and mechanisation of mines (without overall reduction of labour, of course) for improved mining technology, which increase safety efficiency, and productivity of workers for general amelioration of their lot.

Item No.7

- (a) Special trial courts one for each state or Region where there is sufficient workload to justify the constitution of such a court, should be set up to exclusively try all the criminal case for the offences under the Mines Act and other similar enactments.

Such courts may be presided over by a person of appropriate judicial status who shall also be empowered to requisition the services of any expert or experts in mining or other fields to assist the court, as assessors.

Item No.8

- (1) The recommendations of the National Commission on Labour in respect of payment of compensation to workers should be implemented.
- (2) The suggestions made in para 7.0 of the note should be examined, if necessary by forming a Committee, and suitable action taken to develop the Workmens' Compensation Act into a very potent tool for promoting industrial safety, besides doing better justice to the injured/deceased and his family.

Item No.9

Mines Rules framed under the Mines Act should be suitably amended requiring the issue of identity cards to mine workers.

Pending legislation, all mines should adopt this recommendation.

Item No.10

- (1) Duties and Responsibilities of Senior Officials (See recommendation under item 5 of the Agenda)
- (2) Roster of officers on duty on holidays

Regular roster of officers who are on duty on a rest day or on holiday should be prepared and the officers concerned told about their duties and responsibilities for that day. To ensure this regulations or rules may be suitably amended.

(3) Reorganisation of Safety set up at mines

(See Recommendations under Item No.55 of the Agenda).

(4) Periodic Reports of DGMS to Government

Periodic Reports in respect of public sector mines may be submitted by DGMS to the Government, as recommended by the Jitpur Colliery Court of Enquiry.

These reports should be considered at joint meetings between Ministry of Labour and Employment responsible for safety and Ministry of Steel & Mines concerned with production to discuss and sort out problems of enforcement and implementation of measures required for improving safety, welfare and health of workers employed in mines.

(5) Status of Directorate-General of Mines Safety

(See Recommendations under Item 2 of the Agenda)

(6) Activising of Pit Safety Committees

(See Recommendation under Item 6 of the Agenda)

(7) Alternative arrangements of Power Supply

The recommendations of the Jitpur Colliery Court of Enquiry should be implemented. In this connection, action taken by the DGMS was noted.

(8) Recording Methanometers and Air Velocity meters

Indigenous manufacturers of Recording Methanometers and Air Velocity meters should be encouraged. In the meanwhile, necessary foreign exchange should be made available for installing these essential safety items for installation at Degree III gassy mines.

(9) Rescue Services and Equipment

- (i) The recommendations made by Jitpur Colliery Court of Enquiry to strengthen the rescue services and provide the rescue stations with

modern and light type of rescue apparatus and equipment, should be implemented as early as possible.

- (ii) Where possible, some of the bigger units should establish their own rescue services and in this task be assisted by Central Rescue Stations Committee for provision, maintenance and upkeep of rescue equipment.
- (iii) The following equipment should be provided on coalfield/ area-wise basis for rescue of entrapped miners etc:
 - (a) A mobile winder,
 - (b) A large diameter boring machine,
 - (c) Heavy earth moving machinery for speedy isolation of surface fires.
- (iv) Self-rescuers should be introduced as soon as this essential piece of safety equipment becomes available in the country. For this purpose, necessary indigenous capacity should be developed.
- (10) Strengthening of Electrical and Mechanical Wings of DGMS

The Electrical and Mechanical wings of DGMS should be adequately strengthened so as to ensure at least quarterly inspections of each mechanised mine.

GENERAL

Police Enquiries into Mining Accidents

The State Governments which have not yet accepted to implement the recommendations of the Second Mine Safety Conference should be persuaded by the Central Government not to institute a parallel police enquiry into mining accidents which come within the purview of the Mines Act.

National Council for Safety in Mines

The activities of the National Council for Safety in Mines should be expanded by providing additional funds for its proper functioning. For this purpose, additional sources of contributions, if necessary by a levy of cess may be created.

RECOMMENDATIONS OF THE FIFTH CONFERENCE ON SAFETY IN MINES

(Held in New Delhi - 26th and 27th December, 1980)

Item No.1 : Defining the Safety Policy of Mining Companies

1. It is unanimously accepted that every company whether in the public or private sector should have well-defined policy in the field of safety laid down in the form of a resolution at the Company's Board meeting. In defining such a policy, the Company should spell out, among other things, the following:
 - (i) Objectives;
 - (ii) Funds and facilities to achieve the objectives';
 - (iii) The set-up for the execution of the policy at different, levels, the duties and the responsibilities at each level and for close monitoring of the execution;
 - (iv) Arrangement for publicizing the above among the different segments of mining personnel, workers, their representatives and the concerned Governments;
 - (v) Any other matter that may arise during the execution of the Policy.
2.
 - (a) The Board of Directors of the Public Sector Units should review the progress of execution of the Policy at intervals not exceeding 6 months. During this review, the various other accepted recommendations of this Conference should also be reviewed.
 - (b) The Board should make specific mention regarding the progress of safety in its units and the specific steps taken by the Units in the year, in its annual report.
 - (c) The Ministry of Labour should communicate guide-lines in respect of action to be taken at (a) and (b) above, to the administrative ministries who in turn, will instruct the public sector units under their control.
 - (d) The Private Sector units also should be persuaded to adopt a similar course of action.

3. Tripartite meeting consisting of the management, the workers' representatives and the DGMS should be arranged at intervals not exceeding 6 months during which the safety performance and the progress of implementation of the Company's policy on Safety and Health and of the recommendations of this Conference and of different courts of enquiries should be discussed. These meetings could be presided over by representatives of management, labour and DGMS by rotation.
4. An in-depth, mine-wise and cause-wise analysis of all fatal and serious accidents that have occurred at every mine of each mining Company during the last three years shall be made by the ISO (Internal Safety Organisation) of the Company.
5. On the basis of the said analysis, the Board of Directors should every year, draw up a programme of "Safety Campaigns" at selected mines to eliminate avoidable accidents.
6. Effective publicity would be given to the proposed "Safety Campaigns" and the details thereof would be finalised in consultations with workers and their representatives. The duties and responsibilities of workmen, supervisors and management officials would be spelt out and every member made aware of the role to be played by him, either alone or in groups.
7. To make the "Safety Campaigns" successful, good will and co-operation in full measure would be extended by workers and their representatives.
8. The impact of such Safety Campaigns should be continuously monitored by the ISO and reported to the Board of Directors at intervals not exceeding three months. This would enable the Board to issue fresh guidelines in the matter.
9. Every year each Company would bring out a report detailing the "Safety Campaigns" launched and the results achieved. These reports would be presented before the Tripartite Committee. The first report should become available by 31.12.1981.
10. To prevent accidents due to failure of equipment each mining Company should have a well equipped quality control cell which should not only ensure the purchase/procurement of good quality equipment/apparatus but should also monitor the performance of the same in actual use. {This study material has exclusively been provided by mineportal.in }.These cells should also lay down schedules for the proper maintenance and operation of such equipment/apparatus. Periodical testing of the equipment/apparatus should also be the responsibility of these Cells, which should maintain effective liaison with the DGMS, CMRS

and other Institutions. Such Internal Quality Control Cells should be set up before the end of 1981.

Item 2: Adoption of Improved Technology

1. All Degree III gassy mines should have a comprehensive network of environmental monitoring system including methane monitoring within next two years.
2. (a) Tele-communication system should be introduced in a phased manner in belowground mines in the next five years, giving priority according to distance, mechanisation, degree of gassiness, and problems of fire. Tele-communication should also be provided in all mechanised opencast mines in the next two years.

(b) Surface communication systems should be improved expeditiously.
3. (a) R&D Board of Coal India should be reactivated. R&D capabilities should be provided in each mining company in collaboration with C.M.R.S.

(b) Cells for quality control for mines safety equipment and materials should also be set up and fully developed.
4. For proper development and growth of new technology, specialist cells should be set up in each Mining Company and in DGMS for Ventilation, Environment, Mechanisation and Dust Control, in addition to strata control unit.

Item No.3 : Training and Re-training of Workmen

1. V.T. Programmes to be recast and made more comprehensive so that the future mining community is self-reliant and professionally competent to do all face operations including those required for safety. Specialised training courses should also be arranged for the development of skilled operators required for heavy earth moving equipment; longwall face equipment etc.
2. Adequate infrastructure should be provided at the Company and Area levels and efforts should be made to attract talented persons having aptitude to run the training programmes.
3. Training in Vocational Training Centres should be oriented towards how to do the job rather than being shown how the job should be done.
4. There should be sectoral budget for training.

5. Central Training College/Institute should be established for training instructors and development of special cadres of mine surveyors and mine overmen/foremen.
6. Each mining company should formulate a comprehensive five-year scheme for training of all supervisory staff and workers within six months. The training scheme should be implemented thereafter with the help of Central and State Governments and other agencies.
7. Based on the requirement of trained manpower for future development of mining industry, training programmes should be launched. A tripartite committee should be set-up to advise on the modalities and infra-structure for such training.

Item No.4 : Internal Safety Organisation

1. The Internal Safety Organisation (ISO) should be independent of the production line up at all levels.
2. The Chief of ISO should be a senior officer next in rank only to the Director(Tech), if any or M.D./The Chief Executive.
3. The ISO should be a multi-disciplinary team and the field set-up should start above the level of mine. The Safety Officer at the mine level being a specialist staff officer to the Mine Manager, should not be deemed to be part of the ISO.
4. In order that the Internal Safety Organisation is able to play an effective role, detailed guidelines for their functions may be laid down covering, inter-alia, the following:
 - (i) Formulation of safety policy at the corporate level;
 - (ii) effective monitoring of the state of implementation of the policy directives on safety;
 - (iii) periodic inspection of mines for assessing status of safety;
 - (iv) enquiry into all accidents and dangerous occurrences;
 - (v) actively associated in opening new districts and in obtaining permissions, relaxations and exemptions under the statute;
 - (vi) the findings of ISO should be placed before the Pit Safety Committees for discussions and dissemination.

Item No.5 : Workers Participation in Safety Management

1. Mines Act should be amended to give statutory backing to the institutions of Pit Safety Committee and Workmen's Inspectors,

keeping in view the recommendations made by the Committee on Workmen's Inspectors.

2. The Institution of Pit Safety Committees being a fine example of a cooperative effort on the part of all concerned on mines safety at the unit level, there should be due recognition of the same. Participation by officials of higher management in the deliberations of the Committee would ensure positive encouragement; the performance should be periodically received at a level higher than the local management level.
3. For effective liaison, the Workmen's Inspector should be an ex-officio member of the Pit Safety Committee.

Item No.6 : Prevention of Roof/Side Fall Accidents

1. While adopting the policy that with effect from 1.7.82 no worker shall be permitted to work under unsupported roof that has been freshly exposed, each Company should plan and phase over the above programme in three phases of six months each. For this purpose of six months each. For this purpose, suitable support systems shall be selected and provided.
2. Strata Control units should be set up in the Mining Companies and the DGMS within one year.
3. In order to expose as few workers as possible under freshly exposed roof, multiple-skills would be developed in consultation with Trade Unions.

Item No.7 : Health and Prevention of Fatigue

- (1) (a) Immediate steps shall be taken by the mining companies to establish the required infrastructure for implementing the provisions relating to initial and periodical medical examination of mine workers.
(b) The need of treatment, proper care and rehabilitation of persons affected by aforesaid medical examination is recognised. The matter should therefore be examined by a tri-partite committee.
2. There should be suitable machinery both in the Industry and in the DGMS to carry out regular surveys on dust evaluation and evaluating dust control techniques.
3. In mines, supply of drinking water and adequate ventilation at working places should be ensured.
4. In mines where long or arduous travel is involved arrangements for transport of men should be made.

5. Recognising the adverse affect on health of employees while working over-time, employment of persons beyond their hours of normal duties should be minimised.
6. It was felt that there was scope for improvement in the design and quality of footwear in use in mines. The Boot Committee may be revived for this purpose.
7. Each mining company should launch suitable programme for improvement of working environment and living conditions and maintenance of ecological balance, affected by air and water pollution, noise and despoliation.

Item No.8 : Accuracy of Mine Plans

1. Mining Companies should make a realistic appraisal of the survey and supporting personnel required to fulfill statutory and other obligations within a period of 3 months, and take immediate action to make good and short-fall during the course of next 3 years. For this purpose the mining Companies should recruit survey apprentices and take immediate steps for training of mine surveyors either by opening specialised courses in the existing institutions or entering into collaboration with Polytechnics or Training Institutions under Survey of India etc. for meeting the present and future demand.

Mining Companies should also take steps to attract and retain qualified and competent Surveyors by formulating a suitable Survey Cadre Scheme.

2. Basic requirements to carry out efficient survey work and preparation of plans in terms of equipment, material and accommodation be ensured within a period of one year.
3. Existing survey personnel, both in the industry and DGMS, should be given refresher training and exposed to modern survey instruments and techniques.
4. (a) The work of correlation of mine plans and linking them up to the National Grid to the required standards of accuracy should be expedited and completed within a period of one year.

(b) For inaccessible old water-logged and other workings, suitable techniques should be developed to delineate them with modern methods of proving, within a period of 3 years.

Item No.9 : Reorganization of Mines Rescue Services

1. It was decided that this item would be considered further by the Ministry of Labour and that Shri Kanti Mehta, Shri Kalyan Roy, Shri P.

Chanda and Shri GS Marwaha would send their views on the subject to the Ministry of Labour.

RECOMMENDATION OF THE SIXTH CONFERENCE ON SAFETY IN MINES

(Held in New Delhi - 13th & 14th December, 1986)

- 1.0 The recommendations made by the earlier Conference on Safety in Mines should be fully implemented within a period of 1 year.

Item 2.1: Accidents due to falls of roof & sides

- 2.1.1 (i) Manager of every underground mine should formulate 'support plan' for support of roof, sides, back and hangwall in consultation with strata control cell where set up, CEMPDIL/any technical or research institution, ISO and Safety Committee. The 'Support Plan' should be in respect of the following:

- (a) workings within 9 metres of the working faces,
- (b) along tramming levels and especially at loading points,
- (c) along haulage roadways and especially at junctions,
- (d) at any other place(s) in the mine identify for support under Regulation 108 of the Coal Mines Regulations, 1957 and Regulation 112 of the Metalliferous Mines Regulations, 1961.

Local geological conditions, physico-mechanical properties of strata, method of work including mechanisation and past experience etc. may be taken into account while formulating such plan. For non-coal mines, nature of strata which in many cases is massive may be taken into consideration.

The plan should include :

- (a) type of supports e.g. safari supports, roof bolts, friction props, rigid props, or hydraulic props etc.
- (b) duties and responsibilities of Timberman, Dressers, Sirdars/Mates, Overmen/ Foremen, Assistant Managers, Managers and Agents towards supply of material, erection and withdrawal of supports, inspection thereof and ensuring effectiveness of supports.

The 'Support Plan' should be submitted to DGMS for approval.

In case there is delay in formulation of such plan due to involvement of various agencies, interim plan should be prepared and submitted immediately. Pending approval, the plan should be implemented.

- 2.1.1 (ii) No person should be employed at any place which is not supported in accordance with the approved 'Support Plan'.
- 2.1.2 ISO should investigate each and every major incidence of roof and side fall even if it does not involve any casualty. Preventive steps against such falls in future may be taken on the basis of those investigations.
- 2.1.3 Sufficient number of timbermen * dressers should be appointed taking into consideration absenteeism and leave within a period of 6 months.
- 2.1.4 Intensive practical training and retraining should be given to the persons engaged in support work such as timbermen and dressers etc. by experienced and qualified persons. This should be supplemented by organising workshops at mine level at quarterly intervals preferably by NCSM.
- 2.1.5 No blasting in coal-off-the-solid should be done except with proper type of delay action detonators and proper explosives.

Item 2.2 :Accidents due to dumpers and trucks in opencast mines

- 2.2.1 Adequate care should be exercised in selection and training of operators/drivers of dumpers and trucks and any other heavy earth moving machinery.
- 2.2.2 Adequate number of dumper operators and drivers of trucks and HEMM and also pitmen & dumpmen should be appointed keeping in view factors like absenteeism and leave etc. Work on overtime should be abolished.
- 2.2.3 Effective steps should be taken to prevent riding on dumpers and trucks by unauthorized persons. Further, adequate arrangements should be made for transport of machinery maintenance staff.
- 2.2.4 Dumpers, trucks and heavy earth moving machinery within mine premises should be equipped with audio-visual alarm within a period of 2 years to facilitate safe reversal.
- 2.2.5 Transport and loading operations, including those by contractors, should be supervised by competent persons. Where contractors are appointed for transport of mineral, examination of vehicles should be done by the mine management.

Item 2.3 :Accidents due to fire in Oil Mines

- 2.3.1 Mine managements should examine and review all installations vis-à-vis the safe distance to be maintained and work out a time bound action plan for rectification within one year along with safety precautions to be taken in the interim period to minimise danger.
- 2.3.2 All fixed I.C. engines should be fitted with flame arrestors and air intake shut-off valve with remote control within one year.
- 2.3.3 Contingency plan for fire should be framed on priority basis. While doing so, due note of the possible size and duration of fire that may develop should be considered in framing the plan.
- 2.3.4 A study should be undertaken to determine the causes of fire than occurred in the last five years and the remedial measures to be taken within a period of one year.

Item 2.4 : The Mine Environment with special reference to Air Borne dust and health of mine workers.

Mine Environment - Ventilation

- 2.4.1 Every effort should be made by mine managements to achieve the stipulated national standards with respect to mine environment in each mine. For this purpose, a ventilation scheme/plan should be prepared by the manager of each mine and a copy should be submitted to DGMS. No worker should be deployed at any place in any mine where these environmental standards are not met with.
- 2.4.2 Necessary facilities for monitoring the environmental parameters should be provided at mines. {This study material has exclusively been provided by mineportal.in }.Facilities of continuous type monitoring should be installed within three years in all degree III gassy coal mines and in such other mines having active underground fire or mines having serious problems of heat as identified by mutual discussions between mine management and the Directorate-General of Mines Safety.
- 2.4.3 Before adopting any new technology, the adverse effects, if any, of the same on the environmental parameters in mines and on the health of workers employed therein should be studied by a multi-disciplinary team to assess its adaptability to local conditions.

Air Borne Dust

- 2.4.4 An Expert Group consisting of a member each from mine management, research establishment/BGML/CEMPDIL and workers' representative having technical knowledge should be constituted by

DGMS for laying down guidelines for conducting air borne dust surveys for different types of dust, specifying class of workings and periodicity of conducting such surveys for the sake of uniformity and comparison.

2.4.5 Air Borne dust surveys should be carried out on a regular basis so as to conduct/complete the survey in each mine as recommended by the Expert Group. The management should take suitable and necessary steps to control air borne dust. In addition to quantitative surveys, special attention should be paid to assess the chemical composition of air borne dust to ascertain its effect on the type of diseases caused by the dust.

Periodical Medical Examination of Workers

2.4.6 Initial medical examination of all workers employed in underground mines should be completed in next three years. Thereafter, periodical medical examination of such workers should be done at least once in 5 years.

2.4.7 Initial medical examination of all workers employed on surface and engaged in drilling, loading and at crushing and screening plants should be completed in next three years. Thereafter, the periodical medical examination of all such workers should be done at least once in 5 years.

2.4.8 In order to complete the medical examination of all entitled workers, the management should create suitable infrastructural facilities to meet the target specified above.

2.4.9 Categories of persons employed in oil mines requiring periodical medical examination should be identified by consultations between the management of oil mines and DGMS.

2.4.10 DGMS should arrange to get necessary notification issued for implementation of the above recommendations.

Item 2.5 : Accuracy of Mine Plan

2.5.1 Mining companies should expeditiously implement in full the recommendations of the 5th Conference on Safety in Mines regarding preparation and maintenance of mine plans, induction of qualified surveyors in sufficient numbers etc.

2.5.2 Mining companies should evolve a suitable cadre structure for mine surveyors in order to attract and retain competent and qualified persons in survey discipline.

2.5.3 It is accepted that preparation of fresh plans after connecting mines to National Grid involves work which is not only huge in quantum but complex in nature. Surveyors posted at mines would not be in a position to carry out such surveys independently. A team of qualified surveyors should be appointed at area level (as existing in CIL)

which could undertake such surveys in association with mine surveyors. Such a team should also conduct and carry out regular check surveys in order to check the accuracy of mine plans at various mines.

- 2.5.4 Mine managements should avail themselves of various specialist facilities provided at different institutions for upgradation of skill of mine surveyors. Suitable evaluation systems/tests should be conducted at the end of both short term (3-6 months) and long term courses (6-12 months) provided at such institutions for the grant of suitable certificates to the participants.

Item 2.6 : Development of Human Resources for Prevention of Accidents.

- 2.6.1 Every worker should undergo appropriate training whenever there is change in his nature of job.
- 2.6.2 Every worker involved in an accident should undergo special and appropriate training before he is re-assigned work in the mine.
- 2.6.3 The existing training facilities and programmes should be made more comprehensive, useful and result oriented.
- 2.6.4 Suitable organisation for training of workmen's inspector and members of Pit Safety Committee should be created. Such an organisation should frame and conduct suitable and appropriate training programme in order to help them to discharge their responsibilities in a proper manner.
- 2.6.5 Mining Companies should clearly identify the need for training of supervisors working in mines. Mine managements should preferably make use of the services and expertise developed in this regard by NCSM to supplement their own efforts in order to achieve the desired results in next few years.
-

RECOMMENDATIONS OF THE SEVENTH CONFERENCE ON SAFETY IN MINES

(Held in New Delhi on 19th & 20th December, 1988)

1.0 Review of status of implementation of recommendations of Fifth & Sixth Conferences on Safety in Mines.

1.1 Manager of every underground mine should formulate 'Support Plan' for support of roof, sides, back and hangwall. Opinion of Central Mine Planning and Design Institute Ltd (Subsidiary of CIL)/CMRS should be sought where geo-mining conditions are difficult. The 'Support Plan' should be in respect of the following:

- (a) workings within 9 metres of the working faces.
- (b) along tramming levels and especially at loading points.
- (c) along haulage roadways and especially at junctions.
- (d) at any other place(s) in the mine identified for support under Regulation 108 of the Coal Mines Regulations, 1957 and Regulation 112 of the Metalliferous Mines Regulations, 1961.

Local geological conditions, physico-mechanical properties of strata, method of work including mechanisation and past experience etc. may be taken into account while formulating such plan. For non-coal mines, nature of strata, which in many cases is massive, may be taken into consideration.

The plan should include:

- (a) type of supports e.g. safari supports, roof bolts, friction props, rigid props, or hydraulic props etc.
- (b) duties and responsibilities of Timbermen, Dressers, Sirdars/Mates, Overmen/Foremen, Assistant Managers, Managers and Agents towards supply of material, erection and withdrawal of supports, inspection thereof and ensuring effectiveness of supports.

The 'Support Plan' should be submitted to DGMS for approval.

In case there is delay in formulation of such plan due to involvement of various agencies, interim plan should be prepared and submitted immediately. Pending approval, the plan should be implemented.

No person should be employed at any place which is not supported in accordance with the approved 'Support Plan'.

- 1.2 Intensive practical training and retraining should be given to persons engaged in support work such as timbermen and dressers etc. by experienced and qualified persons. This should be supplemented by organising workshops at mine level at quarterly intervals preferably by NCSM.
- 1.3 In coal, no blasting-off-the-solid should be done except with proper type of delay action detonators and proper explosives.
- 1.4 Mine managements should examine and review all installations vis-a-vis the safe distance to be maintained and work out a time-bound action plan for rectification within six months along with safety precautions to be taken in the interim period to minimise danger.
- 1.5 All fixed Internal Combustion Engines should be fitted with flame arrestors and air intake shut-off valve with remote control. No new rig will be purchased or installed without these safety devices. Oil and Natural Gas Commission and Oil India Ltd. will prepare and submit a programme for phasing out such old rigs and will, within six months, also seek specific exemption for continuance of each such rig.
- 1.6 A study should be undertaken to determine the causes of fire that occurred in the last five years. A report on the same indicating the remedial measures taken should be submitted half yearly to DGMS.
- 1.7 Necessary facilities for monitoring the environmental parameters should be provided at mines. Facilities of continuous type monitoring should be installed within one year in all degree III gassy coal mines and in such other mines having active underground fire or mines having serious problems of heat as identified by mutual discussions between mine management and the Directorate-General of Mines Safety.
- 1.8 Initial medical examination of all workers employed in underground mines should be completed by June, 1989. Thereafter, periodical medical examination of such workers should be done at least once in 5 years.
- 1.9 Initial medical examination of all workers employed on surface and engaged in drilling, loading and at crushing and screening plants should be completed by June, 1989. Thereafter, the periodical medical examination of all such workers should be done at least once in 5 years.

- 1.10 Categories of persons employed in oil mines requiring periodical medical examination should be identified by consultations between the management of Oil Mines and DGMS.
- 1.11 To meet the requirement of qualified surveyors in mines, mining companies should expeditiously induct apprentices in sufficient numbers.
- 1.12 Mining companies should evolve a suitable cadre structure for mine surveyors in order to attract and retain competent and qualified persons in survey discipline.
- 1.13 It is accepted that preparation of fresh plans after connecting mines to National Grid involves work which is not only huge in quantum but complex in nature. Surveyors posted at mines would not in a position to carry out such surveys independently. A team of qualified surveyors should be appointed at area level (as existing in CIL) which could undertake such surveys in association with mine surveyors. Such a team should also conduct and carry out regular check surveys in order to check the accuracy of mine plans at various mines.
- 1.14 Mine managements should avail themselves of various specialist facilities provided at different institutions for upgradation of skill of mine surveyors. Suitable evaluation system/tests should be conducted at the end of both short term (3-6 months) and long term courses (6.12 months) provided at such institutions for the grant of suitable certificates to the participants.
- 1.15 Every worker specially piece-rated loader should undergo appropriate training whenever there is change in his nature of job.
- 1.16 Mining companies should clearly identify the need for training of supervisors working in mines. Mine managements should preferably make use of the services and expertise developed in this regard by NCSM to supplement their own efforts in order to achieve the desired results in next few years.
- 1.17 In Oil mines, tri-partite meetings consisting of management, workers' representatives and DGMS should be arranged at intervals not exceeding 6 months during which safety performance and progress of implementation of the Company's policy on Safety and Health and of the recommendations of this Conference should be discussed. These meetings should be presided over by representatives of management, labour and DGMS by rotation.
- 1.18 Tele-communication system should be introduced in a phased manner in below ground mines in the next five years, giving priority

according to distance, mechanisation, degree of gassiness, and problems of fire.

- 1.19 In metalliferous mining companies, the Internal Safety Organisation (ISO) should be made independent of the production line up at all levels within 6 months.
- 1.20 The Chief of Internal Safety Organisation should be a senior officer next in rank only to the Director(Tech) in any or M.D./ The Chief Executive.
- 1.21 In mines, supply of drinking water at working places should be ensured.
- 1.22 In mines where long or arduous travel is involved, arrangements for transport of men should be made.

2.0 Safety in Opencast Mining

- 2.1 (a) Each company should frame suitable 'Code of Traffic Rules' for regulating the movement of Heavy Earth Moving Machinery (commensurate with the capacity/size type of machines used in the mechanised opencast mine) for enforcement in each mine. Such Code of Traffic Rules should be approved by Tri-partite Committee.

(b) The Code of Traffic Rules should be deliberated, framed and approved within a period of 6 months. The Code of Traffic Rules, should be enforced in each mine within a period of 12 months.
- 2.2 (a) Each company operating mechanised mines should frame suitable 'Code of Practice' for the prevention of dumping of overburden at dump yards, at loading points etc. Such 'Code of Practice' should be approved by Tri-partite Committee.

(b) the 'Code of Practice' should be deliberated, framed and approved within a period of 6 months. The code should be enforced in each mine within a period of 12 months.
- 2.3 The design and maintenance of haul roads in mechanised opencast mines should be laid down by each company in respect of each mechanised opencast mine. If required, the company may consult/interact with DGMS in this regard.
- 2.4 (a) Each company should ensure that for every mine a scheme is drawn and implemented for proper maintenance repair, overhaul and erection in respect of heavy earth moving machinery. This scheme should cover places such as repair sheds and workshops.

Necessary help, if required, should be obtained from the manufacturers of Heavy Earth Moving Machinery (HEMM).

(b) Adequate attention should be given towards proper layout of repair sheds and workshops so as to ensure due protection to work persons deployed at these places from the movement of heavy earth moving machinery therein.

- 2.5 The operator's cabin of heavy earth moving machinery should be well designed and substantially built so as to ensure adequate protection to the operator against heat, dust, noise etc. and at the same time provide adequate safety to the operator in the event of overturning of heavy earth moving machinery. A seat belt for the safety of the operator should also be provided.
- 2.6 (a) Operators/drivers of each HEMM should be selected from amongst persons possessing requisite qualifications. {This study material has exclusively been provided by mineportal.in }.The selection process should comprise a test to check driving/ operating skill, aptitude, health and oral examination of the candidate by a competent selection committee.
- (b) All operators of HEMM should undergo regular checks to test their driving/operating skill, knowledge and health once every five years.
- (c) Suitable training institute/training centre should be opened in each company to provide comprehensive training so that only duly qualified and training operators are always available commensurate with the present and future needs of the mechanised mines.
- 2.7 A separate format for writing statutory reports by shot-firers/blasters, mining sirdars/mates and overmen/prepared and circulated early.
- 2.8 A format for writing report of inspection of dragline wire ropes should be introduced early.
- 2.9 A code of practice shall be drawn up for dealing with fires at different location in opencast mines, including HEMM. Arrangements for fighting fire should be provided on all heavy earth moving machineries. Such arrangements should, if possible, if possible, operate automatically on appearance of fire.
- 2.10 Efficient lighting arrangements not below the standards prescribed in the statute shall be provided and maintained at different location in opencast mine.

- 2.11 Structural stability of HEMM should be examined periodically by an independent team of experts. Such an examination may invariably be made after every major repair to HEMM.

3.0 Employment of Contractors' Workers

- 3.1 The approach paper on this subject should be discussed within a maximum period of 6 months by the tri-partite committee of each company for finding out ways and means of reducing accidents to workers employed by contractors.

4.0 Occupational Health Services in Mining Industry

- 4.1 There is a need for creation of a Department on Occupational Health Services in each mining company working mechanised mines.
- 4.2 Occupational Health Services shall have sufficient technical personnel with specialised training and experience in such fields as occupational medicine, industrial hygiene, ergonomics, occupational health and nursing. They should, as far as possible, keep themselves up-to-date with progress in the scientific and technical knowledge necessary to perform their duties. The Occupational Health Services should, in addition, have necessary administrative personnel for their operation. Equipment and appliances of proper type should be provided for carrying out the assigned functions.
- 4.3 The occupational Health Services shall carry out the following functions:
- (i) identification and assessment of the risk from health hazards at work place;
 - (ii) surveillance of the factors in working environment and work practices which may affect workers' health;
 - (iii) surveillance of workers' health in relating to work;
 - (iv) education of workers on sanitation, cleanliness, hygiene and health care;
 - (v) collaborating in providing information, training and education in the fields of occupational health, industrial hygiene and ergonomics;
 - (vi) organisation of first-aid in mines including training and retraining of first-aiders;

- (vii) preparing a quarterly status report on occupational, health and industrial hygiene in the mines of the concerned company. The quarterly report should include information on medical examinations, notifiable disease, status of first-aid, results of surveys for air-borne dust, noise, temperature, quantity of air and sanitation in working places;
 - (viii) the report of medical examination of each worker should be maintained regularly and the record of periodical medical examinations should be maintained systematically. Application of computer for storing and retrieval, of data would be desirable; and
 - (ix) advising the management on occupational health, industrial hygiene, first-aid and ergonomics.
- 4.4 The Occupational Health Service shall be headed by a senior officer.
- 4.5 Occupational Health Physician should be a member of the Safety Committee where he could contribute to the health education of workers.
- 4.6 (i) Management of every mechanised mine should, in consultation with experts of the Occupational Health Services, prepare a scheme for:
- (a) identification of operations and activities where factors which are hazardous to health of persons at work exist or may arise during the course of work.
 - (b) monitoring the levels or values of different factors which may affect health of persons.
 - (c) specifying the various control measures necessary for keeping the levels/values within the permissible limits.
 - (d) health surveillance.
 - (e) health education.
 - (f) first-aid training.
- (ii) The above scheme should clearly specify the types of instruments to be used for monitoring, frequency of observations/examinations, type of training/ education, recording of data, and responsibility of various persons for implementation of the scheme.

4.7 Management of every mine should ensure that:

- (i) all mine workers are given basic training in first-aid.

(ii) holders of first-aid certificates are given refresher training once in two years.

(iii) rescue trained persons acquire highest standards of proficiency in first-aid.

(iv) Ambulance vans are fully equipped with life saving drugs, medicines and appliances needed in emergency.

4.8 In respect of small mechanised mines which are mostly operating in non-coal sector, it may not be feasible for a small organisation to create a special department on occupational health services. For such small mines operators create common facilities and infrastructure for occupational health services. Creation of such facility is specially needed for asbestos, manganese and mica mines. Simultaneously with creation of facilities for occupational health services, it is also necessary to improve quality of life of employees working in mining industry by provisions of well-planned housing colonies provided with all modern facilities such as good drinking water, good sanitation, drainage and recreational facility.

RECOMMENDATIONS OF EIGHTH CONFERENCE ON SAFETY IN MINES

(HELD ON 14TH & 15TH MAY, 1993 AT NEW DELHI)

1.0 REVIEW OF STATUS OF IMPLEMENTATION OF RECOMMENDATION SEVENTH CONFERENCE ON SAFETY IN MINES

- 1.1 Necessary facilities for monitoring the environmental parameters in respect of Methane & Carbon Monoxide should be provided at mines. Facilities of continuous type monitoring should be installed within two years in all degree III gassy coalmines and in such other mines having active underground fire. Indigenous manufacturers should be encouraged to manufacture necessary equipments.
- 1.2 To meet the requirement of qualified surveyors in mines, mining companies should expeditiously induct apprentices in sufficient number commensurate with the retirements & additional requirements.
- 1.3 Though mining companies have evolved a suitable cadre structure for mine surveyors in order to attract and retain competent and qualified persons in survey discipline, the same has not yet been implemented. It should be implemented early.
- 1.4 Preparation of plans after connecting with National Grid by special teams should be expedited and this work shall be completed by December 1995.
- 1.4 In mines where long or arduous travel is involved, arrangement for transport of men should be made.
- 1.5 A code of practice shall be drawn up for dealing with fires at different locations in opencast mines, including HEMM. Arrangements for fighting fire should be provided on all heavy earth moving machineries. Such arrangements should, if possible, operate automatically on appearance of fire/smoke.
- 1.6 Every mining company operating mechanised mines shall create properly staffed and well equipped Occupational Health Services before 31.12.1993.
- 1.7 In respect of small-mechanised mines, which are operating in non-coal sector, it may not be feasible for a small organisation to create a special department on Occupational Health Services. For such small mines, it is suggested that an Association of small mines operators creates common facilities and infrastructure for occupational health services. Creation of such facility is specially

needed for asbestos, manganese and mica mines.

Simultaneously with creation of facilities for occupational health services, it is also necessary to improve quality of life of employees working in mining industry by provision of well planned housing colonies provided with all modern facilities such as good drinking water, good sanitation, drainage and recreational facility.

2.0 PREVENTION OF ACCIDENTS IN COAL MINES DUE TO FALLS OF ROOF

- 2.1 Because of the variable nature of the roof strata in coal mines, these should be classified using RMR method of geomechanical classification as suggested by the expert group (Paul Committee).
- 2.2 The pattern and sequence of support should be as per recommendations of Paul Committee & where support is required it should be such that at any point of time the last row of support is not more than 1.8 m. from the face. Blasting should not be able to dislodge the support system. In case of poor & fair roof condition the quick setting grouted bolts be preferably used.
- 2.3 Every year in at least 1/5th of the development districts suitable type of steel support should be introduced.
- 2.4 Wherever practicable roof bolting as a method of support should be used. Its performance should be monitored regularly. A few conventional timber props may be used as indicator props.
- 2.5 Mining companies should take initiative to select/promote development of suitable type of drills & other accessories for use in various types of roof strata. A task-force may be created for the purpose which may oversee the introduction of steel supports.
- 2.6 Keeping in view the proposed replacement of conventional supports with steel supports, suitable amendments should be made under CMR, 1957 regarding duties of timbermen support personnel).
- 2.7 Arrangement shall be made to give proper training to support personnel.
- 2.8 Development of a portable instrument for detecting the hidden slips in the roof should be taken up on priority by R&D organisations.

3.0 SAFETY EDUCATION AND WORKERS' PARTICIPATION IN SAFETY MANAGEMENT :

3.1 TRAINING OF WORK-PERSONS

- 3.1.1 Each mining company should (either by itself or jointly) draw up model training schedules for different categories of workpersons. Such schedules should be got vetted by the tripartite review committees of respective companies by the 30th June, 1994.

Training Modules of coal industry are already under finalisation. Other companies may use these modules as guidelines for drawing schedules for their workpersons.

- 3.1.2 From 1.1.95 training should be imparted as per new schedules.
- 3.1.3 Training Modules need to be updated from time to time. While adhering to M.V.T Rules, the companies may, based on their own experience or latest information available, modify and update the modules for training.
- 3.1.4 Training is a specialised subject. The in-house training staff drawn from various levels should also be provided opportunity to update their knowledge and skills to impart training by introducing properly designed modules. For this, outside faculties may also be brought in if considered necessary.

3.2 TRAINING OF SUPERVISORY OFFICIALS

- 3.2.1 All front-line supervisory officials like Sirdars/Mates, Overmen/Foremen, Surveyors, Electrical/Mechanical supervisors/Chargemen/Foremen as well as persons supervising other surface operations should be imparted structured training in safety management, for at least two weeks, once in every five years, covering about 20% strength every year.
- 3.2.2 In addition to the existing criteria of eligibility to appear in sirdar's/mate's examination, the company should have arrangement to provide properly designed class-room training to candidates for sirdar's/mate's examination.

- 3.3 Modern tools including audio-visual (video) should be used for imparting all training.

3.4 WORKERS' PARTICIPATION IN SAFETY MANAGEMENT

- 3.4.1 Members of Safety Committees should be given training to prepare them to discharge their assigned functions efficiently and effectively. The training programme should be for one week and should comprise of lecture and demonstration sessions as well as

field visits. The syllabus of the training programme should be drawn by respective mining companies, to suit the local conditions and work practices.

3.4.2 Such training should be completed by 30.6.94 in respect of existing members and all new members should be imparted training within six months of their nomination.

3.4.3 Once in a year, the meeting of the Safety Committee should be attended by senior officials of the Area & Trade Unions. The meeting may review recommendations made during the year by the Committee together with status of implementation as well as the salient features of the reports of Workmen's Inspectors.

At the Area level also similar meeting may be held.

4.0 OCCUPATIONAL HEALTH HAZARDS:

4.1 MEDICAL SURVEILLANCE

ILO Conventions Nos.155 and 161 on Occupational Health Services with particular reference to prevention of occupational diseases and Health Surveillance should be complied with. In particular:

4.1.1 There should be atleast one medical officer properly trained in occupational health in each area who should also be associated with Periodical Medical Examinations.

4.1.2 At least one of the medical officers engaged in medical examinations should be trained in use of ILO classification of radiographs for pneumoconiosis.

4.1.3 Adequate facilities for X-rays and Lung function tests should be provided at each medical examination center.

4.1.4 Health Surveillance record shall be properly maintained.

4.1.5 If the profusion of any type of pneumoconiotic opacities in chest X-ray is 1/0 or above as per ILO classification, the case shall be certified and notified as pneumoconiosis.

4.1.5 One of the medical examinations of every persons should be arranged within one year of his superannuation.

4.1.6 To monitor the progress of profusion in certified cases of pneumoconiosis medical examination should be conducted at shorter intervals.

4.1.7 Each company should submit annual report on radiological results of medical examinations in the enclosed format.

4.2 DUST

4.2.1 Every mining company operating mechanised mines should take early steps to ensure that:

- (a) adequate arrangements and wherever necessary organisation and infrastructure facilities to carry out dust surveys in mines are established within a period of one year.
- (b) air-borne dust surveys are completed and necessary control measures, wherever required, taken within a period of 2 years :
 - (i) at all mechanised longwall faces, mechanised bord and pillar workings and road header drivages in coal mines;
 - (ii) at all drilling, mechanised loading and crushing operations in non-coal mines;
 - (iii) at all ore/coal handling/beneficiation plants.

4.2.2 Necessary training should be imparted to the persons engaged on air-borne dust surveys and control measures.

4.3 NOISE

4.3.1 The recommendations of DGMS (Tech) Circular No.18 of 1975 shall be implemented forthwith.

4.3.2 All mining companies should take steps as regards:

- (i) standardisation of the information to be furnished by the manufacturers/suppliers; as well as its assessment procedure;
- (ii) development and supply of proper type of ear protectors including helmet mounted ear muffs.

4.3.3 Audiometry should be introduced, as a part of mandatory medical examination, for persons seeking employment in mines and for persons engaged in operations/areas where noise level exceeds 90 dB(A).

- 4.4 The recommendations of VII Conference on Safety in Mines regarding the functions of Occupational Health Services are reiterated. Progress on medical examinations, surveillance of working environment, education and awareness activities shall be monitored at company level.

5.0 SAFETY IN OPENCAST AND SURFACE OPERATIONS

- 5.1.1 All person to be employed to drive/operate HEMM should be trained and their competency should be evaluated by a Board constituted by the mining company. The members of such board should be persons who are not connected with imparting of training. However, the training officers may be co-opted in the Board as observer.

- 5.1.2 Only such fitters/mechanics who possess driver's/ operator's competency certificate should be allowed to carry out test-run of HEMM.

The legal position whether the fitters/mechanics who carry out the test run would be required to posses vehicle driving license under Motor Vehicle Act should be examined.

- 5.1.3 To prevent unauthorised driving, a system should be evolved whereby the ignition key and/or cabin key always remains with the driver/operator or with specifically designated competent person(s).

- 5.2 Use of tractor-trailer combination on haul-roads should be discontinued. Where inevitable, the trailer should have separate brake of its own and the use of four wheeled trailer should be preferred. The operators should also be suitably trained on right selection of gears while traveling downhill.

- 5.3 The portion of surface haul road in mine premises where there is heavy traffic of men and machines, should have a separate lane properly fenced off from the haul road for pedestrians and two wheelers.

- 5.4 Wherever space permits, every mine should establish a system whereby loading and unloading operations in the stockyard are not done simultaneously at the same place.

In case adequate space is not available, mine management should organize suitable traffic regulations for eliminating risk element in the operations.

- 5.5 Trucks and other heavy vehicles, not belonging to management should not be allowed in the mine premises without a valid pass issued by the competent authority of the mine.

Before the pass is issued the mine engineer should check the road-worthiness of such vehicles.

In order to check entry of unauthorised vehicles in mine premises, each mine should establish properly manned check gate(s) at the entrance(s) where record of entry and exit of each such vehicle should be maintained.

At the check gate the license of the drivers should also be checked for eliminating the possibility of unlicensed persons driving the vehicles.

- 5.6 Persons engaged in surface operations and, in particular, the contractors' workers, who incidentally are often inexperienced and least informed about job-safety matters, need closer and more competent supervision. To minimise accidents due to surface operations it would be ensured that:

- (i) all persons engaged at any work within the mine premises through the contractors have received relevant training and other job-related briefings and that the drivers of vehicles belonging to contractors entering the mine premises have additionally been explained the salient provisions of "traffic rules".

Each mining company should draw up appropriate training schedules and modalities in this regard and implement the same.

In case of smaller mines, such arrangement may be made by association of mine operators.

- (ii) each and every operation, including the operation carried out through contractors' workers or by outside agency, is placed under the charge of a competent supervisor, duly appointed and authorised by the management, his jurisdiction being clearly demarcated.

6.0 SAFETY IN OIL MINES:

- 6.1 The management of every mine carrying out exploration for and production of petroleum should take due note of the proposed amendments to the Oil Mines Regulations, 1984 and initiate necessary preparatory actions and gear themselves up for early implementation of the proposed amendments relating to fire hazards.

- 6.2 The Oil & Natural Gas Commission and the Oil India Ltd. should set up task force–
- 6.2.1 for drawing up model information sheets, safety report, emergency plan etc. and aiding the mine managements in adopting the same with due regard to local conditions and system; and
- 6.2.2 for monitoring implementation of various precautionary measures relating to fire hazards in oil mines, with particular reference to :
- (a) provision of three BOPs on all drilling rigs;
 - (b) provision of audio-visual alarm at driller's stand to indicate gas kick;
 - (c) prevention of unauthorised entry to christmas trees;
 - (d) preparation of maps showing layout of different types of petroleum pipelines with position of controls, date of installation etc.

RECOMMENDATIONS OF THE NINTH CONFERENCE ON SAFETY IN MINES

(HELD ON 2ND AND 3RD FEBRUARY 2000, AT NEW DELHI)

Review of Status of Implementation of Recommendation of the 8th Conference on Safety in Mines :

- 1.1 Necessary facilities for monitoring the environmental parameters in respect of Methane & Carbon Monoxide should be provided at mines. Facilities of continuous type monitoring should be installed within two years in all degree III gassy coal mines and in such other mines having active underground fire. Indigenous manufacturers should be encouraged to manufacture necessary equipments.
- 1.2 In mines where long or arduous travel is involved, arrangement for transport of men should be made.
- 1.3 In respect of small-mechanised mines, which are operating in non-coal sector, it may not be feasible for a small organisation to create a special department on Occupational Health Services. For such small mines, it is suggested that an Association of small mines operators creates common facilities and infrastructure for occupational health services. Creation of such facility is specially needed for asbestos, manganese and mica mines.

Simultaneously with creation of facilities for occupational health services, it is also necessary to improve quality of life of employees working in mining industry by provision of well planned housing colonies provided with all modern facilities such as good drinking water, good sanitation, drainage and recreational facility.

- 1.4.1 Suitable type of steel/metal supports should be introduced in all the development districts in coal mines within two years.
- 1.4.2 Wherever practicable, roof bolting as a method of support in coal mines should be used. Its performance should be monitored regularly. A few conventional timber props may be used as indicator props.
- 1.4.3 Coal mining companies should take initiative to select/promote development of suitable type of drills & other accessories for use in various types of roof strata. A task force may be created for the purpose which may oversee the introduction of steel supports.

- 1.4.4 Development of a portable instrument for detecting the hidden slips in the roof of coal mines should be taken up on priority by R&D organisations.
- 1.5 All front-line supervisory officials like Sirdars/Mates, Overmen/Foremen, Surveyors, Electrical/Mechanical supervisors/Chargemen/Foremen as well as persons supervising other surface operations should be imparted structured training in safety management, for at least two weeks, once in every five years, covering about 20% strength every year.
- 1.6 The recommendations of DGMS (Tech) Circular No.18 of 1975 shall be implemented forthwith.
- 1.7 Audiometry should be introduced, as a part of mandatory medical examination, for persons seeking employment in mines and for persons engaged in operations/areas where noise level exceeds 90 dB(A).
- 1.8.1 The portion of surface haul road in mine premises where there is heavy traffic of men and machines, should have a separate lane properly fenced off from the haul road for pedestrians and two wheelers.
- 1.8.2 Trucks and other heavy vehicles, not belonging to management should not be allowed in the mine premises without a valid pass issued by the competent authority of the mine.

Before the pass is issued the mine engineer should check the road-worthiness of such vehicles.

In order to check entry of unauthorised vehicles in mine premises, each mine should establish properly manned check gate(s) at the entrance(s) where record of entry and exit of each such vehicle should be maintained.

At the check gate the license of the drivers should also be checked for eliminating the possibility of unlicensed persons driving the vehicles.

- 1.9 Persons engaged in surface operations and, in particular, the contractors' workers, who incidentally are often inexperienced and least informed about job-safety matters, need closer and more

competent supervision. To minimise accidents due to surface operations it would be ensured that:

All persons engaged at any work within the mine premises through the contractors have received relevant training and other job-related briefings and that the drivers of vehicles belonging to contractors entering the mine premises have additionally been explained the salient provisions of "traffic rules".

Each mining company should draw up appropriate training schedules and modalities in this regard and implement the same.

In case of smaller mines, such arrangement may be made by association of mine operators.

2.0 Preventing Mine Disasters from Inundation

- 2.1 Each mine shall be critically examined for its proneness to inundation and assessment regarding danger of inundation and precaution to be taken should be reviewed and updated yearly preferably before the onset of the monsoon. The recommendations may be deliberated in the (Pit) Safety Committee of the mine and information disseminated as widely as possible.
- 2.2 Suitable infrastructure at area level may be provided for drilling advance bore holes to detect presence of waterlogged workings in advance.
- 2.3 Embankments provided against river and jore to guard against inundation should be designed properly keeping in view the engineering parameters. The details of such construction should be properly shown in the underground plan and water danger plan.
- 2.4 Surface excavation or disturbance in or near major sources of water, which are connected or are likely to be connected to below ground workings should be filled up completely.
- 2.5 Detailed precautions against inundation may be laid down while working beneath or in the vicinity of river and major water bodies. This may include framing and implementing standing order for safe withdrawal of persons, including system of information both manual and automatic, effective communication system and system of safe and timely withdrawal of persons to safety.

- 2.6 Mechanism may be developed for warning mines about impending heavy rains similar to warning of impending cyclone issued in coastal areas for taking necessary action. {This study material has exclusively been provided by mineportal.in }.Also coordination with concerned agencies/departments about opening of dams in the rivers on the upstream side should be examined.
- 2.7 Winding system serving as sole means of ingress and egress may be made constantly available even in adverse weather conditions, failure of steam or electricity or any other reasons.
- 2.8 Effective communication may be established within the mine and between mines for safe withdrawal of persons. Necessary standing orders in this regard need to be framed and enforced.
- 2.9 Recommendations of 6th Conference on Safety in Mines to evolve suitable cadre structure for mine surveyors and upgradation of their skill by availing facilities at various institutions, appointment of qualified surveyors and providing infrastructure including computerised facility at area level to oversee survey work of the mine etc. may be implemented.
- 2.10 R&D efforts should be continued to develop a system for construction of water-tight chamber as last refuge below ground in case of inundation.

3.0 Preventing Mine Disasters from Fire, and Effective Emergency

Response

- 3.1 Considering the risk of fire, all coal mine companies shall rank its coalmines on a uniform scale according to its risk from fire on scientific basis. Guidelines may be framed by DGMS and circulated to all mining companies.
- 3.2 Recognizing the urgent need for making the emergency plan responsive, speedy and effective, each mine shall review the existing emergency plan, at a higher level keeping in view the risk from fire.
- 3.3 A tripartite committee may be formed to study the feasibility of establishing rescue rooms in coal mines having high risk of fire and

employing more than 350 persons ordinarily employed in a shift below ground may be considered.

- 3.4 A tripartite committee may be formed to study the feasibility of storing oxygen type self rescuer at strategic places below ground in coal mines with risk of fire in such scale so as to cater to the needs of persons who can be affected in an emergency may be explored.
- 3.5 Each mining company shall formulate and implement structured training programme for development of awareness and increasing effectiveness of emergency response in case of fire amongst work persons, officials and management.
- 3.6 Through sustained and meaningful R&D activities, mining companies and research institution shall help in creating a better understanding of the complex geo-mining situations leading to the occurrence of fire, which in turn will help in formulating guidelines to combat the problem of fire in effective manner. Early detection of heating effect of reversal of fan and control of fire, other associated aspects may be studied.

4.0 Risk Management as a Tool for Development of Appropriate Health and Safety Management Systems.

- 4.1 Every mining company should identify one or more mines and should undertake a formal risk assessment process aimed at reducing the likelihood and impact of mishaps of all kinds in mines. Subsequently risk assessment process should be extended to other mines.
- 4.2 Risk assessment process should aim at effective management of risks, by identifying,
 - (i) which risks are most in need of reduction, and the options for achieving that risk reduction,
 - (ii) which risks need careful on-going management, and the nature of the on-going attention
- 4.3 The risk assessment exercise should follow an appropriate process.
- 4.4 Risk management plans shall be prepared on the basis of risk assessment and implemented in the identified mines.

5.0 Quality Control for Improving Safety

- 5.1 Each mining company and the manufacturer/supplier shall satisfy themselves that the product has valid approval where applicable and conform to relevant standards where available at the time of supply.
- 5.2 Each large mining company may setup quality control cell or strengthen where the same exist, identify critical items which require testing for quality assurance at the time of procurement and during use and arrange testing of the same. {This study material has exclusively been provided by mineportal.in } Testing facilities may be setup wherever feasible;
- 5.3 Any defect or failure of approved items or those having BIS certification may be promptly brought to the notice of the appropriate authority for further action.

6.0 Communication System between DGMS Offices and Mine Management at Site.

- 6.1 Recognizing existence of a large variety of communication systems in mines, a comprehensive review of the existing communication systems at all mines in all mining companies should be undertaken and a consolidated status report prepared for working out a realistic and effective system of communication.

In organized mining sector, an effective internal and external system of communication besides P&T means shall be established both ways between the mines and, Rescue Rooms/stations, hospitals and DGMS offices.

- 6.2 Each mining company in the organized sector shall formulate and implement a comprehensive communication protocol clearly assigning duties and responsibilities of persons at various levels.
- 6.3 In un-organized mining sector, effective communication system shall be established in the following manner,

- i. In large mines effective wireless communication within the mine including attendance rooms and managers' office and residence; and,
- ii. P&T telephone at managers' office and residence.

6.4 Steps shall be taken to strengthen communication system within DGMS offices and amongst DGMS offices and mine sites besides other concerned agencies.

7.0 Safety in Oil mines – Blowout and Fire hazards.

7.1 GENERAL:

Each oil company shall formulate a system to monitor all incidents of fire and blowout, whether or not involving loss of life, injuries and loss of property, investigate the causes and take necessary remedial measures.

7.2 Precautions Against Blowout :

7.2.1 Each oil company shall frame an action plan to provide following safety devices in all the drilling rigs:

- (a) Pit level indicator registering increase or reduction in the drilling mud volume with an audio-visual warning device near the driller's stand,
- (b) A gas detector or explosimeter at the primary shale shaker with audio-visual warning device near the driller's stand,
- (c) A device to accurately measure the mud required to keep well filled at all the time, and
- (d) A device to ensure filling of the well with mud when string is being pulled out.

7.2.2 To ascertain that BOPs function properly up-to their rated capacity, it is essential that all BOPs & choke manifold are pressure tested as prescribed. Adequate facilitates/hydraulic test benches shall be provided in each company so that BOPs and its accessories can be pressure tested to ensure their effectiveness.

7.2.3 At regular intervals, blowout mock rehearsals shall be carried out. Drilling crew including the chemists and geologists at the well site shall to be trained so that they recognize the warning signs of a kick and know what action must be taken to detect and control a kick.

7.2.4 Fitness of the drilling rigs, work-over rigs & well head equipment should be checked initially and periodically. Quality control procedures for tubings/casings shall be appraised and strengthened.

7.2.5 At the time of drilling of the wells, Geo-technical details shall be thoroughly disseminated with the concerned drilling crew to forewarn them about the presence of gas/oil bearing horizons etc.

7.3 Precautions Against Fire

7.3.1 Each Oil company shall examine the condition of pipelines carrying hydrocarbon with special emphasis on:

- Trunk lines
- High pressure gas/oil pipelines
- Pipelines passing through highly populated area, rivers etc.
- Hazards from vehicles plying on the road.
- Old pipe lines.

Hazards from storage of inflammable material shall also be assessed. Action plan shall be prepared to take corrective action in a phased manner.

7.3.2 Plans of pipe lines of flowing wells connected with group gathering stations shall be up-dated showing villages, surface features, location of valves etc. and copy of such plans shall be displayed at every group gathering station.

7.3.3 Work permit system for hot work, cold work and electrical work should be formulated and implemented under the competent supervision at all the oil installations.

8.0 Occupational Health Surveillance In Mining Industry

- 8.1 Occupational Health services as recommended by 7th Conference where ever not yet established shall be established within a period of one year.

Each mining company operating mechanised mines shall computerise all records of medical and environmental surveillance.

- 8.2 Every PME Centre shall be provided with the facility for chest radiographs, lung function tests, arrangement for classification of chest radiographs and also wherever required facilities for audiometry.

- 9.2 All chest radiographs of Initial and Periodical Medical Examinations shall be classified for detection, diagnosis and documentation of pneumoconiosis in accordance with ILO classification for pneumoconiosis.

- 8.5 The PME Medical Officer in every PME centre shall be trained in occupational health and use of ILO classification for pneumoconiosis.

- 8.6 Each mining company operating mechanised mines shall set up an Occupational Diseases Board consisting of one occupational Health Physician, one radiologist and one general physician.

- 8.7 Occupational Diseases Board shall formulate guidelines for referral, re-evaluation, classification of cases of pneumoconiosis and necessary remedial actions at workplace as well as rehabilitation of affected persons(s).

9.0 Increasing Effectiveness Of Worker's Participation In Safety Management.

- 9.1 All mechanised mines and mines using heavy earth moving machinery for exploitation of minerals, where 100 (hundred) or more number of workers are employed, should appoint Workmen's Inspectors.

- 9.2 In large mines sectional/departmental safety committees under the main safety committee may be constituted for specific area of operation.

- 9.3 The tenure of the Safety Committee shall normally be for a period of two (2) years.
- 9.4 Arrangements shall be made to train the trainers of the Safety Committee members.
- 9.5 One of the agenda items in the periodic meetings of the Boards of mining companies shall be “Safety Performance Appraisal” of the company.

RECOMMENDATIONS OF THE TENTH CONFERENCE ON SAFETY IN MINES

(HELD ON 26th AND 27th November 2007, AT NEW DELHI)

1.0 Review of Status of Implementation of Recommendation of the 9th Conference on Safety in Mines:

- 1.1 Necessary facilities for monitoring the environmental parameters in respect of Methane & Carbon Monoxide should be provided at mines. Facilities of continuous type monitoring should be installed within two years in all degree III gassy coal mines and in such other mines having active underground fire. Indigenous manufacturers should be encouraged to manufacture necessary equipments. Time bound programme is to be made, which should be decided in a tripartite committee at company level.
- 1.2 In mines where long or arduous travel is involved, arrangement for transport of men should be made. Time bound programme is to be made, which should be decided in a tripartite committee at company level.
- 1.3 In respect of small-mechanized mines, which are operating in non-coal sector, it may not be feasible for a small organization to create a special department on Occupational Health Services. For such small mines, it is suggested that an Association of small mines operators creates common facilities and infrastructure for occupational health services. Creation of such facilities is specially needed for asbestos, manganese and mica mines.

Simultaneously with creation of facilities for occupational health services, it is also necessary to improve quality of life of employees working in mining industry by provision of well planned housing colonies provided with all modern facilities such as good drinking water, good sanitation, drainage and recreational facilities. DGMS should collect complete information as adequate feed back has not been received.
- 1.4 Development of a portable instrument for detecting the hidden slips in the roof of coalmines should be taken up on priority by R&D organizations. The instrument should be developed by a S&T project which should be guided by a committee consisting of an officer from DGMS and others from Coal Industry and Research Organizations.

- 1.5 All front-line supervisory officials like Sirdars / Mates, Overmen / Foremen, Surveyors, Electrical/ Mechanical supervisors/Chargemen / Foremen as well as persons supervising other surface operations should be imparted structured training in safety management, for at least two weeks, once in every five years, covering about 20% strength every year.
- 1.6 The recommendations of DGMS (Tech) Circular No.18 of 1975 shall be implemented forthwith. (Protection of workers against Noise & Vibration in Working Environment.)
- 1.7 Audiometry should be introduced, as a part of mandatory medical examination, for persons seeking employment in mines and for persons engaged in operations/areas where noise level exceeds 90 dB(A).
- 1.8
 - (a) Before the valid gate pass is issued for entry of trucks and other vehicles not belonging to management into the mine, the mine engineer should check the road-worthiness of such vehicles.
 - (b) In order to check entry of unauthorized vehicles in mine premises, each mine should establish properly manned check gate(s) at the entrance(s) where record of entry and exit of each such vehicle should be maintained.
- 1.9 Persons engaged in surface operations and, in particular, the contractors' workers, who incidentally are often inexperienced and least informed about job-safety matters, need closer and more competent supervision. To minimize accidents due to surface operations it would be ensured that:
 - (a) All persons engaged at any work within the mine premises through the contractors have received relevant training and other job-related briefings and that the drivers of vehicles belonging to contractors entering the mine premises have additionally been explained the salient provisions of "traffic rules".
 - (b) Each mining company should draw up appropriate training schedules and modalities in this regard and implement the same.
 - (c) In case of smaller mines, such arrangement may be made by association of mine operators.

1.10 Preventing Mine Disasters from Inundation

1.10.1 Recommendations of 6th Conference on Safety in Mines –

- (a) To evolve suitable cadre structure for mine surveyors and up gradation of their skill by availing facilities at various institutions, appointment of qualified surveyors.

- (b) Providing infrastructure including computerized facility at area level to oversee survey work of the mine etc. may be implemented.

1.10.2 R&D efforts should be continued to develop a system for construction of water-tight chamber as last refuge below ground in case of inundation.

1.11 Preventing Mine Disasters from Fire, and Effective Emergency Response

1.11.1 Considering the risk of fire, all coal mine companies shall rank its coalmines on a uniform scale according to its risk from fire on scientific basis. Guidelines may be framed by DGMS and circulated to all mining companies.

1.11.2 Each mining company shall formulate and implement structured training programme for development of awareness and increasing effectiveness of emergency response in case of fire amongst work persons, officials and management.

1.12 Quality Control for Improving Safety

1.12.1 Each large mining company may setup quality control cell or strengthen where the same exist, 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 may be setup wherever feasible

1.12.2 Any defect or failure of approved items or those having BIS certification may be promptly brought to the notice of the appropriate authority for further action.

1.13 Safety in Oil mines – Blowout and Fire hazards

1.13.1 Precautions against Blowout:

Each oil company shall frame an action plan to provide following safety devices in all the drilling rigs:

- (a) Pit level indicator registering increase or reduction in the drilling mud volume with an audio-visual warning device near the driller's stand,
- (b) A gas detector or explosimeter at the primary shale shaker with audio-visual warning device near the driller's stand,
- (c) A device to accurately measure the mud required to keep well

filled at all the time, and

- (d) A device to ensure filling of the well with mud when string is being pulled out.

1.13.2 Precautions Against Fire

Plans of pipe lines of flowing wells connected with group gathering stations shall be up-dated showing villages, surface features, location of valves etc. and copy of such plans shall be displayed at every group gathering station.

1.14 Occupational Health Surveillance in Mining Industry

- 1.14.1 All chest radiographs of Initial and Periodical Medical Examinations in private mines shall be classified for detection, diagnosis and documentation of pneumoconiosis in accordance with ILO classification for pneumoconiosis.
- 1.14.2 The PME Medical Officer in every PME centre of private mines shall be trained in occupational health and use of ILO classification for pneumoconiosis.
- 1.14.3 Each mining company operating mechanized mines shall set up an Occupational Diseases Board consisting of one occupational Health Physician, one radiologist and one general physician.

1.15 Increasing Effectiveness of Worker's Participation in Safety Management

- 1.15.1 All private mechanized mines and mines using heavy earth moving machinery for exploitation of minerals, where 100 (hundred) or more number of workers are employed, should appoint Workmen's Inspectors.

In large mines sectional/departmental safety committees under the main safety committee may be constituted for specific area of operation.

2.0 Contractor work vis-à-vis Safety

2.1 Employer's responsibilities

- (a) Suitable clauses (in consistence with risk of the work allotted) shall be included in tender document (including NITs) stating how the risk arising to men & material from the mining operation / operations to be done by the contractors shall be managed.

- (b) Ensure that contractors are familiar with the relevant parts of the statute, health and safety management system and are provided with copies of such documents prior to commencing work.
- (c) Ensure that contractor's arrangements for health and safety management are consistent with those for the mine owner. All the rules, regulations and bye-laws as applicable to the mine owner are also applicable to the contractor. **Details of the contractors' workmen should be maintained in the owner's Form-B Register. Whereas, C, D & E Registers for contractor men may be maintained independently by the owner.** All the above Registers shall be kept in the mine office of the manager.
- (d) **Ensure that contracts should preferably be of longer period (three years),** so that there is adequate scope of management of safety by the contractor.
- (e) Ensure that contractor's provide the machinery, operator and other staff with written safe work procedures for the work to be carried out, stating clearly the risk involved and how it is to be managed.
- (f) Monitor all activities of the contractors to ensure that contractors are complying with all the requirements of statute and the system related to safety. If found non-compliant of safety laws directing the contractor to take action to comply with the requirements, and for further non-compliance, the contractor may be suitably penalized. Clause to this affect may be a part of the agreement between the employer and the contractor.
- (g) Where a risk to health or safety of a person arises because of a non-compliance directing the contractor to cease work until the non-compliance is corrected.

2.2 Contractor's responsibilities

- (a) **Prepare written Safe Operating Procedure (SOP) for the work to be carried out,** including an assessment of risk, wherever possible and safe methods to deal with it/them.
- (b) Provide a copy of the SOP to the person designated by the mine owner who shall be supervising the contractor's work.
- (c) Keep an up to date SOP and provide a copy of changes to a person designated by the mine owner.
- (d) Ensure that all work is carried out in accordance with the Statute and SOP and for the purpose he may deploy adequate qualified and competent personnel for the purpose of carrying out the job in a safe manner.

- (e) For work of a specified scope/nature, develop and provide to the mine owner a site specific code of practice.
- (f) Ensure that all sub-contractors hired by him comply with the same requirement as the contractor himself and shall be liable for ensuring compliance all safety laws by the sub or sub-sub contractors.
- (g) All persons deployed by the contractor for working in a mine must undergo vocational training, initial medical examination, PME. They should be issued cards stating the name of the contractor and the work and its validity period, indicating status of VT & IME.
- (h) Every person deployed by the contractor in a mine must wear safety gadgets to be provided by the contractor. If contractor is unable to provide, owner/agent/manger of the mine shall provide the same.
- (i) The contractor shall submit to DGMS returns indicating – Name of his firm, Registration number, Name and address of person heading the firm, Nature of work, type of deployment of work persons, Number of work persons deployed, how many work persons hold VT Certificate, how many work persons undergone IME and type of medical coverage given to the work persons. The return shall be submitted quarterly (by 10th of April, July, October & January) for contracts of more than one year. However, for contracts of less than one year, returns shall be submitted monthly.

2.3 Employee's responsibilities

- (a) An employee must, while at work, take reasonable care for the health and safety of people who are at the employee's place of work and who may be affected by the employee's act or omissions at work.
- (b) An employee must, while at work, cooperate with his or her employer or other persons so far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of health, safety and welfare of the employee or any other person.

3.0 Safety Issues in mines in unorganized sector

- 3.1 The States in general may grant mining/quarrying leases of a size not less than ten hectares each for an appropriate period, depending on technical feasibility, so that the lessee can make

medium to long-term plan for investment in infrastructure and work the mines in a safe and scientific manner. In case smaller lease needs to be granted, it should be ensured that the Central Laws, including the Mines Act are complied with.

- 3.2 In case of stone quarries on hillocks, whole of the hillock should be given out as a single lease so that necessary development could be done from top-downwards after making approach road to reach to top of the hillock before starting extraction of stone. A condition to this effect may be incorporated before granting such leases.
- 3.3 In the lease document, reference should be made to the Mines Act and the Rules and Regulations made there under for compliance. The DGMS may prepare, in consultation with Ministry of Mines a model document for grant of leases by the state governments so that the conditions of leases are such that there is a uniformity and compliance with central laws.
- 3.4 A copy of the lease document should be sent to the DGMS and lessees explicitly asked to send notice of opening of mine to DGMS in accordance to the Provisions of the Mines Act.
- 3.5 The Conference has noted that there have been instances in some States where leases have been granted in close proximity of inhabited area and within 45 m of Railway acquired land and land acquired for National and State highways, public works without consulting the appropriate statutory authority. The conference recommends that the States may grant mining leases in conformity of Central Laws.
- 3.6 DGMS should organize Orientation Programmes for officers of State Mines and Geology Departments to inform them about safety laws.

4.0 Occupational Health Surveillance and Notified Diseases.

- 4.1 Noise mapping should be made mandatory of various work places in the mine premises based on the various machines being used in concerned mines along with **personal noise dosimetry of individual workmen exposed to noise level above 85 dbA.**
- 4.2 Vibration studies of various mining machinery required to be done before their introduction in mining operations as per ISO standards.
- 4.3 **Ergonomical assessment of all latest machines, before their introduction into mining operation as per ISO standards. Ergonomical assessment should include:**

* Assessment of work process.

* Assessment of working Aids/tools

* Assessment of working posture

- 4.4 Potability tests of drinking water supplied to the mine employees, to be made mandatory once in a year irrespective of its source, preferably after Rainy seasons, the sample of water should be collected from the points of consumption
- 4.5 Initial medical examination shall be made mandatory for all mining employees whether permanent, temporary or contractual, before they are engaged in any mining job.
- 4.6 The frequency of periodic medical examinations should be brought down from existing five years to three years for the mining employees above 45 years of age. This should be implemented in three years.
- 4.7 Standards of medical examinations for both Initial and Periodic should be modified as mentioned below in order to ensure early diagnosis of more diseases caused or get aggravated due to employment in mines.
- (a) In addition to measurement of blood pressure, detailed cardiovascular assessment of employees should be done. This should include 12 leads electrocardiogram and complete lipid profile.
 - (b) Detailed neurological examinations including testing of all major superficial and deep reflexes and assessment of peripheral circulation to diagnose vibrational syndromes.
 - (c) In addition to routine urine, fasting and post-parandial blood sugar should be included for early diagnosis of diabetes mellitus.
 - (d) Serum Urea and Creatinine should be included for assessment of Renal function.
 - (e) Hematological tests like Total count, Differential count, percentage of Hemoglobin and Erythrocyte Sedimentation Rate should be included to diagnose Blood Dyscrasias.
- 4.8 Special tests should be included in the PME for employees exposed to specific health hazard;
- (a) For employees exposed to manganese, special emphasis should be given to behavioral and neurological disturbances such as

speech defect, tremor, impairment of equilibrium, adiadochokinesia H₂S and emotional changes.

- (b) For persons exposed to lead, PME should include blood lead analysis and delta aminolevulinic acid in urine, at least once in a year.
 - (c) Employees engaged in food handling and preparation and handling of stemming material activities should undergo routine stool examination once in every six months and sputum for AFB and chest radiograph once in a year.
 - (d) Employees engaged in driving/ HEMM operation jobs should undergo eye refraction test at least once in a year.
 - (e) Employees exposed to ionizing radiation should undergo Blood count at least once in a year.
- 4.9 It is proposed to include following diseases in the list of Notified diseases under Section 25 (1) of Mines Act, 1952:
- (a) All other types of Pneumoconiosis excluding Coal workers pneumoconiosis, Silicosis and Asbestosis. This includes Siderosis & Berilliosis.
 - (b) Noise induced hearing loss.
 - (c) Contact Dermatitis caused by direct contact with chemicals.
 - (d) Pathological manifestations due to radium or radioactive substances.
- 4.10 For smaller mines where PME facilities are not existing, medical examinations can be done through other competent agencies.

5.0 Mechanization with a view to phase-out manual loading & to improve safety standards.

- 5.1 Keeping in view the objective of phasing out manual loading, all coal companies shall identify appropriate technology suitable for the prevailing geo-mining conditions and introduce the same in such a manner so as to phase out manual loading operations completely within a period of five years in coal seams with gradient of 1 in 5 or less, and within a period of seven years in coal seams with gradient steeper than 1 in 5. {This study material has exclusively been provided by mineportal.in }
- 5.2 While formulating the strategies for face mechanization in underground workings, it shall be ensured that back up facilities like coal evacuation, support system, ventilation arrangements etc. are compatible with face mechanization.

- 5.3 The scheme of face mechanization shall be based on proper scientific investigation. The scheme shall also include arrangements for monitoring strata behavior and environmental conditions.
- 5.4. Possibility of deployment of multi-skilled miners in the face shall be explored to reduce the exposure at hazardous areas without affecting employment.
- 5.5. Suitable training for efficient & safe operation of machinery shall be imparted to all concerned.
- 5.6 While planning for face mechanization, due considerations shall be given for long term sustainability of the technology.
- 5.7 A policy document shall be framed by each coal mining company within a period of six months for addressing the implementation issues. It shall also be ensured that all safety features are inbuilt into the system.

6.0 Reduction of risk from roof and side falls in coal mines

- 6.1 In every coal mining company, **STRATA CONTROL CELL** shall be established at corporate and area levels within a period of one year, to assist mine managers, for formulation of Systematic Support Rules, monitoring strata control measures in a scientific way to ensure efficacy of support system and for procurement/supply of quality supporting materials. Such cell shall be manned by adequate number of technical personnel headed by a senior official not below the rank of General Manager at Corporate level and Dy. General Manager at Area level.
- 6.2 **Roof bolting shall be used as a primary means of support for freshly exposed roof in development as well as depillaring districts.** For the roof category "Poor", having value of RMR of 40 or less, or where there is excessive seepage of water from the roof strata, roof bolts exclusively with resin capsules shall be used to ensure adequate & immediate reinforcement of the strata.
- 6.3 Due emphasis shall be given to support the sides of galleries while framing Systematic Support Rules.
- 6.4 **Suitable steps shall be taken by the mining companies to inculcate a culture of "no work at face" other than supporting work, till the roof is supported by roof bolts up to at least 0.6 meter from the face.**

- 6.5 To ensure proper drilling for roof bolting in all types of roof strata, suitable fit-for-use roof bolting machines shall be introduced in all mines within a period of one year. Such machines shall be capable of being operated from a distance or be provided with suitable canopy to protect the supporting personnel during drilling or bolting operations.
- 6.6 Risk assessment exercise shall be carried out in the mines for assessing the risk from the hazards of roof & side falls and identifying the control mechanism with specific responsibility for implementation. This exercise shall be reviewed at regular intervals not exceeding a year.
- 6.7 Each company shall take steps to impart structured training to officers, supervisors and support personnel on roof bolting.

7.0 Safety of Contractor Workers and Implementation of "Cold Work Permit" in Oil mines.

7.1 Contractor workers:

- (a) Before the commencement of the work by the contractor the job shall be thoroughly assessed for potential hazards and risks to the contractor worker and appropriate measures shall be taken to mitigate them.
- (b) Adequate supervision by the management shall be provided for the work to be carried out by the contractor.
- (c) Frequent change of contractual employee shall not be allowed.

7.2 Issue of cold work permit

- (a) Where the risk arising from the work to be performed under given circumstances at the installation, demands a stringent system of control to ensure safety of work persons, the management shall ensure that such work is carried out only by issuing a cold work permit.
- (b) The cold work permit shall be in a standardized format specifying place, time, date, and duration of such work, the precautions to be taken and other relevant details.
- (c) Relevant training shall be imparted to all concerned for successful implementation of cold work permit

Definition: "Cold work" means any work which is of non-routine nature so identified by the manager.

8.0 Belowground Communication and Tracking System

- 8.1 All belowground mines shall be provided with efficient voice communication from the working districts/places to the surface.
- 8.2 Mining companies in collaboration with research institutions/ equipment manufacturers shall initiate and fund for, suitable research initiatives for establishment of appropriate communication system for below ground mines including to locate the trapped miners.
- 8.3 Mine management in collaboration with equipment manufacturers shall evolve a system of proximity warning device in HEMM and initiate measures for its implementation.

All the recommendations should be complied within a period of four years.

9.0 "Safety Management System": Strategies for Implementation and Path Forward

- 9.1 Every mine should employ a sound risk analysis process, should conduct a risk assessment, and should develop a safety management plan to address the significant hazards identified by the analysis/ assessment.
- 9.2 The managements of every mining company should adopt the process of safety management system and commit itself for proper formulation and implementation of the same in totality. Necessary resources should be allocated for implementation of the control measures identified by the risk assessment process.
- 9.3 Necessary training of all employees of mining companies should be organized with the help of experts, both national and international, for optimal adoption of the safety management system.

10.0 Implementation of ILO Convention No.176 in mines

The Committee decided that a separate discussion be held by the Govt. of India in a tripartite forum to deliberate on the implications arising out of ILO Convention No.176.

Recommendations of 11th Conference on Safety in Mines

(Held on 4th & 5th July, 2013 at New Delhi)

1.0 Review of status of implementation of recommendations of 10th Conference on Safety in Mines.

1.1(a) Necessary facilities for monitoring the environmental parameters in respect of Methane and Carbon Monoxide should be provided at mines. Facilities of continuous type monitoring should be installed within two years in all degree III gassy COAL and in such other mines having active underground fire.

1.1(b) Indigenous manufacturers should be encouraged to manufacture necessary equipments.

1.1(c) Time bound programme is to be made, which should be decided in a tripartite committee at company level.

1.2 In underground specified mines where long or arduous travel is involved, arrangement for transport of men should be made with a target of 20 % every year.

1.3 In respect of small-mechanised mines, which are operating in NON-COAL sector, it may not be feasible for a small organization to create a special department on Occupational Health Services. For such small mines, it is suggested that an Association of small mines operators creates common facilities and infrastructure for occupational health services. Creation of such facilities are specially needed for asbestos, manganese and mica mines.

1.4 Development of a portable instrument for detecting hidden slips in roof of COAL mines should be taken up on priority by R&D organizations. The instrument should be developed by S&T project which should be guided by a committee consisting of an officer from DGMS and others from COAL Industry and Research Organisations.

1.5(a) Before the valid gate pass is issued for entry of trucks and other vehicles not belonging to management into the mine, the mine engineer should check the road-worthiness of such vehicles.

1.5(b) In order to check entry of un-authorized vehicles in mine premises, each mine should establish property manned check gate(s) at the entrance(s) where record of entry and exist of each such vehicle should be maintained.

1.6(a) All persons engaged at any work within the mine premises through the contractors have received relevant training and other job-related briefings and that the drivers of vehicles belonging to contractors entering the mine premises have additionally been explained the salient provisions of "traffic rules".

1.6(b) Each mining company should draw up appropriate training schedules and modalities in this regard and implement the same.

1.6(c) In case of smaller mines, such arrangement may be made by association of mine operators.

1.7 Considering the risk of fire, all COAL mine companies shall rank its COAL mines on a uniform scale according to its risk from fire on scientific basis. Guidelines may be framed by DGMS and circulated to all mining companies.

1.8 Contractor work vis-à-vis safety

1.8.1 Employer's responsibilities

1.8.1(a) Suitable clauses (in consistence with risk of the work allotted) shall be included in tender document (including NITs) stating how the risk arising to men and material from the mining operation/operations to be done by the contractors shall be managed.

1.8.1(b) Ensure that contractors are familiar with the relevant parts of the statutes, health and safety management system and are provided with copies of such documents prior to commencing work.

1.8.1(c) Ensure that contractor's arrangements for health and safety management are consistent with those for the mine owner. All the rules, regulations and bye-laws as applicable to the mine owner are also applicable to the contractor. Details of the contractor's workmen should be maintained in the owners Form-B register.

Whereas as C, D & E registers for contractor men may be maintained independently by the owner and shall be kept in the mine office of the manager.

1.8.1(d) Ensure that contracts should preferably of longer period (3 years), so that there is adequate scope of management of safety by the contractor.

1.8.1(e) Ensure that contractors provide the machinery, operator and other staff with written safe work procedures for the work to be carried out, stating clearly the risk involved and how it is to be managed.

1.8.1(f) Monitor all activities of the contractors to ensure that contractors are complying with all the requirements of statute and the system related to safety. If found non-compliance of safety laws directing the contractors to take action to comply with the requirements and for non-compliance, the contractor may be suitably penalized. Clause to this affect may be a part of the agreement between the employer and the contractor.

1.8.1(g) Where a risk to health or safety of a person arises because of a non-compliance directing the contractor to cease work until the non compliance is corrected.

1.8.2 Contractor's responsibilities

1.8.2 (a) Prepare written Safe Operating Procedure (SOP) for the work to be carried out, including an assessment of risk, wherever possible and safe methods to deal with it/them.

1.8.2 (b) Provide copy of the SOP to the person designated by the mine owner who shall be supervising the contractor's work.

1.8.2 (c) Keep an up to date SOP and provide a copy of changes to a person designated by the mine owner

1.8.2 (d) Ensure that all work is carried out in accordance with the Statute and SOP and for the purpose he may deploy adequate qualified and competent personnel for the purpose of carrying out the job in a safe manner.

1.8.2 (e) For work of a specify scope/nature, develop and provide to the mine owner a site specific Code of Practice (COP).

1.8.2 (f) Ensure that all sub-contractors hired by him comply with the same requirement as the contractor himself and shall be liable for ensuring the compliance all safety laws by the sub or sub-sub contractors.

1.8.2 (g) All persons deployed by the contractor for working in mine must undergo vocational training, initial medical examination, PME. They should be issued cards stating the name of the contractor and the work and its validity period, indicating status of VT & IME.

1.8.2 (h) Every person deployed by the contractor in a mine must wear safety gadgets to be provided by the contractor. If contractor is unable to provide, owner, agent and manager of the mine shall provide the same.

1.8.2 (i) The contractor shall submit to DGMS returns indicating -Name of his firm, Registration number, Name and address of person heading the firm, Nature of work, type of deployment of work persons, Number of work

persons deployed, how many work persons hold VT Certificate, how many work persons undergone IME and type of medical coverage given to the work persons. The return shall be submitted quarterly (by 10th of April, July, October and January) for contracts of more than one year. However, for contracts of less one year, returns shall be submitted monthly.

1.8.3 Employees Responsibilities

1.8.3 (a) An employee must, while at work, take reasonable care for the health and safety of people who are at the employee's place of work and who may be affected by the employee's act or omissions at work.

1.8.3 (b) An employee must, while at work, co-operate with his or her employer or other persons so far as is necessary to enable compliance with any requirement under the act or the regulations that is imposed in the interest of health, safety and welfare of the employee or any other person.

1.9 Safety issues in mines in un-organised sector

1.9.1 In case of stone quarried on hillocks, whole of the hillock should be given out as a single lease so that necessary development could be done from topdownwards after making approach road to reach to top of the hillock before starting extraction of stone. A condition to this effect may be incorporated before granting such leases.

1.9.2 In the lease document, reference should be made to the Mines Act and the Rules and Regulations made there under for compliance. The DGMS may prepare, in consultation with Ministry of Mines a model document for grant of leases by the state Governments so that the conditions of leases are such that there is a uniformity and compliance with central laws.

1.9.3 A copy of the lease document should be sent to the DGMS and lessees explicitly asked to send notice of opening of mine to DGMS in accordance to the Provisions of the Mines Act.

1.9.4 The Conference has noted that there have been instances in some States where, leases have been granted in close proximity of inhabited area and within 45 m. of Railway acquired land and land acquired for National and State highways, public works without consulting the appropriate statutory authority. The conference recommends that the States may grant mining leases in conformity of Central Laws. {This study material has exclusively been provided by mineportal.in }

1.9.5 DGMS should organize Orientation Programmes for officers of State Mines and Geology Departments to inform them about safety laws.

1.10 Occupational Health surveillance and Notified Diseases

1.10.1 Noise mapping should be made mandatory of various workplaces in the mine premises based on the various machines being used in concerned mines along with personal noise dosimetry of individual workmen exposed to noise level above 85 dbA.

1.10.2 Vibration studies of various mining machineries before their introduction in mining operation should be done as per ISO Standards.

1.10.3 Ergonomical assessment of all latest machines, before their introduction into mining operation as per ISO standards. Ergonomical assessment should include:

- * Assessment of work process.

- * Assessment of working Aids/tools

- * Assessment of working posture.

1.10.4 Portability tests of drinking water supplied to the mine employees, to be made mandatory once in a year irrespective of its source, preferably after rainy seasons, the sample of water should be collected from the points of consumption.

1.10.5(a) In addition to measurement of blood pressure, detailed cardiovascular assessment of employees should be done. This should include 12 leads electrocardiogram and complete lipid profile.

1.10.5(b) Detailed neurological examinations including testing of all major superficial and deep reflexes and assessment of peripheral circulation to diagnose vibrational syndromes.

1.10.5(c) In addition to routine urine, fasting and post-parandial blood sugar should be included for early diagnosis of diabetes mellitus.

1.10.5(d) Serum Urea Creatinine should be included for assessment of Renal function.

1.10.6 Special tests should be included in the PME for employees exposed to specific health hazard:

1.10.6(a) For employees exposed to manganese, special emphasis should be given to behavioural and neurological disturbances such as speech defect, tremor, impairment of equilibrium, adiadochokinesia H₂S and emotional changes.

1.10.6(b) For persons exposed to lead, PME should include blood lead analysis and delta aminolevulinic acid in urine, at least once in a year.

1.10.6(c) Employees engaged in food handling and preparation and handling of stemming material activities should undergo routine stool

examination once in a every six months and sputum for AFB and chest radiograph once in a year.

1.10.6(d) Employees engaged in driving/HEMM operation jobs should undergo eye refraction test at least once in a year.

1.10.6(e) Employees exposed to ionizing radiation should undergo blood count at least once in a year.

1.10.7 All other types of Pneumoconiosis excluding Coal workers pneumoconiosis, silicosis and asbestosis. This includes Siderosis & Berillyosis.

1.10.8 For smaller mines where PME facilities are not existing, medical examinations can be done through other competent agencies.

1.11 Mechanisation with view to phase out manual loading etc.

1.11.1 Keeping in view the objective of phasing out manual loading, all COAL companies shall identify appropriate technology suitable for the prevailing geomining conditions and introduce the same in such a manner so as to phase out manual loading operation completely within a period of five years in COAL seams with gradient of 1 in 5 or less, within a period of seven years where gradient steeper than 1 in 5.

1.11.2 While formulating the strategies for face mechanization in underground workings, it shall be ensured that back facilities like COAL evacuation, support system, ventilation arrangements etc are compatible with face mechanization.

1.11.3 The scheme of face mechanization shall be based on proper scientific investigation. The scheme shall also include arrangements for monitoring strata behaviour and environmental conditions.

1.11.4 Possibility of deployment of multi-skilled miners in the face shall be explored to reduce the exposure at hazardous areas without affecting employment.

1.11.5 Suitable training for efficient and safe operation of machinery shall be imparted to all concerned.

1.11.6 While planning for face mechanization, due considerations shall be given for long term sustainability of the technology.

1.12 Reduction from risk from roof and sides falls in coal mines.

1.12.1 In every Coal mining company, STRATA CONTROL CELL shall be established at corporate and area levels within a period of one year, to assist mine managers, for formulation of Systematic Support Rules, monitoring strata control measure in a scientific way to ensure efficacy of

support system and for procurement/supply of quality supporting materials. Such cell shall be manned by adequate number of technical personnel headed by a senior official not below the rank of General Manager at Corporate level and Dy. General Manager at Area level.

1.12.2 Roof bolting shall be used as a primary means of support for freshly exposed roof in development as well as depillaring districts. For the roof category Poor, having value of RMR of 40 or less, or where there is excessive seepage of water from the roof strata, roof bolts exclusively with resin capsules shall be used to ensure adequate & immediate reinforcement of the strata.

1.12.3 To ensure proper drilling for roof bolting in all types of roof strata, suitable fitfor-

use roof bolting machines shall be introduced in all mines within a period of one year. Such machines shall be capable of being operated from a distance or be provided with suitable canopy to protect the supporting personnel during drilling or bolting operations.

1.12.4 Risk assessment exercise shall be carried out in the mines for assessing for risk from the hazards of roof and sides falls and identifying the control mechanis with specific responsibility for implementation. This exercise shall be reviewed at regular intervals not exceeding a year.

1.12.5 Each company shall take steps to impart structured training to officers, supervisors and support personnel on roof bolting.

1.13 Below ground communication and tracking system

1.13.1 Mining companies in collaboration with research institutions/equipment manufacturers shall initiate and fund fo, suitable research initiatives for establishment of appropriate communication system for below ground mines including to locate the trapped miners.

1.13.2 Mine management in collaboration with equipment manufacturers shall evolve a system of proximity warning device in HEMM and initiate measures for its implementation.

1.14 Safety Management system" Strategies for implementation and path forward.

1.14.1 Every mine should employ a sound risk analysis process, should conduct a risk assessment, and should develop a safety management plan to address the significant hazards identified by the analysis / assessment.

1.14.2 The managements of every mining company should adopt the process of safety management system and commit itself for proper formulation and implementation of the same in totality. Necessary

resources should be allocated for implementation of the control measures identified by the risk assessment process.

1.14.3 Necessary training of all employees of Mining Companies should be organized with the help of experts, both national and international, for optimal adoption of safety management system.

1.15 Implementation of ILO convention No. 176 in Mines

1.15.1 The committee decided that a separate discussion be held by the Govt. of India in a tripartite forum to deliberate on the implications arising out of ILO Convention No. 176.

2.0 Small Scale Mining

2.1 The concerned authority in State Governments may grant prospecting

lease/mining lease/ mining right after ascertaining technical feasibility of mineral extraction in pursuance with provisions of the mining law, so that the lessee can make medium to long-term plan for investment in infrastructure and work the mines in a safe and scientific manner. While conduct of mining operations, it should be ensured that the Central Laws, including the Mines Act are complied with.

2.2 The State Governments may explore the feasibility of demarcation of mining zones to avoid problems of growing habitation encroaching into the mining area, thereby creating unsafe and unhealthy conditions. However, the State Governments may take efforts to relocate the habitation already existing near mining zones.

2.3 The lease granting authority of State Governments may assign a unique identification number, which will serve as a common reference for all central and state authorities responsible for administration of central and state laws.

The details of lease may be displayed in a board of permanent nature in a prominent place in the lease hold are showing following:

- a. Name of lessee:
- b. Lease number:
- c. Period of lease:
- d. Unique identification number:

2.4 The lease granting authority of State Governments may insert a clause in the lease document requiring the lessee to submit a notice of (i)

commencement of any mining operation, and (ii) appointment of a manager, prescribed under the Mines Act, 1952 and Rules and Regulations framed there under.

2.5 The concerned authorities of State Governments may be requested to explore the possibility of introducing a course in Mining at Industrial Training Institutes in consultation with DGMS to augment the requirement of Mining Mates.

2.6 Orientation Programmes may be organized for officers of State Mine and Geology Departments on OSH Laws.

2.7 Organized mines of public and private sector may consider extending their facilities in Vocational Training, Occupational Health Surveillance and other Safety Awareness Programmes for workers engaged in small scale mining sector.

2.8 As a promotional initiative, social dialogue and deliberations at appropriate level may be initiated to facilitate formation of Cooperative Society/Mine Owners Association to tackle issues of resource and logistics management essential for safe and healthy mining.

2.9 The Conference appreciates the efforts made by Ministry of Labour & Employment and Directorate General of Mines Safety for encouraging and adopting innovative means to create awareness about OSH issues and improving compliance in small scale mining sector with public private interventions. It is recommended to continue with such initiatives vigorously and in enhanced manner.

2.10 The concerned authorities may explore possibilities of setting up of Mine Workers Welfare Boards for minerals like sandstone, marble and granite.

3.0 Safety, Health and Welfare of Contractual Workers.

3.1 The recommendations made in the 10th conference on Safety in Mines regarding safety, health and welfare of contractor's workers shall be complied within two years. Owner, Agent and Manager shall be responsible for ensuring compliance at their respective mines.

3.2 There shall be provisions for modifications in Notice Inviting Tenders (NITs) to fulfil the requirement of statute/circulars issued by DGMS from time to time subsequent to the finalization of NITs also.

3.3 The contractor shall not employ or terminate his worker without the knowledge of the mine management.

3.4 Payment to contractor's workers including leave with wages shall be made through bank only.

3.5 In case of non-routine type of work in the mine a Work-Permit system, outlining the precautions to be adopted, SOPs, supervision, persons responsible for the job etc., shall be adopted.

3.6 Each company shall frame a safety, health and welfare policy for their contractor's workers keeping in view the requirement of Mines Act and Rules & Regulations made there-under. The details of the policy shall be included in the tender document which will be a binding clause for the contractor.

3.7 Each mining company shall extend all benefits including medical facilities and payment of wages, to contractor's workers receiving injury whilst on duty.

Owner, Agent and Manager shall be responsible for ensuring compliance at their respective mines.

3.8 Medical facilities shall be extended to contractor workers.

3.9 Central Government should take steps against non-compliance of the recommendations of the National Safety Conferences.

4.0 Surface and Underground Transportation Machinery:

4.1 MACHINERY FOR SURFACE OR OPENCAST OPERATIONS.

4.1(a) Mine Planning & Design;

The provisions of requirements of HEMMs and their installations, operations, maintenance and training shall be included in the project at planning stage.

4.1(b) Safety Features in HEMMs

4.1(b)(i) Audio-Visual Alarm;

The sound level of AVA should be at least 5 to 20% higher than the ambient noise level; and The audio frequency and its amplitude band should be increasing and uniquely heard to keep persons alert in the blind zone during reversal.

- AVA should be of IP 67 compliance.

4.1(b)(ii) Anti-Skid and Tail-End Protection System;

The provision of tail end protection, bumper extension or any other device shall be provided in dumpers/tippers to prevent collision both head on and head to tail conditions.

4.1(b)(iii) GPS-GSM Based Navigation System;

The GPM-GSM based vehicle navigation system shall be used in large mines in a phased manner.

4.1(c) Risk Control and Management;

Risk Assessment and Control of Risks should be conducted by the mine management quarterly and annually.

4.1(d) Skill Development and Training;

General Skill Development programme should be undertaken for training of operators and all other associated staffs using state of the art technique including simulation and 3D Virtual Reality system.

4.1(e) Protection against Fatigue

4.1(e)(i) Long or Extended Hours of driving beyond 8 continuous hours with a rest interval of half an hour after four hours of continuous operation, shall not be permitted, for which biometric system of check-in & check-out system of attendance associated with suitable software shall be introduced in the mine.

4.1(e)(ii) Additional warning system for operator's fatigue should be provided in the machine.

4.1(e)(iii) Operator's Seat in the Vehicle/HEMMs should be ergonomically designed to have adequate comforts while driving continuously.

4.2 TRANSPORTATION MACHINERY IN UNDERGROUND:-

4.2(a) All steam winders should be replaced with electric winders in phased manner within a period of five years.

OR

Alternate access to the mine in the form of Inclines or Shafts may be considered and implemented within the same period.

4.2(b) Safety Features in Winding;

Detail survey of all winding installation completed 20 years shall be carried out by committee of experts and its recommendations shall be implemented.

4.2(c) Man-Riding System;

DGMS should initiate necessary steps to frame suitable standard for man riding system within a period of 18 months through an expert committee.

4.2(d) Use of Diesel Equipment belowground in Coal Mines;

An expert committee may be appointed to examine and frame standards and safety provisions for diesel equipment in belowground both coal and non-coal mines.

www.MINEPORTAL.in