

RECOMMENDATIONS OF THE TENTH CONFERENCE ON SAFETY IN MINES

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

Besides reviewing the status of implementation of the recommendations of Ninth Conference on Safety in Mines, the conference had deliberated upon and had made valuable recommendations on the following subjects:

1. Contractor Work Vis-à-vis Safety.
2. Safety Issues in Mines in Unorganized Sector.
3. Occupational Health Surveillance & Notified Diseases.
4. Mechanization with a view to Phase-out Manual loading & to improve Safety Standards.
5. Reduction of Risk from Roof and Side Falls in Coal Mines.
6. Safety of contractor workers and Implementation of "Cold Work Permit" in Oil Mines.
7. Belowground Communication and Tracking System.
8. "Safety Management System" Strategies for Implementation and Path Forward.
9. Implementation of ILO Convention No. 176 in Mines.

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 an 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.

1.15.2 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 effect 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 db(A).

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-pancreal 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.

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.