OCCUPATIONAL SAFETY AND HEALTH 13

13.1 The Constitution of India contains specific provisions on occupational safety and health of workers **(Table 13.1).** The Directorate General of Mines Safety (DGMS), Dhanbad and the Directorate General of Factory Advice Service and Labour Institutes (DGFASLI), Mumbai, the two field organisations of Ministry of Labour and Employment, strive to achieve the principles enshrined in the Constitution of India in the area of occupational safety and health in mines, factories and ports.

DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTES, MUMBAI

THE ORGANISATION

13.2 The Directorate General Factory Advice Service & Labour Institutes (DGFASLI), Mumbai which is an attached office of the Ministry of Labour & Employment, functions as a technical arm of the Ministry in regard to matters concerned with safety, health and welfare of workers in factories and ports/ docks. It assists the Central Government in formulation and review of policies and legislations on occupational safety and health in factories and ports; maintains a liaison with Factory Inspectorates of States and Union Territories in regard to the implementation and enforcement of provisions of the Factories Act, 1948; renders advice on technical matters; enforces the Dock Workers (Safety, Health & Welfare) Act, 1986; undertakes research in industrial safety, occupational health, industrial hygiene and industrial psychology etc.; and provides training, mainly in the field of industrial safety and health including one year Diploma Course in Industrial Safety, three-months Certificate Course in Industrial Health (Associate Fellow of Industrial Health -AFIH), six-weeks course in Industrial Hygiene Techniques, one month Specialized Certificate Course in Safety and Health for Supervisory Personnel working in Hazardous Process Industries and two months Certificate Course in Construction Safety.

13.3 The DGFASLI organisation comprises the Headquarters; five Labour Institutes and 11 Inspectorates of Dock Safety in Major Ports. The Headquarters in Mumbai has three divisions/ cells, namely, Factory Advice Service Division, Dock Safety Division and Awards Cell.

13.4 The Central Labour Institute in Mumbai started working from 1959. The Institute was shifted to the present premises at Sion, Mumbai- 400022 in February, 1966 and all the disciplines functioning at different locations under the Chief Advisor of Factories were brought under one roof. Over the past 40 years, the Institute has grown and assumed the status of a major National Resource Centre with the following divisions/ cells:

- **Industrial Safety**
- **Industrial Hygiene**
- **Industrial Medicine**
- **Industrial Physiology**
- **Industrial Psychology**
- **Industrial Ergonomics**
- **Environmental Engineering**
- **Staff Training**
- **Small Scale Industries**
- **Productivity**
- **Major Accident Hazards Control**
- **Management Information Services**
- **Safety and Health Communication**
- **Construction Safety**

13.5 The different divisions at the Institute undertake activities, such as, carrying out studies and surveys; organizing training programmes, seminars and workshops; rendering services, such as, technical advice, safety audits, testing and issuance of performance reports for personal protective equipment, delivering talks, etc. Some of these facilities that are not available in the regions are extended to the regions as and when necessary.

13.6 The Regional Labour Institutes (RLIs) located in Kolkata, Chennai and Kanpur are serving the respective regions of the country. Each of these institutes have the following Divisions/Sections:

- **Industrial Safety**
- **Industrial Hygiene**
- **Industrial Medicine**
- **Staff Training and Productivity**
- **Safety and Health Communication**
- **Major Accident Hazards Control**
- **Computer Centre**

13.7 Regional Labour Institute at Faridabad is in the formative stage of being set up. An office, with three officers on deputation from the Central Labour Institute, Mumbai, has been established. This would serve the northern States/UTs viz. Delhi, Punjab, Haryana, J&K, and Himachal Pradesh in more effective and direct manner as these are being presently looked after by the Regional Labour Institute, Kanpur, which is having a large number of states to extend its services.

13.8 The Inspectorates of Dock Safety are established at 11 major ports of India viz., Kolkata, Mumbai, Chennai, Visakhapatnam, Paradip, Kandla, Mormugao, Tuticorin, Cochin, New Mangalore and Jawaharlal Nehru Port. The Inspectorate of Dock Safety at Ennore Port is in the process of being set up. The manpower inventory of the organisation as on 30.09.2007 is given in **Table 13.2.**

ACTIVITIES

Safety in Factories

13.9 Comments/clarifications etc. on the matters relating to occupational safety and health, and the provisions of the Factories Act, 1948 were provided to Chief Inspectors of Factories (CIFs), State Governments, Ministry of Labour & Employment, Factories, etc. on the following topics:

- Crèche facilities under the Factories Act, 1948 in the Army Base Workshop at Agra.
- Inclusion of Transport Allowance for the purpose of computing Overtime Allowance.
- Action Taken Report (ATR) and Plan of Action on control and monitoring of Silicosis in factories to the National Human Rights Commission.
- Brief Note on ILO Conventions for discussions in the 30th Session of the Committee on Conventions.
- Proposed amendments to the Factories Act, 1948 - (revised).
- ILO Decent Work Country Programme in respect of Government of India.
- ILO Convention No. 161 concerning Occupational Health Services.
- Recommendations by the National Commission for Women (NCW).
- Draft Policy Document on creating Information Technology Investment Regions for setting up Integrated Model Townships for Sunrise Industries, IT/ITES Electronic Hardware in the country.
- Grant of accumulation and encashment of 300 days' Earned Leave for Defence and other Industrial Employees.
- Overview of safety and health in up-stream Petroleum Industry.

Others:

- Organized a meeting of the Committee to examine viability of ratification of ILO Convention No. 162 concerning safety in the use of Asbestos.
- Conducted a one day National Workshop on "Status of Implementation of Provisions relating to Silicosis" at DGFASLI on 31.08.2007 to

assess the prevalence of Silicosis in the country, existing control and preventive mechanism, etc.

Dock Safety:

13.10 The Dock Workers (Safety, Health and Welfare) Act, 1986 was enacted on 14th April, 1987. The Dock Workers (Safety, Health and Welfare) Rules, 1990 and Regulations 1990 were framed under this Act. As a result of introduction of these new set of statutes, the scope of dock work has considerably increased covering more number of workers employed in ports, who were hitherto not covered for their safety, health and welfare. In addition, the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, framed under the Environment (Protection) Act, 1986, is also enforced by DGFASLI through the Inspectorates of Dock Safety located in the major ports of India. During the period April 2007 to September 2007, 600 inspections of Ships and Oil Tankers were carried out by the Inspectorates of Dock Safety at the major ports. There were 86 reportable accidents in all the ports, out of which, 20 were fatal.

Training programmes

Professional programmes

- One year Advanced Diploma in Industrial Safety Course for 2006-2007 at CLI, Mumbai; RLI Kolkata; RLI Chennai; and RLI Kanpur for 146 Safety Officers, as required under Section 40-B of the Factories Act, 1948 and Rules made thereunder.

- Three months' Associate Fellow in Industrial Health (AFIH) Course at CLI, Mumbai and RLI Kolkata for 66 medical personnel, as required under Section 41-C of the Factories Act, 1948 and Rules made thereunder.

Training Programmes are conducted in the field of industrial safety and health. Joint participation of management personnel and Trade Union Leaders of the same organisations was a unique feature in some of these programmes. During the period up to September 2007, 50 training programmes, including seminars/workshops and in-plant programmes, were also conducted benefiting 1013 participants from 344 organisations. In addition, Appreciation programmes were conducted for 2248 beneficiaries at various divisions of DGFASLI and the four Labour Institutes in Mumbai, Kolkata, Chennai and Kanpur.

Studies and Surveys

13.11 National Studies and Surveys are undertaken to ascertain the status of working conditions and standards of safety in select group of industries and operations. The National Studies and Surveys, which were completed, are Assessment of Capabilities & Management of Occupational Safety and Health in the States of Bihar, Tripura and Uttarakhand.

In addition, the National Studies/Surveys, which are under progress are, (i) Assessment of Capabilities & Management of Occupational Safety and Health in the State of Chhattisgarh (ii) Safety, Health & Ergonomic Study of Child Labour (ILO Project).

State level Studies and Surveys are undertaken in the State in certain priority areas to ascertain status of Safety, Health and Environment at work place. The State level studies, viz., Study on "Investigation of accident in Sodium Chlorate storage area of Shree Shyam Board & Paper Mills Ltd., Kashipur, Uttarakhand" and "Use of PPE in ship-breaking units in the State of Gujarat" were completed.

Unit level consultancy studies are carried out at the request of the management and reports are submitted for implementation of recommendations for further improvements. Consultancy studies were carried out in the following areas:

- Airborne Contaminants 3
- Noise Level 1
- Industrial Hygiene Survey 3
- Ventilation Study 1
- Safety Audit 6

- Hazop Study 2
- Ergonomic Study 5

National Referral Diagnostic Centre:

13.12 Suspected cases of occupational diseases, such as, silicosis, occupational dermatitis etc. are referred to the National Referral Diagnostic Centre for opinion.

PLAN SCHEMES OF DGFASLI

13.13 During the year 2007-08 under the 11th Five Year Plan, the DGFASLI has undertaken the following two plan schemes for improving the Occupational Safety and Health in the manufacturing and Port Sectors:

13.13.1 Plan Scheme -I: Establishment of Regional Labour Institute at Faridabad

Objective: The objective of the scheme is to cater to the needs of the industries in the northern regions to promote occupational safety, health and work environment which at present, due to heavy workload on the Regional Labour Institute, Kanpur, is not being effectively met. The Institute building at Faridabad is near completion and to make the Institute fully functional, it is essential to create posts and develop necessary infrastructure during the 11th Five Year Plan.

13.13.2 Plan Scheme-II: Strengthening of DGFASLI Organisation and Occupational Safety

& Health (OSH) in Factories, Ports & Docks

Objective: The objective of the scheme is to strengthen the infrastructural facilities for improving occupational safety and health in factories, ports and docks thereby contributing in prevention of occupational injuries and diseases. The following activities are proposed in the 11th Five Year Plan.

- Establishment of a National Board on Occupational Safety & Health;
- Upgradation of different laboratories of CLI & RLIs;
- Monitoring of Occupational Safety, Health, and Work Environment in factories, ports and docks;
- Strengthening of enforcement systems in the major ports;
- Improvement in Occupational Safety and Health in Construction and Ship Breaking Industry.

Major Accident Hazards Control:

13.14 The Major Accident Hazards Control Advisory Division at the Central Labour Institute, Mumbai advises State Governments and MAH units on control of Major Accident Hazards; preparation of emergency plans, Safety Audit, Risk Assessment etc. As on date, the details of MAH Units, hazardous chemicals & on-site emergency plans in the country are (i) 1696 MAH Units (ii) 182 hazardous chemicals (iii) 1477 On-site emergency plans.

Management Information Services

13.15 The CLI is equipped with microfiches and international softwares, such as, CCINFO discs, CIS bibliographic database, NIOSH Registry of Toxic Effects of Chemical Substances and information on Chemicals of Environmental and Health Concern (CESARS), etc. published as CDROMs by the Canadian Centre of Occupational Safety and Health. It also has WHAZAN and EPACHEM softwares. Microfiche reader services are provided through a well-equipped library having over 25,000 books and technical journals. NICNET connectivity through E-Mail service has been established in CLI. Also, Indian Occupational Safety & Health Network (INDOSHNET) has been established by the Ministry of Labour & Employment, Government of India, with DGFASLI as nodal agency and CIS Centre as the Network facilitator.

DGFASLI Website:

13.16 The DGFASLI's website was launched in January 2001. The website www.dgfasli.nic.in is a source of information on various safety and health

related matters, such as, database on abstract on OS&H studies, reports, information on advisory services rendered by DGFASLI in the area of testing of respiratory and non-respiratory personal protective equipment, flame proof equipment approval, material safety data sheets and National Referral Diagnostic Centre, etc. The INDOSHNEWS newsletters of DGFASLI are also available on the website. The training programme calendar for all the labour institutes; announcements on National Safety Awards & Vishwakarma Rashtriya Puraskar, AFIH course, Diploma Course in Industrial Safety, along with the application forms, are available on the website. The website enables users to access other useful websites related to safety and health and get the national directory of organisation-profile of agencies engaged in the field of safety and health. The website also contains the text of the Factories Act, 1948 and the Model Rules framed thereunder and also the Dock Workers (Safety, Health and Welfare) Act, 1986 etc. Statistics of Factories, Docks, list of Chief Inspectors of Factories, list of Dock Safety Inspectorates are also available.

Safety and Health Communication

13.17 For the purpose of updating the Industrial Safety, Health and Welfare Centre of the Central Labour Institute, as well as to provide art support for the production of video films, publicity material, such as, banners, safety posters, and technical literature, etc., the CLI has an Art Studio equipped with the necessary facilities.

Industrial Safety, Health & Welfare Centre

13.18 Industrial Safety, Health and Welfare Centre of the Central Labour Institute and Regional Labour Institutes promote the hazard communication through display of panels, models, charts, graphs, write-ups etc. which is visited by workers, executives from industry and delegates from other countries. During the period, 72 Safety & Health Appreciation programmes were conducted for 1468 visitors.

Testing of Personal Protective Equipment

13.19 The laboratories for respiratory and non-respiratory personal protective equipment testing at Central Labour Institute, Mumbai undertake performance tests of Canisters, Masks, Helmets, Safety Shoes, Safety Goggles, Safety Belts, Welding Glasses etc. Following equipments were tested to ascertain their performance characteristics so as to meet relevant BIS standards:

- 39 dust respirators, canisters, dust filters etc.
- 167 non-respiratory equipments such as helmets, safety shoes, etc.

Approval of Flame proof Electrical Equipment

13.20 As per the BIS standard IS:2148-1981, DGFASLI is the approving agency for Flame Proof Electrical Enclosures for their use in hazardous atmosphere. Seven approvals were issued to 1 manufacturer and 2 manufacturing units were visited for inspection of the testing facilities.

Representation on BIS Committees:

13.21 Officers of DGFASLI represented on several BIS Committees/Sub-Committees dealing with Safety and Health matter and offered comments on draft standards.

13.22 The DGFASLI, on behalf of the Ministry of Labour & Employment, has been implementing the Vishwakarma Rashtriya Puraskar (VRP) since 1985 (earlier known as Shram Vir National Awards) and the National Safety Awards scheme since 1965. These schemes were modified in 1970 and again in 1977. The schemes presently in operation are as under:

- **Vishwakarma Rashtriya Puraskar:** It is designed to give recognition at the national level to outstanding suggestions resulting in (i) higher productivity (ii) improvement in working conditions (iii) savings in foreign exchange (import substitute as well as quality

and safety of products) (iv) improvement in overall efficiency of the establishments. It covers workers employed in factories and docks. Applications for the awards under this Scheme are invited every year and these are forwarded by the management on behalf of the workers. Prizes are grouped in three classes, i.e. Class (A) = 5, Cash Award of Rs.50,000/- each; Class (B) = 8, Cash Award of Rs.25,000/- each; and Class(C) = 15, Cash Award of Rs.10,000/- each.

- **National Safety Awards:** National Safety Awards are given in recognition of good safety performance on the part of the industrial establishments covered under the Factories Act, 1948, the employers covered under the Dock Worker (Safety, Health and Welfare) Act, 1986 and Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. Shields and Citation Certificates are awarded to Winners and Runners Up. Schemes I to VIII are meant for factories and construction sites and Schemes IX and X are for Ports.

13.23 The Awards distribution function for Vishwakarma Rashtriya Puraskar and National Safety Awards for the year 2006 was held on 07.10.2007 at Vigyan Bhawan, New Delhi and the awards were presented to the awardees by Shri Oscar Fernandes, Minister of State for Labour & Employment (Independent Charge). Out of 221 applications received for Vishwakarma Rashtriya Puraskar, awards were given to 99 awardees and out of 341 applications received for National Safety Awards, 95 awards were given.

Group photograph of Hon'ble Minister of State for Labour & Employment (Independent Charge) with the awardees of Vishwakarma Rashtriya Puruskar and National Safety Awards held on October 7, 2007

DIRECTORATE GENERAL OF MINES SAFETY, DHANBAD

13.24 Mineral constitutes the backbone of the economic growth of any nation and India has been eminently endowed with this gift of nature. Progressive industrialization witnessed the rise in demand and hence, production of various minerals. Growth of mining under the impact of successive Five Year Plans has been phenomenal. To take care of the enhanced targets, mechanization of mining activities has taken place. Table 13.3 shows the increasing trends of some important parameters like number of mines, value of minerals mined, aggregate machine power installed and explosive used. Large-scale mechanization led to higher risk to health and safety of work persons deployed in mines. Under the Constitution of India, Safety, Welfare and Health of workers employed in mines are the concern of Central Government (Entry 55 - Union List - Article 246). The Mines Act, 1952 and the Rules and Regulations framed thereunder regulate the objectives. These are administered by the Directorate-General of Mines Safety (DGMS), Dhanbad under the Ministry of Labour and Employment. Apart from administering the Mines Act and Subordinate Legislations thereunder, DGMS also administers parts of other allied legislations. These are as follows:

Mines Act, 1952

- Coal Mines Regulations, 1957.
- Metalliferous Mines Regulations, 1961.
- Oil Mines Regulations, 1984.
- Mines - Rules, 1955.
- Mines Vocational Training Rules, 1966.
- Mines Rescue Rules, 1985.
- Mines Crèche Rules, 1966.
- Coal Mines Pit Head Bath Rules, 1959.

Indian Electricity Act, 1910

- Indian Electricity Rules, 1966 (portion relating to mines only)

Allied Legislation

- Factories Act, 1948:Chapters III & IV
- Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 under Environmental Protection Act, 1986
- Land Acquisition (Mines) Act, 1885
- The Coal Mines (Conservation & Development) Act, 1974

ORGANISATIONAL SET-UP

13.25 The Directorate General of Mines Safety is a subordinate office under the Ministry of Labour and Employment with its Headquarters at Dhanbad (Jharkhand) and is headed by the Director-General of Mines Safety. At Head Quarters, Director General is assisted by specialist staff-officers of Mining, Electrical and Mechanical Engineering, Occupational Health, Statistics, Law, Survey, Administration and Accounts discipline. The Head Quarters also has a Technical Library and S&T Laboratory as a back-up support to the organisation. Field organisation has a two-tier network. The entire country is divided into six zones, each under the charge of Deputy Director-General. There are three to four Regional offices under each Zonal office. Each Region is under the charge of Director of Mines safety. There are in all 21 such Regional offices. Five Sub-Regional offices have also been set up in important areas of concentrated mining activities away from Regional offices. Each of these is under charge of Deputy Director. Besides having inspecting officers of Mining cadre in each zone, there are officers of Electrical and Mechanical Engineering and Occupational Health disciplines. DGMS has a total sanctioned strength of 978 persons with 740 in position as on 01.10.07 as indicated below:

CATEGORY	SANCTIONED STRENGTH	IN POSITION STRENGTH
GROUP-A	177	135
GROUP-B	104	88
GROUP-C	453	356
GROUP-D	244	161
TOTAL	978	740

TREND OF ACCIDENTS

13.26 Trend in fatal and serious accidents in both coal as well as non-coal mines is given in (Table 13.4). Cause-wise distribution of fatal accidents is also given in **Table 13.5 and Table 13.6** with respect to coal and Non-Coal mines. Dumpers and Trucks were the biggest contributor to fatal accidents in coal mines, followed by fall of roof and sides. Dumpers and Trucks had the largest share of fatal accident in non-coal mines also. To arrest the number of accidents, the Directorate-General of Mines Safety has taken various measures.

SAFETY MEASURES

13.27 To ensure enforcement of necessary safety measures in mines, inspections and inquiries are carried out by the inspecting officers of DGMS. Apart from inspecting coal, metalliferous and oil mines, DGMS also undertakes investigation into all fatal accidents, certain serious accidents and dangerous occurrences and makes recommendations for remedial measures to prevent recurrence of similar mishaps.

The Trend of accidents from 1998 to 2007 is shown in **Table 13.6 A.** The trend in fatal accidents and fatality rate per 1000 persons employed on 10-yearly average basis from the year 1951 to 2000 and 2001-2007 is shown in **Table 13.6 B**.

- Power under Section 22 and 22A of the Mines Act, 1952, Regulation 103 of Coal Mines Regulations, 1957 and Regulation 108 of Metalliferous Mines Regulations, 1961 has been vested with DGMS to issue improvement notices and prohibitory orders to resist or prohibit employment of persons in mines or part of mines.
- During the period April 2007 to September 2007, 80 notices & 40 orders were issued in coal mines and 41 notices and 110 orders were issued in non-coal mines.
- The number of inspections and inquiries carried out from the year 1996 onwards are shown in **Table 13.7.**

CIRCULARS

13.28 The DGMS issues circulars to the mining industry on occupational safety and health matters, which may have wide implications. During the year 2006-07, technical circulars, 2 technical instruction, 4 approval circulars, 2 Legislation circulars and 1 Statutory Order were issued to the mining industry.

COMPETENCY TEST

13.29 To ensure that only competent persons are appointed as mine Managers, Surveyors, Overman, Foreman etc. the DGMS, on behalf of the Board of Mining Examinations constituted under the Coal Mines Regulation, 1957 and the Metalliferous Mines Regulations, 1961, conducts examinations and issues certificates of competency. Details of applications received and competency certificates issued during the period from April 2007 to October 2007 have been given in **Table 13.8.**

APPROVAL OF MINES SAFETY EQUIPMENTS

Approval is granted by Chief Inspector of Mines (Also designated as Director General of Mines Safety) to various equipments for use in mines to fulfill the statutory obligation enshrined under different provisions of Coal Mines Regulation, 1957, Metalliferous Mines Regulations, 1961, Oil Mines Regulations, 1984, Mines Rescue Rules, 1985 and

Indian Electricity Rules, 1956. The procedure of approval includes scrutiny of the applications mainly to find out the quality control system adopted by the manufacturers and their capacity to manufacture equipments/material etc. which will be capable of working safely under the hostile environment of the mines and remain operative during prolong use under adverse condition. The equipments also need to confirm the relevant Indian Standards and in case, there is no Indian Standard, the standards of the country of origin (ISO/EN/DIN etc.). The application should also include test certificates from approved laboratory as per the relevant standard. After the documents are scrutinized and found in order, field trial approval is granted to check the pit worthiness of the equipments in various mines. After the equipments are successfully field tried, performance report from the concerned mine management is obtained. If the above reports are found satisfactory, regular approval is granted for a specific period.

The equipments/machinery/appliances and materials requiring approval can be broadly categorized into:-

(i) Personal protective equipments,

(ii) Environmental monitoring instruments and devices,

(iii) Machinery and other equipments for carrying out mining operations, and

(iv) Safety materials for use in underground mines.

During the period 01.11.2006 to 31.10.07, a total of 70 approvals for use of material, equipment, machinery etc. in mines were granted. Approval was also withdrawn from one of the manufacturer of helmets during the period.

NATIONAL SAFETY AWARDS (MINES)

13.30 In the year 1983, the National Safety Awards for mines were instituted with 1982 as the contest year. The scheme is designed to give recognition at the national level for outstanding safety performances in mines covered under the Mines Act, 1952. The awards are given every year. Awards for the year 2002 & 2003 have been distributed in a function held on 14th February, 2007 by the then Hon'ble Vice President of India, Shri Bhairon Singh Sekhawat. The list of award winning mines for the contest years 2004, 2005 & 2006 have been finalized and the award distribution function is expected to be held shortly.

ON-GOING PLAN SCHEMES

Augmentation of S&T Capabilities, Mines Rescue Services and Human Resource Development (S&T)

13.31 This scheme has been formulated by merging the objectives of ongoing schemes, namely, "Augmentation of Science & Technological support capabilities in DGMS (S&T) 1981", "Development of Mines Rescue Services (DMRS) 1981" and "Human Resource Development for improving health and safety standards in mines (HRD) 1990".

With a view to keeping the technical and professional competence of the inspecting officers updated and backing the regulatory, enforcement, advisory and the promotional roles of the Directorate-General of Mines Safety, special attention is being paid to the following areas:

(A) Scientific and Technological Support:

13.32 This component of the plan scheme aims at providing in-house scientific support to the officers of DGMS in discharging their regulatory, enforcement and promotional role. It also provides scientific support and advice to mine operators, workers organisation and other institutions concerned with occupational health and safety matters. The activities of the S&T plan scheme covers a wide cross-section of facets of occupational safety and health including occupational hygiene/health, strata control, mine ventilation, mine gases, fire and explosion, mining techniques, mine mechanization,

oil and opencast mines safety, standard setting and policy planning.

The support activities are broadly divided into three categories:

Major Programmes:

The major programmes of the S&T plan scheme include:

(1) Occupational Safety:

(a) Monitoring of implementation of the Technical Standards on Support System in Board and Pillar workings.

(b) Review of standards on stability of multi-seam workings.

(c) Review of standards on detection, control, dealing with and protective measures against fire and revision of standards/guidelines.

(d) Assessment of hazards associated with mine mechanization and standardization of monitoring techniques and control measures.

(i) Standardization of prototype test(s) houses for testing powered supports and hydraulic / friction props.

(ii) Standardization of Ultrasonic Testing Techniques and formulation of Acceptance and Rejection Norms

(iii) Testing of fire resistance hydraulic oils.

(2) Occupational Hygiene and Health :

(a) Standardization of techniques for monitoring and control of occupational hazards from noise, air borne dust, mine gases and poor illumination.

(b) Review and standards of medical examinations.

(c) Review and standardization of procedures for surveillance of occupational diseases already established.

(B) Development of Mines Rescue Services:

This component of the plan scheme aims at promoting proper rescue services in mining industry. The scheme envisages critical appraisal of design characteristics of rescue apparatus and self-rescuers, evaluation of field performance of the same, inquiry into accidents in use of rescue apparatus, inspection of rescue stations/rescue rooms, organizing rescue competitions, monitoring formulation of emergency plan by the management of all under ground mines and to deal with applications for grant of permissions/ approval/relaxation under the Mines Rescue Rules, 1985.

Major Programmes:

1. Installation of testing facility SCBA of Resuscitator.
2. Creation of Rescue Data bases.

   a) Rescue facilities in the country

   b) Actual Rescue/Recovery work done in the country
3. Inspecting of Rescue facilities in the Mines/ Rescue Stations/Rescue Rooms etc.
4. Testing of Self-Rescuers.
5. Co-ordination of Mines Rescue Competition.
6. Standard setting, review of emergency plans.
7. Issue of Technical circulars to the mining industry.
8. Grant of approval/relaxation under the Mines Rescue Rules, 1985

(C) Human Resource Development:

This scheme envisages setting-up of a Mines Safety & Health Academy comprising Institutes at Dhanbad and Nagpur for imparting structured training to the Inspecting Officers of DGMS so as to update and upgrade their technical and professional competence

and improve their effectiveness in regulatory, enforcement, advisory and promotional roles. The facilities so created would be also utilized for disseminating latest information on mine safety principles and practices amongst the key safety personnel of the mining industry and the Workmen's Inspectors.

Major Programmes:

1. Development of training Modules
2. Conduct of training programmes.

(a) Training of DGMS Officers

(i) New Entrants

(ii) Existing officers

(iii) Special Lectures

(b) Training of key personnel in Mining Industry

(i) Managerial personnel

(ii) Safety Officers

(iii) Ventilation Officers

(iv) Engineers

(v) Industrial Hygienists

(vi) Executive Trainees

(vii) VTOs.

(c) Training of Workmen's Inspectors.

During the year 2007-2008, the following activities were/are proposed to be undertaken by S& T Wing.

STUDY OF MINE ACCIDENTS AND DEVELOPMENT OF MINE SAFETY INFORMATION SYSTEM (SOMA)

The scheme has been formulated by merging two on-going plan schemes of DGMS, namely "Development of Mine Safety Information System (DMSIS, 1976)" and "Study of Mine Accidents to plan Preventive Measures (SOMA,1976)". These two schemes were functional independently during the 8th plan period and during the first 4 years of the 9th plan. In 2001-2002, i.e. the terminal year of the 9th plan, keeping the objective of integration in view, these schemes were merged into one scheme viz. "Study of Mine Accidents and Development of Mine Safety Information (SOMA)".

A. "Study of Mine Accidents to Plan Preventive Measure (SOMA)":

Objective of the Scheme:

- to carry out studies into mine accidents and dangerous occurrences in order to arrive at the root cause of accident and to suggest preventive measures which, on implementation would improve safety standards in mines;
- identification of mines with relatively higher potential of accidents through in-depth analysis of accident data and risk assessment through risk analysis and to propose the preventive measures to eliminate danger therefrom;
- to develop a multi-disciplinary perspective in respect of major cause group of accidents by undertaking in-depth study of the underlying factors causing such accidents; to identify and forecast potential areas of dangers as well as to suggest preventive actions;
- to reconstruct complicated accident for proper investigation of causes leading to the occurrences. It also envisages to develop additional model to give support to the statistical analysis by forecasting hazards through risk assessment and risk analysis;
- to collect, compile and disseminate detailed information on various technical and welfare aspects of mining activities for:

o assessment of implementation of various provisions under statute

- o a1ssessment of the profile of labour force
- o assessment of trend in mechanization in mines
- o projections of future development in mining
- o in-depth analysis of accidents and their causes etc.
- o development and assessment of impact of safety programmes and campaigns.

B. "Development of Mine Safety Information System (DMSIS)":

This component of the plan scheme is designed to render statistical support to DGMS for effective administration of the Mines Act, 1952. As per this Act and different rules and regulations framed therein, it is mandatory for the management of every mine coming under the purview of Mines Act to submit information regarding various facets of mining operation such as average daily employment, production, usage of machinery and explosives, etc. in the mines in certain specified formats in the form of annual and quarterly or monthly returns.

Based on the information received, tables on employment, production, mechanization, use of explosives, index of labour earnings, etc. are generated. In addition , information regarding accidents in mines and brief description of findings of enquiry in respect of each and every fatal accident that occurred during the reference year form a part of the annual publication entitled "Statistics of Mines in India - Vol. I & Vol. II". Volume I pertains to information relating to coal mines and volume II Metalliferous and Oil mines in India.

During the period April to October 2007, the manuscript of the Annual publication, "Statistics of Mines in India - Vol. I & Vol. II" for the year 2005 has been compiled , while data for the year 2006 is under process.

A "Monthly Review of Accidents" is also brought out to reflect the trend in accidents on a monthly basis. In addition to the above, a "Monthly Activity Report" covering all major activities including important developments/ achievements of the organisation is brought out under this scheme.

CAREER MANAGEMENT AND TRAINING (CMT)

13.33 Several officers were deputed for training in important areas such as administrative and financial matters and technical aspects of mining methodology etc.

NATIONAL SAFETY COUNCIL

ORGANISATION AND FUNCTIONS

13.34 The National Safety Council (NSC), set up by the Ministry of Labour and Employment, Government of India on 4th March, 1966, is an autonomous, national level apex institution with a tripartite Board of Governors. Its mission is to develop a national movement on Safety, Health and Environment towards preventing and mitigating loss of life, human suffering and economic losses. It is an institution of international repute having an all India network with more than 6,900 members comprising Corporate Members (industrial establishments, employers' organisations, professional bodies / institutions and trade union organisations), Individual Members and Life Members with 16 Chapters and 30 Action Centres across the country. The activities of NSC include: conducting training, national and international conferences, HSE audits, risk assessment, emergency preparedness and other consultancy services; issuing technical publications and periodicals (Quarterly Industrial Safety Chronicle and Bi-monthly Industrial Safety Newsletter); production and distribution of Safety Calendar, HSE Diary and other safety promotional material; spearheading national level campaigns viz. National Safety Day / Week, Fire Service Week, World Environment Day, ILO-World Day, etc.; operating NSCI Safety Awards Schemes and special projects in emerging key areas of national concern. At the

international level, NSC has developed close co-operation and collaboration with ILO, UNEP, World Bank, EPA (USA), ADPC (Bangkok), JISHA (Japan), NSC (USA), Korea Industrial Safety Association (KISA), EC, Swedish Rescue Services Agency (SRSA) and the member organisations of APOSHO (Asia Pacific Occupational Safety and Health Organisation) of which NSC is a founder member.

LAUNCHING OF GUJARAT CHAPTER OF NSC

13.35 NSC launched its 16th Chapter in Gujarat on 4th April, 2007. The Chapter was inaugurated by Shri Mulubhai Bera, Hon'ble Minister of Labour & Employment, Government of Gujarat at a function organized at Mahatma Gandhi Labour Institute (MGLI), Ahmedabad. The function was attended by about 250 representatives of the NSC members and invitees from the State.

REVIVAL OF DELHI CHAPTER OF NSC

13.36 The Delhi Chapter of NSC was re-launched at a function held on 6th July, 2007 which was inaugurated by Smt. Sudha Pillai, IAS, Secretary, Ministry of Labour & Employment, Government of India. The function was attended by over 120 persons representing all stakeholders - Central and State Governments, central organizations of employers and workers, industry associations, NSC members from Delhi area, institutions and international organizations like ILO and European Commission.

NATIONAL APELL CENTRE (NAC)

13.37 The National APELL (Awareness and Preparedness for Emergencies at Local Level) Centre (NAC), established in April, 2002 in the NSC Headquarters in collaboration with UNEP, is dedicated primarily to strengthen chemical emergency preparedness and response in India through the use of the internationally accepted APELL (Awareness and Preparedness for Emergencies at Local Level) process. Some of the important activities carried out under the NAC are as under:

- International Workshop on Preparation of Emergency Plans for APELL Project Officials from Sri Lanka.
- NSC-UNEP collaborated EU-Asia Pro-Eco Post Tsunami Project of the European Commission in Tourism Destination - Kanyakumari.

INVOLVEMENT & ROLE IN INDUSTRIAL DISASTER MANAGEMENT

- Launching of National Disaster Management Guidelines - Chemical Disasters in Delhi and Mumbai.
- Training Workshop on 'Disaster Management' from 24-26 September, 2007 in Ahmedabad.
- Following workshops are proposed to be conducted till 31st March, 2008:
  i. National Workshop on "Disaster Management" from 11-13 December, 2007 in Bhubaneswar, Orissa in collaboration with its Orissa Chapter.
  ii. Training Workshop on 'Testing of Plans' in February, 2008 in Mumbai.

NEW INITIATIVE ON SAFETY AND HEALTH IN CONSTRUCTION SECTOR

13.38 The following are some of the important activities undertaken during the period:

- Conducted a 2-day specialized public Training Course on "Safety in Scaffolding and Working at Heights" from 26-27 April, 2007 for 98 participants from 40 organisations.
- Conducted a 3-day specialized public Training Course on "Safety and Health in Construction Work" from 7-10 August, 2007 for 44 participants from 26 organisations.

- 5 Inplant Training Courses were conducted for 132 participants
- 2 safety audits were conducted for the following units.
  - o NTPC - Koldam Hydro Electric Power Project, Barmana, Himachal Pradesh from 1-4 May, 2007 and
  - o Construction of Stage-III of Vindhyachal Super Thermal Power Project, Sidhi, U.P from 9-13 July, 2007.

SAFETY CONSULTANCY SERVICES

13.39 As the technical leader in providing Safety Consultancy Services, NSC has been carrying out safety audits of various types of industries including Construction Sites, Electrical & Fire Safety audits of factories & office premises, Risk Assessment, HAZOP Studies, Preparation / Review of Onsite Emergency Plan, Preparation of Safety Report, etc. In all, 40 assignments were carried out covering various units representing different sectors including the review of the Crisis Management & Disaster Preparedness Plan of Mumbai Port Trust.

HEALTH, SAFETY & ENVIRONMENT (HSE) TRAINING

13.40 As Training is a core activity of NSC, it has continued to lay emphasis on designing and developing training courses as per the emerging needs of the industry. During the period, 52 training courses / workshops / seminars comprising 14 national level and 38 unit level were conducted for a total of 2730 participants from various types of industries.

NATIONAL SAFETY DAY/NATIONAL SAFETY WEEK CAMPAIGN - 2007

13.41 The 36th NSD/Week Campaign - 2007 was celebrated throughout the country on a much wider scale. In addition, the following two Campaigns were also promoted by NSC during the period:

i. Fire Service Week- 2007 from 14th to 20th April, 2007,

ii. World Environment Day (WED) - 2007 on 5th June, 2007, and

iii. Printing of the National Safety Calendar - 2007 and Health, Safety & Environment (HSE) Diary.

NSCI SAFETY AWARDS SCHEMES

13.42 NSC is operating the following Awards Schemes providing recognition for developing and sustaining effective occupational safety and health management systems and procedures:

- **Scheme for Manufacturing Sector**

  Started in the year 1998, this scheme is aimed at providing recognition to factories for developing and implementing effective occupational safety and health management systems & procedures. For the Award Year 2006, 32 organisations won the Awards. Tata Chemicals Ltd., Fertiliser Works, Budaun, U.P. bagged the top Award 'Sarvashreshtha Suraksha Puraskar', 5 organisations were awarded the second category of Award ie., 'Shreshtha Suraksha Puraskar' while 10 organisations won the 'Suraksha Puraskar' under the third category of award, 16 organisations won the 'Prashansa Patra'.

- **Scheme for Construction Sector**

  This Scheme was started in 2005 under its new initiative on Safety and Health in Construction Sector. For the Award Year 2006, 16 organisations won the Awards under different categories. Larsen & Toubro Ltd., E&C Division, PTA Project, (Client -IOCL Panipat Refinery), Panipat, Baholi, Haryana bagged the Golden Safety Award, 2 organisations won the Silver Safety Award, 3 organisations won the Bronze Safety Award and 10 organisations were awarded the

Prashansa Patra.

BEST NSC Chapter Awards Scheme

13.43 This scheme was started in the Financial Year 2004-05 to recognize Chapter's performance in furtherance of NSC mission. The chapters are grouped into three categories i.e. Large, Medium and Small. The results have been declared for the Year 2005-06. Tamil Nadu Chapter won the Best Chapter Award in 'Large Category'.

(a) INTERNATIONAL ACTIVITIES

- **Participation in the Meeting of Asia Pro Eco Regional Environmental Challenges Post - Tsunami**

  Shri A.Y. Sundkar, Asstt. Director, NSC attended the above meeting held at Jakarta, Indonesia on 18-19 April, 2007 and made a presentation on "Progress on Implementation of EU-Asia Pro-Eco Post Tsunami Project of European Commission in Tourism Destination - Kanyakumari".

- **Pre APOSHO-23 preparatory meeting in Bangkok**

  Shri K.C. Gupta, DG, NSC and the Hon. Secretary General of APOSHO participated in the preparatory meeting held at Bangkok from 27-29 August, 2007 for discussion on the follow-up of the minutes of the last APOSHO Meeting and the other related matters.

- **APOSHO-23 Conference and Annual Meeting**

  The 23rd APOSHO Conference and AGM will be hosted by NSC Singapore from 30th October to 2nd November, 2007. The Theme of the Conference is "Working Together to Raise Occupational Safety and Health Awareness". Being the Hon. Secretary General of APOSHO, Shri K.C. Gupta, DG, NSC delivered an Address at the Inaugural Function of the Conference.

- **7th AGEE Meeting of UNEP/OCHA**

  The 7th Meeting of the AGEE (Advisory Group on Environmental Emergencies) was organised by the joint UNEP/OCHA (Office for the Coordination of the Humanitarian Affairs Unit in Sweden from 13-15 June, 2007. Being a Member of this Advisory Group, DG, NSC participated in the Meeting and made a presentation on "APELL in India". He was unanimously elected as the Vice-Chairman of the Meeting while Mr. Chris Dijkens, The Netherlands was elected as the Chairman.

Subsequently, the Meeting of the above Working Group has been scheduled from 3-5 December, 2007 at Tunis, Tunisia. As the Vice-Chairman of the Working Group DG, NSCI would be participating and making contribution at this meeting.

Table 13.1

CONSTITUTIONAL PROVISIONS OF OCCUPATIONAL SAFETY AND HEALTH

Article	Constitutional Provision
24	No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment.
39(e&f)	The State shall, in particular, direct its policy towards securing: (e) that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength; (f) that children are given opportunities and facilities to develop in a healthy manner and in conditions of freedom and dignity and that childhood and youth are protected against exploitation and against moral and material abandonment.
42	The State shall make provision for securing just and humane conditions of work and for maternity relief.

Staff position of DGFASLI

Table 13.2

Units	Technical		Administrative		Total	
	Sanctioned	Working	Sanctioned	Working	Sanctioned	Working
Headquarters	14	8	57	46	71	54
CLI, Mumbai	98	63	91	72	189	135
4 RLIs*	79	41	76	62	155	103
Dock-Safety Inspectorates	22	13	31	27	53	40
Total:	**213**	**125**	**255**	**207**	**468**	**332**

* The posts at RLI, Faridabad are yet to be created

Table 13.3

Growth of Mining Activities in India

Year	No. of reporting mines			Value of minerals (in Million Rupees)			Aggregate H.P. (in 000s)			Explosives used (in 000 tonnes)	
	Coal	Metal	Oil	Coal	Metal	Oil	Coal	Metal	Oil	Coal	Metal
1997	580	1834	34	193877	43758	40813	5314	2016	570	232.7	43.4
1998	594	1864	37	205307	45286	53136	5399	2020	602	247.0	47.1
1999	598	1957	44	219101	46415	83982	5660	2147	744	267.6	49.8
2000	595	2022	45	234531	53111	92954	5561	2371	757	290.5	55.4
2001	568	1907	43	261082	54032	106747	5586	2190	778	292.6	55.8
2002	567	1870	42	286390	64965	123326	5432	1997	757	315.3	55.6
2003	562	1761	49	299954	77605	131897	5677	1950	747	309.8	63.7
2004	560	1764	47	322425	104283	166083	5728	2336	685	312.6	70.5
2005	569	1835	50	371391	133417	230586	5415	2495	701	297.2	70.8
2006*	575	1985	45	378250	135758	235886	5468	2645	718	300.0	80.8

* Date are provisional.

Year	Trend of Accidents in Mines					
	Number of Accidents in Coal Mines			Number of Accidents in Non-Coal Mines		
	Fatal	Serious	Total	Fatal	Serious	Total
1998	128	523	651	56	254	310
1999	127	595	722	61	230	291
2000	117	661	778	51	187	238
2001	105	667	772	71	199	270
2002	81	629	710	52	205	257
2003	83	563	646	52	168	220
2004	87	962	1049	57	188	245
2005	96	1106	1202	48	108	156
2006*	79	814	893	59	75	134
2007*	81	550	631	36	58	94

*Figures of 2006 & 2007 are provisional and figures for 2007 are from January to September 2007

Table 13.5

Trend of Accidents in Coal Mines – Causewise

Causes	Number of Fatal Accidents						Number of Serious Accidents					
	2002	2003	2004	2005	2006	2007	2002	2003	2004	2005	2006	2007
Fall of Roof	23	18	26	18	13	11	45	39	44	38	27	22
Fall of Sides	11	5	8	7	4	2	38	27	67	45	26	22
Other Ground Movements	1	1	0	0	1	0	0	0	1	1	0	0
Winding in Shafts	0	1	0	0	3	0	4	4	5	2	4	1
Rope Haulage	6	10	5	12	8	6	85	84	127	168	173	84
Dumpers, Trucks, etc.	14	21	22	18	11	24	28	35	20	34	37	20
Other Transportation Machinery	2	2	3	4	5	2	19	15	10	16	46	22
Non-Transportation Machinery	9	11	7	15	9	8	39	43	28	46	47	41
Explosives	4	3	5	2	1	1	9	6	8	5	0	2
Electricity	4	1	4	4	3	4	7	3	4	5	5	0
Gas, Dust, Fire, etc.	0	2	2	0	4	1	2	6	2	0	1	1
Fall of Persons	4	5	3	7	3	7	151	147	307	284	210	161
Fall of Objects	2	1	0	6	6	3	99	90	183	264	144	105
Other Causes	1	2	2	3	8	12	103	64	156	198	94	69
Total	**81**	**83**	**87**	**96**	**79**	**81**	**629**	**563**	**962**	**1106**	**814**	**550**

Note: Data for 2006 and 2007 are provisional and figures for 2007 are from January to September, 2007.

Table 13.6

Causes	Trend of Accidents in Non-coal Mines – Cause wise											
	Number of Fatal Accidents						Number of Serious Accidents					
	2002	2003	2004	2005	2006	2007	2002	2003	2004	2005	2006	2007
Fall of Roof	1	1	2	1	0	2	1	1	2	2	0	1
Fall of Sides	10	7	12	5	10	6	1	1	3	0	1	0
Other Ground Movements	0	0	0	0	0	0	0	0	0	0	0	0
Winding in Shafts	0	0	0	0	0	0	1	0	0	0	1	2
Rope Haulage	0	0	0	0	0	0	1	1	0	1	0	1
Dumpers, Trucks, etc.	10	13	18	12	18	15	14	15	11	10	6	2
Other Transportation Machinery	3	2	3	1	2	5	3	3	2	3	6	3
Non-Transportation Machinery	6	6	6	9	4	2	23	25	22	15	9	11
Explosives	8	5	3	4	3	1	2	1	0	1	0	1
Electricity	1	3	2	0	0	1	4	1	0	0	1	1
Gas, Dust, Fire, etc.	0	1	0	0	0	0	0	0	0	3	0	0
Fall of Persons	10	11	6	13	14	2	41	23	41	22	20	10
Fall of Objects	2	3	3	2	7	1	45	45	38	20	16	8
Other Causes	1	0	2	1	1	1	69	52	69	31	15	18
Total	**52**	**52**	**57**	**48**	**59**	**36**	**205**	**168**	**188**	**108**	**75**	**58**

Note: Data for 2006 and 2007are provisiona l and figures for 2007are from January to September, 2007

Table 13.6A

Accidents and resultant casualties in mines

Year	Coal					Non-Coal				
	Fatal Accident			Serious Accident		Fatal Accident			Serious Accident	
	Acc	Killed	Inj	Acc	Inj	Acc	Killed	Inj	Acc	Inj
1998	128	146	18	523	542	56	65	15	254	258
1999	127	138	21	595	629	61	72	13	230	238
2000	117	144	28	661	679	51	55	2	187	192
2001	105	141	14	667	706	71	81	8	199	200
2002	81	97	15	629	650	52	64	3	205	206
2003	83	113	12	563	578	52	62	16	168	169
2004	87	96	14	962	977	57	64	9	188	194
2005	96	117	19	1106	1119	48	52	4	108	109
2006*	79	138	15	814	828	59	72	9	75	76
2007*	81	83	7	550	565	36	42	5	58	70

* Data for 2006 and 2007 are provisional and figures for 2007 are from January to September, 2007.

Table No. 13.6B

Trend in Fatal Accidents and Fatality Rates per 1000 Persons Employed (Ten Yearly Average)

Year	Coal Mines				Non coal Mines			
	Avg. Acc	Acc. Rate	Avg. Killed	Death Rate	Avg. Acc	Acc. Rate	Avg. Killed	Death Rate
1951-60	222	0.61	295	0.82	64	0.27	81	0.34
1961-70	202	0.48	260	0.62	72	0.28	85	0.33
1971-80	187	0.40	264	0.55	66	0.27	74	0.30
1981-90	162	0.30	185	0.34	65	0.27	73	0.31
1991-2000	140	0.27	170	0.33	65	0.31	77	0.36
2001-2007*	87	0.22	112	0.28	54	0.34	62	0.40

* Data are provisional and up to September, 2007

Table 13.7

Number of Inspections and Enquiries

Year	No. of Inspections				No. of Enquiries				Grand Total
	Coal	Metal	Oil	Total	Coal	Metal	Oil	Total	
1996	5525	2491	226	8242	1105	330	50	1485	9727
1997	4563	2404	189	7156	1157	406	34	1597	8753
1998	4752	2539	166	7457	1127	398	29	1554	9011
1999	6106	3061	198	9365	1319	483	26	1828	11193
2000	5642	3614	245	9501	1163	325	26	1514	11015
2001	5410	2908	229	8547	1148	418	51	1617	10164
2002	5667	2856	269	8792	1022	402	30	1454	10246
2003	5574	3247	246	9067	966	427	13	1406	10473
2004	5214	2983	228	8425	834	436	08	1278	9703
2005	5247	3107	295	8649	933	372	30	1335	9984
2006	4192	2630	219	7041	951	338	27	1316	8357
2007*	3142	1645	170	4957	612	269	10	891	5848

*Figures are provisional and up to September, 2007

Table 13.8

Applications received & Certificates of Competency issued during April to October, 2007

Category of certificates of competency	Coal Mines Regulation, 1957		Metalliferous Mines Regulations, 1961	
	Applications received	Certificates issued	Applications received	Certificates issued
Manager	4268	375	2306	326
Surveyor	319	16	116	21
Overman / Foreman	1369	87	442	135
Sirdar / Mate	498	81	561	198
Shotfirer/Blaster	Nil	Nil	286	133
Winding Engine Driver	91	8	Nil	Nil
Gas-testing	879	235	Nil	Nil

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