

Recommendations of 11th conference on Safety in Mines held on 4th & 5th July, 2013 at New Delhi.

COMMITTEE 'A'

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

The committee unanimously decided to carry forward the following Para of the recommendations of the 10th Conference on Safety in Mines, namely:-

- 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(a) 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.
- 1.8(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.
- 1.8(b) In order to check entry of un-authorized vehicles in mine premises, each mine should establish properly manned check gate(s) at the entrance(s) where record of entry and exist of each such vehicle should be maintained.
- 1.9(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".
- 1.9(b) Each mining company should draw up appropriate training schedules and modalities in this regard and implement the same.
- 1.9(c) In case of smaller mines, such arrangement may be made by association of mine operators.
- 1.11.1 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.

2.0 Contractor work vis-à-vis safety

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2.1 Employer's responsibilities

- 2.1(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.
- 2.1(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.
- 2.1(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.
- 2.1(d) Ensure that contracts should preferably of longer period (3 years), so that there is adequate scope of management of safety by the contractor.
- 2.1(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.
- 2.1(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.
- 2.1(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.

2.2 Contractor's responsibilities:

- 2.2(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.
- 2.2(b) Provide copy of the SOP to the person designated by the mine owner who shall be supervising the contractor's work.
- 2.2(c) Keep an up to date SOP and provide a copy of changes to a person designated by the mine owner
- 2.2(d) Ensure that all work is carried out in accordance with the Statue 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.
- 2.2(e) For work of a specify scope/nature, develop and provide to the mine owner a site specific Code of Practice (COP).
- 2.2(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.
- 2.2(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.

2.2(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.

2.2(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 than one year, returns shall be submitted monthly.

2.3 Employees Responsibilities

2.3(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.

2.3 (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.

3.0 Safety issues in mines in un-organised sector

3.2 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 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 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 dB(A).
- 4.2 Vibration studies of various mining machineries before their introduction in mining operation should be done 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.
- 4.5 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.
- 4.7(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.
- 4.7(b) Detailed neurological examinations including testing of all major superficial and deep reflexes and assessment of peripheral circulation to diagnose vibrational syndromes.
- 4.7(c) In addition to routine urine, fasting and post-prandial blood sugar should be included for early diagnosis of diabetes mellitus.
- 4.7(d) Serum Urea Creatinine should be included for assessment of Renal function.
- 4.8 Special tests should be included in the PME for employees exposed to specific health hazard:
 - 4.8(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.
 - 4.8(b) For persons exposed to lead, PME should include blood lead analysis and delta aminolevulinic acid in urine, at least once in a year.
 - 4.8(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.
 - 4.8(d) Employees engaged in driving/HEMM operation jobs should undergo eye refraction test at least once in a year.
 - 4.8(e) Employees exposed to ionizing radiation should undergo blood count at least once in a year.
- 4.9(a) All other types of Pneumoconiosis excluding Coal workers pneumoconiosis, silicosis and asbestosis. This include Siderosis & Berilliosis
- 4.10 For smaller mines where PME facilities are not existing, medical examinations can be done through other competent agencies.

5.0 Mechanisation with view to phase out manual loading etc.

- 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 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.

- 5.2 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.
- 5.3 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.
- 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 and 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.

6.0 Reduction from risk from roof and sides 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 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.
- 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.
- 6.5 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 for risk from the hazards of roof and sides 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.

8.0 Below ground communication and tracking system

- 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.

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 safety management system.

10.0 Implementation of ILO convention No. 176 in Mines

- 10.0 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.

COMMITTEE 'B'

Small Scale Mining

- (1) The concerned authority in State Government 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) 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 Government may take efforts to relocate the habitation already existing near mining zones.
- (3) The lease granting authority of State Government 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:

- (4) The lease granting authority of State Government 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.
- (5) The concerned authorities of State Government 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.
- (6) Orientation Programmes may be organized for officers of State Mine and Geology Departments on OSH Laws.
- (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.
- (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.
- (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.
- (10) The concerned authorities may explore possibilities of setting up of Mine Workers Welfare Boards for minerals like sandstone, marble and granite.

COMMITTEE 'C'

Safety, Health and Welfare of Contractual Workers.

- (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 the their respective mines.
- (2) There shall be provisions for modifications in Notice Inviting Tenders (NITs) to fulfill the requirement of statute/circulars issued by DGMS from time to time subsequent to the finalization of NITs also.
- (3) The contractor shall not employ or terminate his worker without the knowledge of the mine management.

- (4) Payment to contractor's workers including leave with wages shall be made through bank only.
- (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.
- (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.
- (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.
- (8) Medical facilities shall be extended to contractor workers.
- (9) Central Government should take steps against non-compliance of the recommendations of the National Safety Conferences.

COMMITTEE 'D'

Surface and Underground Transportation Machinery:

(A) MACHINERY FOR SURFACE OR OPENCAST OPERATIONS

- (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.
- (b) Safety Features in HEMMs
 - (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.
 - (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.

(iii) GPS-GSM Based Navigation System

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

- (c) Risk Control and Management
Risk Assessment and Control of Risks should be conducted by the mine management quarterly and annually.
- (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.
- (e) Protection against Fatigue
 - (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.
 - (ii) Additional warning system for operator's fatigue should be provided in the machine.
 - (iii) Operator's Seat in the Vehicle/HEMMs should be ergonomically designed to have adequate comforts while driving continuously.

(B) TRANSPORTATION MACHINERY IN UNDERGROUND:-

- (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.
- (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.
- (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.
- (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.
