Chapter-13

OCCUPATIONAL SAFETY AND HEALTH

13.1 The Constitution of India contains specific provisions on occupational safety and health of workers **(Box 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 policy and legislation 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 Post Graduate Certificate Course in Industrial Health (Associate Fellow of Industrial Health (AFIH), six-weeks course in Industrial Hygiene Techniques, One month Specialised 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 of the headquarters; five Labour Institutes and Inspectorates of Dock Safety in 11 Major Ports. The Headquarters in Mumbai has three divisions/ cells, namely, Factory Advice Service, Dock Safety and Awards.

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 39 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, organising 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 such 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**
- **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 one officer on deputation from the Central Labour Institute, Mumbai, has been established in a rental premises. 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.

Staff Strength

The manpower inventory of the organisation as on 30.09.2006 is given in **Box 13.2**

ACTIVITIES

13.9**Safety in Factories**

Comments/clarifications etc. on the provisions of the Factories Act, 1948 were provided to Chief Inspectorates of Factories (CIFs), State Governments, Ministry of Labour & Employment and the Factories, etc. on the following topics:

- Draft Legislation on Occupational Safety and Health.
- Suggestions received from different Ministries/State Governments and other Organisations, regarding the Draft National Policy on Occupational Safety & Health.
- ILO Report IV2(B) relating to the Convention and Recommendation on the Promotional Frame work for Occupational Safety and Health.
- The West Bengal Municipal Corporation Bill, 2006
- Report of the Committee on "Streamlining of requirement of Inspection of Industrial Units under different Acts " – reference from Ministry of Commerce & Industry (Department of Industrial Policy & Promotion) – Action Taken Report.
- ILO Report on " Making Decent Work an Asian Goal".
- Labour Inspection Convention No. 81 Report Form and Observations 2004 for submission of Final Report to the ILO.
- The Factories (Tamil Nadu)Amendment Bill, 2005
- ILO Convention No. 174 concerning Prevention of Major Industrial accidents.
- ILO Convention NO. 90 regarding night work of Young Persons.
- Proposal on designating a Statistical Adviser in each Ministry of the Government of India

Others:

- Prepared information relating to Criminal Law (Amendment) Bill, 2005 – concept of " Plea Bargaining"

- Organised a national seminar on "Setting up of National Board on Accreditation & Certification of Institutions, Professionals & Services in Occupational Safety & Health" on 26 and 27 October 2006.

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 been 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 are also enforced by DGFASLI through the Inspectorates of Dock Safety located in the major ports of India.

13.11 During the period from April 2006 to September 2006, 716 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 7 were fatal.

Training programmes

Professional programmes

- One year Advanced Diploma in Industrial Safety Course for 2005-2006 at CLI, Mumbai, RLI Kolkata, RLI Chennai, RLI Kanpur for 143 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 62 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 2006, 66 training programmes including seminar/workshops and in-plant trainings were also conducted benefiting 1221 participants from 353 organisations. In addition, Appreciation programmes were conducted for 2630 beneficiaries at various divisions of DGFASLI and the four Labour Institutes, in Mumbai, Kolkata, Chennai and Kanpur.

Studies and Surveys

13.12 **National Studies and Surveys** are undertaken to ascertain status of working conditions and standards of safety in selected 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 Jharkhand and Karnataka. In addition, the National Studies/Surveys under progress are (i) Assessment of capabilities & management of occupational safety and health in the states of Bihar, Tripura and Uttaranchal. (ii) Safety, Health & Ergonomics study of child labour (ILO Project).

13.13 **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 hazards of Herbicide at M/s Monsanto Chemical India Ltd., Silvasa was completed and the study "Investigation of accident in Sodium chlorate storage area of Shree Shyam Board & Paper Mills Ltd., Kashipur, Uttaranchal" is under progress.

13.14 **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 following areas:

- Airborne Contaminants 11
- Noise Level 2
- Environmental 5
- Heat Stress Study 1
- Ventilation Study 1
- Safety Audit 10
- Hazop Study 1
- Ergonomic Study 10
- Risk Assessment 1

National Referral Diagnostic Centre:

13.17 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

13.18 During the period 2006-2007, six Plan Schemes under the Xth Five Year Plan have been taken up by DGFASLI for implementation. Out of these, three are continued from the IXth Five Year Plan and 3 are old plan schemes continued from VIIth Five Year Plan.

Continuing Plan Schemes

Plan Scheme -I: Development of Safety & Health Information System & Data Bank

Objectives: Development of national inventory on occupational safety and health and connectivity between State Factory Inspectorates and DGFASLI. The inventory will cover information pertaining to manufacturing activities covered under the Factories Act, 1948, occupational injuries and diseases in the sector, management of OSH at unit and state level.

Achievements of the Scheme include (a) Development of OS&H Data Bank (b) Dissemination of OS&H Information.

Plan Scheme-II: Establishment of a Regional Labour Institute at Faridabad

Objectives: The objective of the Scheme is to cater to the needs of the northern area of the country in relation to safety and health, which, at present, due to heavy workload on Regional Labour Institute, Kanpur is not effectively met. The Institute will specialise in assisting small-scale industrial units. It will also help Policy Planning Division of DGFASLI to better liaise with the Ministry and other Government departments in Delhi.

Plan Scheme-III: Improvement and Strengthening of Enforcement System for Safety and Health of Dock Workers in Major Ports

Objectives: To update knowledge and competence building of Inspectors to cope up with the recent developments in the Maritime trade and to develop the capability of the DGFASLI officers in the field of training of trainers, authorised persons, responsible persons, competent persons, etc. and other specialised category of personnel in the area of handling of containers and dangerous goods. It will also fulfill the statutory obligations of DGFASLI as the Chief Inspector of Dock Safety under the Environment (Protection) Act, 1986 and the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989.

Major achievements of the Scheme include (i) Conduct of specialised training programmes/ seminars / workshops for Inspectors of Dock Safety, responsible persons, authorised persons, supervisory personnel, trade union officials, trainers of Port Training Institutes, Safety Committee members, Competent Persons & Safety Officers and (ii) Enforcement activities (Inspection of ships, container ships, tankers, loose gears, docks, container yards, hazardous installations, isolated storages and pipelines, ICDs etc.).

Old plan schemes

Plan Scheme-IV: Establishment of a System of Chemical Safety and Monitoring of Occupational Health Status

of Workers Employed in Hazardous Industries

Objectives: The Plan Scheme is having three components namely, Chemical Safety, Occupational Health and Testing & Certification of Personal Protective Equipment (TCPPE). All these three components of the Plan Schemes were initiated during the 8th Plan period as independent Plan Scheme. However, all the three Plan schemes were merged in the last year of the 9th Plan period. The objectives of the Plan Scheme are given below:

- Undertaking national level research project to generate sufficient data on Occupational Safety and Health in priority hazardous chemical processes.
- Provide health and safety training of personnel on chemical safety and prevention of major industrial accidents, occupational health at the national level to strengthen the capabilities of management, workers and their representatives.
- Extending support to State Governments for effective enforcement of health provisions, for example, Section 41F of Factories Act dealing with monitoring of work environment by using equipments already supplied to them.
- Extending Associate Fellow of Industrial Health course for Medical Officers to RLIs including Occupational Health Nurses Course.
- Quality assurance programme for Personal Protective Equipment.

Major Achievements of the Scheme include (a) Conduct of Training Programme, Seminar/ Workshop, Studies and Surveys, various courses and (b) Testing of NRPPE and RPPE etc.

Plan Scheme-V : Application of Ergonomics and Improvement in Working Conditions and Productivity in Factories, Docks and Small and Medium Scale Enterprises.

Ergonomics

Objectives

- To carry out Research study / Consultancy to make the best adjustment between man and machine in Factories, Docks and Construction works.
- To evolve standards of thermal limits for day-to-day industrial tasks, and to find out remedial measures to various problems.
- To determine work-rest Regimens of different combinations of work load.

Small and Medium Scale Enterprises

Objectives: To bring about improvement in working condition leading to higher productivity, employee comfort and satisfaction through training of owner, managers and workers of small and medium scale enterprises.

Achievements of this Scheme include Conduct of training programmes, Studies / Surveys etc.

Plan Scheme-VI: Reorganization and Strengthening of the DGFASLI and Establishment of Special Cells

Objective: Substantial expansion of the facilities in the DGFASLI organization by creating special cells to meet the specific requirements under the Factories (Amendment) Act 1987 and to meet the Safety and Health Standards in the Factories more effectively.

Achievements of this Scheme include preparation of slides/ posters on OSH and production of video films

Major Accident Hazards Control:

13.19 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) 1539 MAH Units (ii) 162 hazardous chemicals (iii) 1361 On-site emergency plans.

Management Information Services

13.20 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:

13.21 The DGFASLI 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 programmes calendar for all the labour institutes, announcement on National Safety Awards & Vishwakarma Rashtriya Puraskars, 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 Factories Act, 1948 and the Model Rules framed there under 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 Officers are also available.

Safety and Health Communication

13.22 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

13.23 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 86 Safety & Health Appreciation programmes were conducted for 1868 visitors.

Testing of Personal Protective Equipment

13.24 The Testing laboratories for respiratory and non-respiratory personal protective equipment testing laboratories 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.

- 65 dust respirators, canisters, dust filters etc.

- 191 non-respiratory equipment such as helmets, safety shoes, etc.

Approval of Flame proof Electrical Equipment

13.25 As per the BIS standard IS: 2148-1981, DGFASLI is the approving agency for Flame Proof Electrical Enclosures for their use in hazardous atmosphere. 5 approvals were issued to 4 manufacturers out of 5 applications received.

Representation on BIS Committees:

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

13.27 The DGFASLI on behalf of the Ministry of Labour and Employment has been implementing the Vishwakarma Rashtriya Puraskar (VRP) since 1965 (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) = 3, CASH AWARD OF RS.50,000/- EACH, CLASS (B) = 5, CASH AWARD OF RS.25,000/- EACH AND CLASS(C) = 10, 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.

13.28 The Awards distribution function for Vishwakarma Rashtriya Puraskar and National Safety Awards for the year 2005 was held on 17.09.2006 at Vigyan Bhavan, New Delhi and the awards were presented to the awardees by Shri Chandra Sekhar Sahu, the then Minister of State for Labour & Employment. Out of 320 applications received for Vishwakarma Rashtriya Puraskar, awards were given to 91 awardees and out of 405 applications received for National Safety Awards, 109 awards were given.

DIRECTORATE GENERAL OF MINES SAFETY, DHANBAD

13.29 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 there-under regulate the objective. These are administered by the Directorate-General of Mines Safety (DGMS), Dhanbad under the Union Ministry of Labour and Employment. Apart from administering the Mines Act and Subordinate Legislations there-under, DGMS also administers parts of other allied legislations in the mines by way of their statutory duties. 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 (in so far as they relate 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.**

ORGANISATION SET-UP

13.30 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 996 persons with 747 in position as on 31.10.05 as indicated below:

CATEGORY	SANCTIONED STRENGTH	IN POSITION STRENGTH
GROUP-A	177	133
GROUP-B	104	85
GROUP-C	468	355
GROUP-D	247	174
TOTAL	996	747

TREND OF ACCIDENT

13.31 Trend in fatal and serious accidents in both coal as well as non-coal mine 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. Fall of roof and sides remained the biggest contributor to fatal accidents in coalmines, followed by

Dumpers and Trucks. The latter group had the largest share of fatal accidents in non-coal mines. To arrest the number of accidents the Directorate-General of Mines Safety has taken various measures.

SAFETY MEASURES

13.32 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 details of accidents from 1997 to 2006 are 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 2001-2006 is shown in **Table No. 13.6B**.

- 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 2006 to September 2006, 60 notices & 30 orders were issued in coal mines and 31 notices & 119 orders were issued in non-coal mines.
- The number of inspections and inquiries carried out from the year 1995 onwards are shown in **Table 13.7**.

CIRCULARS

13.33 The DGMS issues circulars to the mining industry on occupational safety and health matters, which may have wide implications. During the year 2005-06, 4 technical circulars, 1 technical instruction and 1 general instruction were issued to the mining industry.

COMPETENCY TEST

13.34 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 2006 to October 2006 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, 1984, 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 under 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:-

- Personal protective equipment.
- Environmental monitoring instruments and devices.
- Rescue apparatus.
- Electrical equipment and cables.
- Explosives and accessories.
- Machinery and other equipments for carrying out mining operations and
- Safety materials for use in underground mines.

During the year 2005-06, 97 approvals for use of material, equipment, machinery etc. in mines were granted while during the period 01.04.06 to 31.10.06, 71 approvals for use of material, equipment, machinery etc. in mines have so far been granted.

NATIONAL SAFETY AWARDS (MINES)

13.35 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 list of award winning mines for the contest years 2002 & 2003 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)

13.36 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:

13.37 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 advises 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 mechanisation, oil and opencast mines safety, standard setting and policy planning.

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) Standardisation of prototype test(s) for testing power supports and hydraulic / friction props.
(ii) Standardisation of Ultrasonic Testing Techniques and formulation of Acceptance and Rejection Norms
(iii) Testing of fire resistance hydraulic oils.

(2) Occupational Hygiene and Health

(a) Standardisation of techniques for monitoring and control of occupational hazards from noise, air borne dust, mine gases and poor illumination.
(b) Review of standards of medical examinations.
(c) Review of 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, organising 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) CMR/OMR/MMR/dBase
   b) RRAE databases
3. Design of rescue systems
   a) Inundation RRS
   b) Fire RRS
   c) Explosion RRS
4. Development of disaster control systems.
5. Testing of self-rescuers, Testing SCBA.
6. Rescuers Competition.
7. Standard setting, review of emergency plans.
8. Issue of Technical circulars to the mining industry.

(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 schedules
2. Conduct of training programmes.

(a) Training of DGMS Officers
- **New Entrants**
- **Existing officers**
- **Special Lectures**

(b) Training of key personnel in Mining Industry

- **Management personnel**
- **Safety Officers**
- **Ventilation Officers**
- **Engineers**
- **Industrial Hygienists**
- **Executive Trainees**
- **VTOs.**

(c) Training of Workmen's Inspectors

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 functioning independently during the 8th plan period and during the first 4 years of the 9th plan. In 2001-2002, keeping in view the objective of integration, these schemes were merged into one scheme.

A. Study of Mine Accidents to Plan Preventive Measures (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:
    - assessment of implementation of various provisions under statute
    - assessment of the profile of labour force
    - projections of future development in mining
    - 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 2006, the Annual publication, "Statistics of Mines in India – Vol. I & Vol. II" for the year 2004 has been published while data for the year 2005 is under processing. This data is likely to be finalised by March 2007.

A "Monthly Review of Accidents" is also brought out to reflect the trend in accidents on a month-to-month 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)

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

13.38 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 6500 members comprising Corporate Members (industrial establishments, employers' organisations, professional bodies / institutions and trade union organisations), Individual Members and Life Members with 15 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 collaboration with ILO, UNEP, World Bank, EPA (USA), ADPC (Bangkok), WEC, JISHA (Japan), NSC (USA) and the member organisations of APOSHO (Asia Pacific Occupational Safety and Health Organisation) of which NSC is a founder-member.

11TH NATIONAL CONFERENCE ON "SAFETY, HEALTH AND ENVIRONMENT"

13.39 The 11th National Conference on 'Safety, Health and Environment: Issues, Strategies & Programmes – Indian Situation – Global Vision' was held from 5-7 April, 2006 in Vigyan Bhawan, New Delhi. Besides invitees, it was attended by 729 delegates from varied sectors representing the key stakeholders across the country. Ninety-six Chairpersons, Speakers & Panelists including 9 International Speakers, contributed to the deliberations on different topics covering a range of current issues.
The Conference was inaugurated by Shri Chandra Sekhar Sahu, the then Union Minister of State for Labour & Employment who also distributed the Awards and opened the HSE Exhibition. A total of 67 Awards under 3 different Schemes covering the Manufacturing Sector (2004 & 2005), Construction Sector (2005) and the Best Chapter Awards Scheme (2004-05) were distributed. The Special Conference

Number of the Chronicle was released by Secretary (Labour & Employment).

ROADMAP FOR NSC'S NEW INITIATIVES

13.40 The Council has launched New Initiatives on three Sectors namely, Road Transportation, Construction and Small and Medium Enterprises. The following important activities were undertaken under these Initiatives during this period.

Road Transportation Safety

- VCDs of the NSC-LPA jointly produced film on Safe Driving were made available to the Corporate Members of the Council.
- A one-day Training Programme on Defensive Driving was organised for NSC officers on 27th June 2006.

Safety and Health in Construction Sector

The NSC conducts training courses and conferences, safety audits, a manual on safety & health management, safety promotional material, OSH information and advisory services, separate Safety Awards Scheme for the Construction Sector. The following activities were undertaken by the NSC during this period:-

- Conducted a 4-day specialized public Training Course on Safety and Health in Construction Work from 13-16 June 2006.
- Conducted two 2-day Specialised Training Programmes on 'Safety in Scaffolding and Working at Heights' from 27-28 April 2006 and on 17-18 October 2006.
- Six In-plant Training Courses were conducted during this period.
- One safety audit was conducted during this period.

NATIONAL APELL CENTRE (NAC)

NSC's APELL Experience in Sri Lanka

13.41 The National Awareness and Preparedness for Emergencies at Local Level (APELL) Centre [NAC] As a part of its ongoing effort to strengthen the APELL Programme world-wide, the UNEP launched the APELL programme in Sri Lanka.

Two experts including DG, NSC were invited by the UNEP as the resource persons for sharing experience on the implementation of APELL Programme in a 3-day APELL Workshop organised by the Ministry of Environment and Central Environmental Authority of Sri Lanka in collaboration with the UNEP from 21-23 June 06 in Colombo.

NSC's Collaboration with UNEP in the EU-Asia Pro-Eco Post Tsunami Programme of the European Commission

13.42 NSC is one of the 3 Asian Partners in the UNEP'S above Post-Tsunami Programme promoted by the European Commission. The project of two years duration would be implemented in a Tourist destination hit by Tsunami in Dec. 04, 'Kanyakumari' was identified in India with the involvement of NAC sub-centre established in Heavy Water Plant, Tuticorin and NSC's local Chapter.

MoU with Lokmanya Medical Foundation (LMF)

13.43 The objective of the MoU signed by NSC with LMF is to network and thereby strengthen collaboration between NSC and LMF which leads to compliment each others efforts in the aspect of Emergency Medical Service (EMS) in road transportation for the larger benefit of industry and community. LMF would act as a NAC Sub-Centre. The first joint activity under the MoU was the celebration of the World Trauma Day on 17th October 2006 in Pune by organising a

workshop on 'Basic Life Support' for the auto rickshaw drivers.

NSCI SAFETY AWARDS

13.44 The NSCI Safety Awards Scheme for Manufacturing Sector started in the year 1998, is aimed at providing recognition to factories for developing and implementing effective occupational safety and health management systems & procedures.

The Awards under Manufacturing Sector for the years – 2004 and 2005, Construction Sector for the year – 2005 and Best NSC Chapter Awards for the period 2004-05 were presented by Shri Chandra Sekhar Sahu, the then Union Minister of State for Labour & Employment in the 11th National Conference held at Vigyan Bhawan, New Delhi on 5th April, 2006.

BEST NSC Chapter Awards Scheme

13.45 This scheme was started in the Financial year – 2004-05 to recognise Chapter's performance in furtherance of NSC mission. The chapters are grouped into three categories i.e. Large, Medium and Small. Tamil Nadu Chapter won the Best Chapter Award in 'Large Category', and Kerala Chapter under 'Medium Category' for the year 2004-05.

SAFETY CONSULTANCY SERVICES

13.46 As a technical leader, the NSC is providing Safety Consultancy Services like 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 On-site Emergency Plan, Preparation of Safety Report etc. In all, 36 assignments were carried out covering various types of industries.

HEALTH, SAFETY & ENVIRONMENT (HSE) Training

13.47 As HSE 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, 37 training courses/ workshops / seminars comprising 12 national level and 25 unit level were conducted for 1272 participants from various types of industries.

NATIONAL CAMPAIGNS

13.48 The National Level Campaigns namely, Fire Service Week, World Environment Day, National Safety Day / National Safety Week Campaign were spearheaded during this period.

NATIONAL SAFETY CALENDAR – 2007

13.49 To support HSE awareness and educational programmes, a multi-coloured 8-sheet National Safety Calendar - 2007 for which technical concepts are developed by NSC and the cartoons executed by Padmabhushan Shri Mario de Miranda, the renowned cartoonist will be brought out by December 2006.

HSE DIARY - 2007

13.50 NSC has been bringing out its Health, Safety & Environment (HSE) Diary since 1998. The Diary for the year 2007 will contain 100 pages of valuable technical information on current HSE areas such as ILO Convention & Recommendation on Promotional Framework for OSH, Hazards in Ship Breaking/Recycling Industry, Guidance for Preparation of Safety Reports, Disaster Management, Health, OSH Management Systems, Food Safety, Energy Conservation, Fire Safety, etc.

NSC'S INVOLVEMENT & ROLE IN INDUSTRIAL DISASTER MANAGEMENT

13.51 **Collaboration with National Disaster Management Authority (NDMA)**

- Lead Role in developing a document on 'National Disaster Management Policy and Guidelines – Chemical Disasters".

- NSC as a Member on the Core Group on Nuclear Disasters.

13.52 **Collaboration with the NIDM**

- Workshop on Industrial Disaster Management by Administrative Reforms Commission.
- Collaborative Training Workshop on Industrial and Chemical Disaster Management.
- Development of Disaster Management Plan for twin townships – NOIDA & Greater NOIDA.
- First India Disaster Management Congress, 28-29th November 2006, New Delhi.

NSC's representation on Working Groups constituted by the Planning Commission, Government of India

13.53 DG, NSC was made a member in the following 2 Working Groups constituted by the Planning Commission, Government of India for the Eleventh Five Year Plan:

- Working Group on "Occupational Safety & Health",
- Working Group on Quality, Certification and Conformity Assessment.

International Activities

MoU signed with KISA

13.54 NSCI signed a MoU with the Korea Industrial Safety Association (KISA) of the Republic of Korea on 4th July 2006 at Seoul ushering in co-operation in Occupational Safety & Health between the two organisations.

The salient features of the MoU are:

- Expedite and co-operate for the purpose of development of OHS through technical co-operation and exchanges.
- Exchange technical personnel on workplace Safety and Health
- Identify specific areas for joint projects and seminars for creating safe environment for industrial activities
- Exchange of information and materials

APOSHO-22 Conference & AGM (9-12 MAY 2006)

13.55 The 22nd APOSHO Conference and Annual Meeting (AGM) were hosted by the Safety and Health at Work Promotion Association, Thailand in Bangkok from 9-12 May 2006. A 2-member official delegation comprising Shri H Mahadevan, Vice Chairman (Workers) and Shri K.C. Gupta, DG, NSC, India participated in the Conference, AGM and the Advisory Committee Meetings.

Box 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

Box 13.2

Units	Technical		Administrative		Total	
	Sanctioned	Working	Sanctioned	Working	Sanctioned	Working
Headquarters	14	9	47	40	61	49
CLI, Mumbai	98	64	93	78	191	142
4 RLIs*	80	54	80	64	160	118
Dock-Safety Inspectorates	22	13	32	27	54	40
Total:	**214**	**140**	**252**	**209**	**466**	**349**

* 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
1996	576	1872	32	157474	36521	37388	5300	1877	523	207.8	47.2
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*	**567**	**2110**	**50**	**368940**	**104388**	**168085**	**5800**	**2338**	**701**	**350.3**	**71.1**

* Data are provisional.

Table 13.4

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
1997	**143**	**677**	**820**	**70**	**265**	**335**
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**	**246**
2005*	**99**	**985**	**1084**	**57**	**108**	**119**
2006*	**62**	**537**	**599**	**49**	**54**	**103**

Note: *Figures of 2005 & 2006 are provisional and figures for 2006 are from January to September 2006

Table 13.5

Trend of Accidents in Coal Mines – Cause wise

Causes	Number of Fatal Accidents						Number of Serious Accidents					
	2001	2002	2003	2004	2005	2006	2001	2002	2003	2004	2005	2006
Fall of Roof	30	23	18	26	19	10	35	45	39	44	36	19
Fall of Sides	9	11	5	8	7	3	43	38	27	67	39	16
Other Ground Movements	0	1	1	0	0	1	1	0	0	1	1	0
Winding in Shafts	2	0	1	0	1	1	6	4	4	5	2	2
Rope Haulage	15	6	10	5	12	6	116	85	84	127	148	128
Dumpers, Trucks, etc.	19	14	21	22	21	10	32	28	35	20	32	25
Other Transportation Machinery	1	2	2	3	3	4	23	19	15	10	12	35
Non-Transportation Machinery	10	9	11	7	12	6	34	39	43	28	41	30
Explosives	2	4	3	5	2	1	7	9	6	8	3	0
Electricity	4	4	1	4	3	3	5	7	3	4	4	1
Gas, Dust, Fire, etc.	0	0	2	2	0	3	0	2	6	2	0	0
Fall of Persons	7	4	5	3	9	3	191	151	147	307	248	136
Fall of Objects	2	2	1	0	4	6	83	99	90	183	234	90
Other Causes	4	1	2	2	6	5	91	103	64	156	185	55
Total	**105**	**81**	**83**	**87**	**99**	**62**	**667**	**629**	**563**	**962**	**985**	**537**

Note: Data for 2005 and 2006 are provisional and figures for 2006 are from January to September, 2006.

Table 13.6

Causes	Trend of Accidents in Non-coal Mines – Cause wise											
	Number of Fatal Accidents						Number of Serious Accidents					
	2001	2002	2003	2004	2005	2006	2001	2002	2003	2004	2005	2006
Fall of Roof	2	1	1	2	1	2	0	1	1	2	2	0
Fall of Sides	8	10	7	12	6	7	1	1	1	3	0	1
Other Ground Movements	0	0	0	0	0	0	0	0	0	0	0	0
Winding in Shafts	0	0	0	0	1	0	1	1	0	0	0	0
Rope Haulage	0	0	0	0	0	0	5	1	1	0	1	0
Dumpers, Trucks, etc.	22	10	13	18	13	17	14	14	15	11	10	5
Other Transportation Machinery	4	3	2	3	1	1	2	3	3	2	3	6
Non-Transportation Machinery	7	6	6	6	8	5	23	23	25	22	15	4
Explosives	6	8	5	3	4	2	0	2	1	0	1	0
Electricity	1	1	3	2	1	0	1	4	1	0	0	0
Gas, Dust, Fire, etc.	3	0	1	0	0	0	0	0	0	0	3	0
Fall of Persons	11	10	11	6	14	10	44	41	23	41	22	13
Fall of Objects	2	2	3	3	6	4	53	45	45	38	20	13
Other Causes	5	1	0	2	2	1	55	69	52	69	31	12
Total	71	52	52	57	57	49	199	205	168	188	108	54

Note: Data for 2005 and 2006 are provisional and figures for 2006 are from January to September, 2006.

Table 13.6 A

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
1997	143	165	22	677	703	70	77	13	265	272
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	59	66	10	188	194
2005*	99	120	19	985	998	57	61	4	108	109
2006*	62	113	7	537	551	49	54	7	54	54

*** Data for 2005 and 2006 are provisional and figures for 2006 are from January to September, 2006.**

Table No. 13.6 B

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
2001-2006*	91	0.22	113	0.27	56	0.35	65	0.40

* Data are provisional and up to September, 2006

Table 13.7

Number of Inspections and Enquiries

Year	No. of Inspections				No. of Enquiries				
	Coal	Metal	Oil	Total	Coal	Metal	Oil	Total	Grand Total
1995	5461	3206	181	8848	1102	396	21	1519	10367
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*	2914	1656	161	4731	550	242	19	811	5542

*Figures are provisional and up to September, 2006

Table 13.8

Applications received & Certificates of Competency issued during April to October, 2006

Category of certificates of competency	Coal Mines Regulation, 1957		Metalliferous Mines Regulations, 1961	
	Applications received	Certificates issued	Applications received	Certificates issued
Manager	4239	299	2055	169
Surveyor	356	23	109	17
Overman / Foreman	1298	192	534	168
Sirdar / Mate	654	47	328	121
Shotfirer/Blaster	22	0	117	59
Winding Engine Driver	-	34	6	7
Gas-testing	1988	205	58	3

****