

RECOMMENDATIONS OF THE FIRST CONFERENCE ON SAFETY IN MINES

Held in Calcutta on 5th-6th August, 1958

A. General

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.
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

1. The Regulations should be more specific about the standards of ventilation.
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 should be in charge of a competent person.
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

1. The standard of survey should be improved. A Senior Surveyor's Certificate should be instituted. All correlation surveys, surveys of mines before abandonment and check-surveys of all underground workings once in every 5 years, should be carried out by such surveyors.
2. Standards of accuracy of plans of different types may be prescribed.
3. A Water Danger Plan should be prepared in respect of all underground workings showing all reservoirs of water lying within 60m of any workings.
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.

1. A realistic view should be taken about the enforcement of new provisions of regulations. Sufficient time must be given to the management -and to the workmen, where necessary -to come up to new standards.
2. Where provision has been made regarding the laying down of standards etc., this may be done in due course of time.
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)

1. There is need for greater awareness of the dangers of inflammable gas in general.
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 method should be considered.
3. Research is necessary into the methods of properly ventilating the headings in bord and pillar workings.
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.
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.
6. Lamps issued to overmen and superior officials should be relighter type.

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

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

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

CD. Problems of Roof Control

1. The problem of controlling strata stresses at greater depths requires detailed investigation.
2. In deeper coal mines and for working thick seams sandstowing during depillaring operations should be compulsory.

CE. Problems of Mechanisation

1. A properly equipped and staffed Mechanisation Training Centre should be opened without delay for training machine operators and maintenance-men.
2. Institution of new statutory certificates of competency for mine engineers, mechanics and electricians etc. should be considered.
3. The standard of supervision on the afternoon and night shifts should be improved. In gassy and mechanized mines, in particular. the percentage of officials should be raised.
4. In mechanised mines, more attention should be paid to the support of roof.

CF. Greater use of explosives

1. Constant effort should be made to raise the standard of handling and use of explosives.
2. Persons to be appointed as shotfirers should be properly selected and intensively trained, so that safety habits are ingrained in their very nature.
3. The fixation of the maximum number of shots to be fired by a shotfirer needs very careful consideration.
4. In every mine using more than a prescribed amount of explosives. The whole shotfiring staff should be under the charge of a superior official on each shotfiring shift.

D. Organisation of large and / or gassy mines

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, sandstowing, shotfiring, machinery maintenance etc.
2. Only experienced persons should be appointed as managers of large and or gassy mines.
3. In all mines above a prescribed size, a suitably qualified persons should be employed as Safety Officer.

DA. Need for Research Work

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

1. The definition of 'agent' in the Mines Act should be amended to include every person other than an owner or agent who takes part or has an effective say in the technical management of the mine including-
 - (i) Senior officers 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.
2. Where the owner himself directly supervises and directs work at the mine, he must carry direct responsibility for safe operation in every case.
3. Mines Act should clearly provide that all instructions regarding technical matters (even by an Owner or Agent) should be routed through the manager.
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.
5. The status of surveyors and other supervisory officials should be improved commensurate with their responsibilities and duties.
6. The status of winding engine-men should also be improved to attract persons of higher standard to this cadre.
7. A statutory provision similar to Coal Mines Regulation 113(2) should be made relating to the determination of the size of overmen's district.
8. No safety official shall be dismissed unless his case has been discussed in the Pit Safety Committee.

F. The Role of Workmen

1. Workmen and their representatives should cooperate with the management in ensuring effective compliance with safety measures and precautions.
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.
3. A copy of every violation letter received from the Mines Department should be posted on a special notice board.
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. 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.
5. Cases of disciplinary action arising out of non-observance of safety requirements may be referred to the Committee.
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 thorough enquiry by a properly-constituted body.
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

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

1. All entrants to mining should be subjected to a physical test. All mine workers should also be medically examined at periodic intervals.
2. Provision of housing for mine-workers should be given top priority.
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

1. Inspections should not be carried out 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-

(a) Two general inspections every year of all mines.

(b) In all large 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.

(c) 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 up to a certain standard.

(d) A number of surprise inspections should be made on the afternoon and night shifts.

2. As it is asking too 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.

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

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.

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

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.

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. The principle followed in the U.K. where the salary-grade of an Inspector starts where that of the manager in the nationalized industry ends, may be followed here with advantage.

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

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

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

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.

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

4. The Mines Act should be amended to provide that evidence recorded by Inspectors would be accepted by the Courts of Law.
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.
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.
7. Contravention of an order under Section 22(3) of the Act should be punishable with imprisonment only.
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."
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.
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

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.
2. Expenditure incurred on stone-dusting (or other dust-treatment) should be a legitimate charge on the funds of the Coal Board.
3. The rate of assistance granted in cases of conservation should not exceed that in cases of voluntary stowing for safety.
4. In cases of compulsory stowing for safety, assistance should be granted at the full (100%) rate.

J. Education and Training

1. Unless competent and dependable workmen, operators and officials are available in mines, no programme of promotion of safety can make any real headway.
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.
3. Further Accident Prevention courses for all workers should be arranged at periodic intervals.
4. The provision of training facilities for mining supervisory staff should be expedited. Special attention should be paid to the training of mine surveyors.
5. one-year specialisation courses for qualified engineers for employment in mines should be instituted.
6. A suitable scheme of directed practical training for mining engineers should be evolved.
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

1. "Everyone who works in the mine, from the manager to the youngest worker must be instilled 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."
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.
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.
4. It is also necessary to hold periodic refresher courses.
5. 'First Aid Training' amongst mine workers should be intensified.

KB. Safety Competitions and Incentive for Safety

1. Safety weeks should be held occasionally in the whole industry. Safety Campaigns, aimed at reducing accidents of a particular type or during a particular period, may also be useful.
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.
3. Large mines or group of mines should institute awarding systems of safety prizes to district officials, individuals etc. for low-accident performance.
4. Institution of a suitable scheme of Incentive Safety Bonus deserves serious consideration.
5. Officials' Safety meetings at the mine-level are also a useful medium for promoting safety.

LA. Rescue in cases of inundation

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

1. A statutory provision 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.
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

1. There is a case for increasing the rates of compensation.
2. There are also strong grounds 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 arrangements being made to rehabilitate the permanently injured coal-miners should be extended to cover all mines.

O. Collection of statistics

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

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

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