# 1.0 Introduction

Under the Constitution of India “Regulation of Labour and Safety in Mines and Oilfields” is a central subject (Entry 55 of the Seventh Schedule of Article 246). The matter is regulated by the Mines Act, 1952 and the Rules and Regulations framed thereunder. It extends to whole of India including territorial water i.e. upto 12 nautical miles in the sea measured from appropriate base line. These statutes are administered by Directorate-General of Mines Safety (DGMS) under the Union Ministry of Labour & Employment.

## 1.1 Historical Background

Although exploitation of minerals has been going on in the country from pre-Christian era, it was only towards the end of 19th Century that attempts were made by the state for regulation of employment and working conditions therein. Following the International Labour Conference in Berlin in 1890, the then Government of UK through the Secretary of State for India asked the Government of India to consider the desirability of undertaking legislation for inspection of mines in general and coal mines in particular and for regulation of employment therein of men, women and children. Accordingly in 1894, Mr. James Grundy was appointed as first ever Inspector of Mines in India within the organization of Geological Survey of India. Mr. Grundy recommended that provisions be made for the minimum age of employment; notice of opening and of accidents, first-aid, management and supervision etc. Major disasters at Kolar Gold Field in 1897 and at Khost Coal Mines, Baluchistan (presently in Pakistan) in 1898 expedited finalisation of the first Mines Act which was enacted on 22nd March, 1901. A Bureau of Mines Inspection was started in Calcutta on 7th January 1902 to administer the provisions of the Mines Act, 1901. The organization was renamed as Department of Mines and its office was shifted to Dhanbad in 1908. In 1960, the organization was renamed as Office of the Chief Inspector of Mines. Again in 1967 the name of the organization was changed to Directorate-General of Mines Safety (DGMS). In 1988 DGMS was declared a Scientific and Technological Organization.

Apart from administering the Mines Act and legislation framed thereunder, DGMS also administers certain allied legislation. A list of legislation administered by DGMS is given at **Appendix-I**.

## 1.2 Organizational Set-up of DGMS

Directorate-General of Mines Safety is a multi-disciplinary organization with Inspecting Officers from Mining, Mechanical and Electrical engineering and Occupational Health disciplines. Officers appointed to different technical posts in DGMS are selected by U.P.S.C. They are required to have Degree in Mining or Mechanical or Electrical Engineering with several years of experience, varying from seven to ten years of working in responsible capacity in mines or allied industry. Besides, officers of mining cadre posses First Class Mine Manager's Certificate of

Competency. The Occupational Health cadre is manned by qualified and experienced medical personnel.

The organization has its headquarters at Dhanbad (Jharkhand) and is headed by the Director-General of Mines Safety. At the headquarters, the Director-General is assisted by specialist staff-officers in mining, electrical and mechanical engineering, occupational health, law, survey, statistics, administration and accounts disciplines. The headquarters has a technical library and S&T laboratory as a back-up support to the organization. Extensive computerization has been done in head office and in the field offices to upgrade the standard of work. The head office and some of the field offices have access to the internet enabling these to place themselves at par with other developed countries of the world so far as the communication with the use of computer is concerned. DGMS has a plan to establish a network for all its offices through Internet. A web page on DGMS has already been launched during the centenary year.

The field organization has a two-tier network of field offices. The area of jurisdiction of DGMS covering the entire country is divided into six zones, each under the charge of a Deputy Director-General. There are three to four Regional offices under each zonal office. Each Region is under the charge of a Director of Mines Safety. There are in all 21 such Regional Offices. Sub-regional offices have been set up in important areas of concentrated mining activities away from Regional office. There are five such sub-regional offices, each under the charge of a Deputy Director. Each Zone, besides having inspecting officers of mining cadre has officers in electrical, mechanical engineering and occupational health disciplines.

Organization chart of DGMS are at **Appendix-IIA & IIB**. Table - 1 shows the discipline-wise strength of inspecting officers as on 31.12.2006. A statement showing posting of Group 'A' & 'B' officers in DGMS during the year 2006 are given at **Appendix-III**.

| **TABLE:1** | **STRENGTH OF INSPECTING OFFICERS AND SANCTIONED POSTS AS ON 31.12.2006** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DESIGNATION | DISCIPLINE | | | | | | | |
| | MINING | | ELECTRICAL | | MECHANICAL | | O. H | |
| | S | P | S | P | S | P | S | P |
| Director General | 1 | - | - | - | - | - | - | - |
| Dy. Director General | 7 | 7 | 1 | 1 | - | - | - | - |
| Director | 29 | 29 | 4 | 4 | 2 | 2 | - | - |
| Dy. Director | 82 | 57 | 18 | 11 | 10 | 5 | 1 | 1 |
| Assistant Director | 1 | - | - | - | - | - | Gr.I: 3<br>Gr.II: 5 | 2<br>3 |
| **Total** | **120** | **93** | **23** | **19** | **12** | **7** | **9** | **6** |

S – Sanctioned P - In Position

## 1.3 Role and Function of DGMS

Enforcement of the provision of the Mines Act, 1952 and Rules, Regulations and Order made thereunder and drafting appropriate legislation to absorb the technical advancement as well as to make the same comprehensive, practicable and legally sound. Setting standards, by overseeing compliance thereof as intensively as the resources permit and through a variety of promotional initiatives and awareness programme, the officers of DGMS exercise preventive as well as educational influence over the mining industry. DGMS is also promoting the concept of 'self-regulation' as well as 'workers' participation in safety management. With changing scenario, attempts are being made to superimpose its traditional role of seeking compliance by legal sanctions and work prohibition optimally, with advisory and other safety promotional initiatives; thereby creating an environment in which safety is given due priority.

**Current functions of DGMS broadly include:**

1. Development and updating of legislation and issue of guidelines and circulars periodically.
2. Inspection – overseeing compliance of the statutes by the management through sample inspection as and when required
3. Investigation into:
   (a) accidents
   (b) dangerous occurrences - emergency response
   (c) complaints & other matters and
   (d) taking corrective action and action against delinquents
4. (a) Grant of :
   (i) statutory permission, exemptions & relaxations
   (ii) approval of mine safety equipment, material & appliances
   (b) Interactions for development of safety equipment, material and safe work practices
5. Safety promotional initiatives including:
   (a) Organization of -
   National Conference on Safety in Mines
   National Safety Awards
   Safety Weeks & Campaigns
   (b) Safety Information Dissemination
   (c) Preview of project reports & mining plans
   (d) Promoting -
   - safety education and awareness programme
   - workers' participation in safety management through -
     - workmen's inspector
     - safety committee
     - tripartite reviews
6. Conduct of examinations for grant of competency certificates.

## 1.4 Gazette Notification

Following gazette notifications were issued during the year 2006:

| TABLE:2 | Notification No. & date | Brief subject |
|---|---|---|
| 1. | SO 57(E) dated 19.1.2006 | Central Government extends the duration for a further period of three months of Central Saunda court of inquiry for a further period of three months from 17.1.2006 to 16.4.2006 |
| 2. | GSR 73 dated 20.3.2006 | Notification regarding use of electrical appliances in Oil Mines. |
| 3. | SO 483(E) dated 3.4. 2006 | Central Government extends the duration for a further period of three months from of Central Saunda court of inquiry from 17.4.2006 to 16.7.2006. |
| 4. | SO 522(E) dated 10.4.2006 | Constitution of Advisory Committee and appointment of Committee for the State of Goa to advise the Central Government on the matters arising out of administration of the Iron Ore Mines, Manganese Ore Mines and Chrome Ore Mines Labour Welfare Fund Act, 1976. |
| 5. | SO 615(E) dated 26.4. 2006 | Central Government extends the duration of GDK 8A court of inquiry for a further period of six months from 21.4.2006 to 20.10.2006 |
| 6. | SO 2100 dated 17.5.2006 | Central Government appoints the officers as Inspectors of Mines subordinate to the Chief Inspector of Mines. |
| 7. | SO 778(E) dated 18.5.2006 | Appointment of Committee under Section 12 of the Mines Act, 1952. |
| 8. | SO 1756(E) dated 12.10. 2006 | Appointment of Shri PC Parakh, former Secretary, Ministry of Coal to hold formal inquiry into the causes and circumstances attending to the accident occurred on 6.9.2006 in the Bhatdee Colliery of M/s. Bharat Coking Coal Limited. |
| 9. | SO 1863 (E) dated 31.10.2006 | Appoint of Shri MM Sharma, Dy.Director-General of Mines Safety as Chief Inspector of Mines. |

## 1.5 Measures to improve safety in mines:

Since mining is beset with many inherent hazards, detailed precautions have been laid down in the Mines Act, Rules and Regulations framed thereunder to guard against dangers in mines and it is the responsibility of the mine management to comply with the same. While the onus of providing for and ensuring safety in mines rests with the mine management, DGMS has the responsibility to see that the safety statute is kept updated to absorb the technical advancements as well as to make the same comprehensive, practicable, legally sound and also to carry out periodic inspection of mines to oversee compliance of safety laws. The Mines Act and the subordinate legislations framed thereunder is periodically updated for the purpose. Each and every accident involving fatality is enquired into by an officer or a team of officers of DGMS. A few accidents involving serious bodily injury and most of the important dangerous occurrences are also investigated by DGMS Officers. Arising out of inspections and enquiries conducted by DGMS, one or more of the following actions, as appropriate, is taken: -

(a) drawing the attention of the mine management about the contraventions of the statutes etc.;

(b) withdrawal of statutory permission, approval, relaxation or exemption granted ;

(c) serving an improvement notice ;

(d) imposition of a prohibitory order ;

(e) suspension of statutory certificate of competency held by managerial and supervisory personnel, if found negligent in the discharge of duties;

(f) prosecution of person(s) held responsible;

(g) punitive action taken departmentally by mining companies.

Mine management is also addressed to take steps as are considered necessary by the inspecting/enquiry officer to rectify the defects or deficiencies in working condition or system.

## 1.6 Inspection & Enquiries

Discipline-wise number of inspections and enquiries made by the inspecting officers are given in table:3.

| **TABLE:3** | **NUMBER OF INSPECTIONS AND ENQUIRIES MADE DURING THE YEAR 2006** | | | | | |
|---|---|---|---|---|---|---|
| Discipline of Inspection Service | Coal Mines | | Metal Mines | | Oil Mines | |
| | Inspections | Enquiries | Inspections | Enquiries | Inspections | Enquiries |
| Mining | 2869 | 803 | 2299 | 320 | 85 | 25 |
| Electrical | 903 | 43 | 243 | 0 | 111 | 0 |
| Mechanical | 307 | 66 | 52 | 9 | 16 | 2 |
| Occupational Health | 113 | 39 | 36 | 9 | 7 | 0 |
| **TOTAL** | **4192** | **951** | **2630** | **338** | **219** | **27** |

## 1.7 Improvement Notices & Prohibitory Orders

### 1.7.1 Coal Mines

106 (one hundred six) improvement notices under various provisions of the statutes were issued as a result of inspections of the mines during the year 2006. These improvement notices were issued for various types of serious defects, details of which are given in table:4 below :

| **TABLE:4** | **IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT, 1952 IN COAL MINES DURING 2006** | |
|---|---|---|
| SL.NO. | NATURE OF DEFECT | NO. OF CASES |
| 1. | High benches in opencast workings | 15 |
| 2. | Inadequate support | 6 |
| 3. | Poor ventilation | 4 |
| 4. | Inadequate coal dust suppression | 8 |
| 5. | Isolation stopping | 1 |
| 6. | Improper/ non-provision of travelling road | 1 |
| 7. | Danger of Inundation | 2 |
| 8. | Unstable workings | 0 |
| 9. | Lag in stowing | 0 |
| 10. | Accumulation of gases | 0 |
| 11. | Defective Electrical installation | 17 |
| 12. | Inadequate earth leakage protection | 0 |
| 13. | Defective winding rope | 0 |
| 14. | Other defects in winding installation | 5 |
| 15. | Defective shot-firing practices | 1 |
| 16. | Others | 46 |
| | **TOTAL** | **106** |

61 (sixty-one) prohibitory orders under Section 22(3), 22A(2) and 22(1A) of the Mines Act, 1952 were issued during the year 2006. These orders were imposed for various dangerous conditions prevailing at the mines, details of which are given in table 5:

| **TABLE:5** | **PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3) AND 22A(2) AND 22(1A) OF THE MINES ACT,1952 IN COAL MINES DURING 2006** | |
|---|---|---|
| SL.NO. | NATURE OF DEFECT | NO. OF CASES |
| 1. | High benches in opencast workings | 17 |
| 2. | Inadequate support | 6 |
| 3. | Poor ventilation | 7 |
| 4. | Inadequate coal dust suppression | 3 |
| 5. | Isolation stopping | 0 |
| 6. | Improper/ non-provision of travelling road | 0 |
| 7. | Danger of Inundation | 5 |
| 8. | Unstable workings | 0 |
| 9. | Lag in stowing | 0 |
| 10. | Accumulation of gases | 0 |
| 11. | Defective Electrical installation | 0 |
| 12. | Inadequate earth leakage protection | 0 |
| 13. | Defective winding rope | 0 |
| 14. | Other defects in winding installation | 3 |
| 15. | Defective shot-firing practices | 1 |
| 16. | Others | 19 |
| | **TOTAL** | **61** |

### 1.7.2 Metalliferous Mines

In metalliferous mines inadequate benching and unstable slope in opencast workings and non-appointment of manager and supervisory officials in the mines were the main reasons for which improvement notices and prohibitory orders were issued. Notices issued under Sections 22(1) & 22A(1) of the Mines Act, 1952 during the year 2006 were 64 (sixty four). Prohibitory orders under Sections 22(1A), 22A(2) and 22(3) issued in Metalliferous Mines during the year 2006 were 211 (two hundred eleven). Details of the improvement notices and prohibitory orders issued during 2006 are given in table: 6 & 7 respectively.

| **TABLE:6** | **IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT,1952 IN METALLIFEROUS MINES DURING 2006** | |
|---|---|---|
| SL.NO. | NATURE OF DEFECT | No. of cases |
| 1. | Non-appointment of qualified manager and supervisory officials | 6 |
| 2. | Inadequate benching and sloping in opencast workings | 50 |
| 3. | Miscellaneous | 8 |
| | **TOTAL** | **64** |

| **TABLE:7** | **PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3), 22A(2) & 22(1A) OF THE MINES ACT,1952 ISSUED IN METALLIFEROUS MINES DURING 2005** | |
|---|---|---|
| SL.NO. | NATURE OF DEFECT | No. of cases |
| 1. | Non-appointment of qualified manager and supervisory officials | - |
| 2. | Inadequate benching and sloping in opencast workings | 206 |
| 3. | Miscellaneous | 5 |
| | **TOTAL** | **211** |

### 1.7.3 Oil Mines

No prohibitory order was issued in oil mines during the year 2006.

## 1.8 Permission, relaxations and exemptions

### 1.8.1 Coal Mines

916 (nine hundred sixteen) permissions/ exemptions and relaxations were granted in coalmines during the year 2006. Details of such cases are given in table:8.

| **TABLE:8** | **PERMISSIONS, RELAXATIONS & EXEMPTIONS GRANTED IN COAL MINES DURING 2006** | |
|---|---|---|
| SL.NO. | Particulars of Permissions, Relaxations & Exemptions | No. of cases |
| 1. | Extraction of coal by methods other than bord & pillar beneath areas free from surface features | 33 |
| 2. | Extraction of coal by methods other than bord & pillar below surface features | 11 |
| 3. | Extraction of coal by bord & pillar methods beneath areas free from surface features | 156 |
| 4. | Extraction of coal by bord & pillar methods beneath surface features | 83 |
| 5. | Development below surface features including development in contiguous seams/ sections | 72 |
| 6. | Blasting coal off the solid | 47 |
| 7. | Development within 60m. of waterlogged workings | 20 |
| 8. | Workings within 7.5m. / Adjustment of mine boundaries | 24 |
| 9. | Exemptions from different provisions of regulations | 114 |
| 10. | Others | 356 |
| | **TOTAL** | **916** |

### 1.8.2 Metalliferous Mines

1017 (one thousand seventeen) permissions/relaxations/exemptions under different provisions of the statutes were granted during the year 2006. Particulars are given in table:9.

| TABLE:9 | PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN METALLIFEROUS MINES DURING 2006 | |
|---|---|---|
| SL.NO. | Particulars of Permissions, Exemptions & Relaxations | No. of cases |
| 1. | Stoping of blocks | 28 |
| 2. | Use of HEMM with deep hole blasting | 113 |
| 3. | Use of ANFO and/or more than one explosive in a shot hole | 27 |
| 4. | Working under railways and roads | 2 |
| 5. | Appointment of managers of more than one mine/ permit manager etc. | 460 |
| 6. | Appointment of surveyor of more than one mine | 9 |
| 7. | Others | 378 |
| | **TOTAL** | **1017** |

### 1.8.3 Oil Mines

108 (one hundred eight) permissions/relaxations/exemptions were granted during the year 2006 under various provisions of the Oil Mines Regulations, 1984. The details of such cases are given in table:10

| TABLE:10 | PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN OIL MINES DURING 2006 | |
|---|---|---|
| SL.NO. | Particulars of Permissions, Exemptions & Relaxations | No. cases |
| 1. | Well head installations | 36 |
| 2. | Laying of oil pipe line | 72 |
| | **TOTAL** | **108** |

## 1.9 Prosecutions

6 (six) prosecutions were instituted in coalmines during the year 2006. In respect of non-coal mines, 22 (twenty two) prosecutions were launched during 2006. Contraventions of provisions of statute for which these prosecutions were instituted are given in tables: 11 & 12.

**Details of prosecution cases as on 31.12.2006.**

| Coal | Non-coal | Pending | Disposed |
|---|---|---|---|
| No. of prosecution launched during the year 2006 | No. of prosecution launched during the year 2006 | Total pending cases upto 31.12.2006 | Total disposed cases upto 31.12.2006 |
| 06 | 22 | 954 | 209 |

| TABLE:11 | PROSECUTIONS INSTITUTED IN RESPECT OF COAL MINES DURING 2006 | |
|---|---|---|
| SL.NO. | CONTRAVENTION | NO. OF CASES |
| 1. | Contraventions leading to accidents | 5 |
| 2. | Non-submission or submission of incorrect plans, returns, notices etc. | - |
| 3. | Non-appointment of qualified persons as senior supervisory officials | - |
| 4. | Contraventions under Indian Electricity Act or Rules | 1 |
| 5. | Other violation of serious nature | - |
| 6. | Miscellaneous violations | - |
| | **TOTAL** | **6** |

| TABLE:12 | PROSECUTIONS INSTITUTED IN RESPECT OF NON-COAL MINES DURING 2006 | |
|---|---|---|
| SL NO. | CONTRAVENTION | NO. OF CASES |
| 1. | Contravention leading to accidents | 17 |
| 2. | Contravention of orders under sections 22(1A), 22(3), Reg. 108 etc. | 1 |
| 3. | Non-appointment of qualified persons as senior supervisory officials | - |
| 4. | Non-appointment of qualified persons as subordinate supervisory officials | - |
| 5. | Non-provisions of protective equipment | - |
| 6. | Other miscellaneous contraventions | 4 |
| | **TOTAL** | **22** |

# 2.0 Coal Mines

## 2.1 General

Number of operating coalmines during 2006 was 575 as compared to 565 in 2005. Company-wise number of coal mines and production is given in table: 13.

| TABLE: 13 | Number of Mines during 2006 | | | | Production (in million tonnes) |
|---|---|---|---|---|---|
| COMPANY | Underground | Opencast | Both | Total | |
| Coal India Limited | 293 | 140 | 42 | 475 | 337 |
| Singareni Collieries Company Limited | 52 | 11 | 0 | 63 | 35 |
| Others | 9 | 25 | 3 | 37 | 50 |
| **TOTAL** | **354** | **176** | **45** | **575** | **422** |

Table-14 shows the number of underground coalmines having gassy seams of different degrees.

| TABLE : 14 | UNDERGROUND COAL MINES HAVING GASSY SEAMS OF DIFFERENT DEGREES | |
|---|---|---|
| Degree of gassiness | Number of Mines | |
| | 2005 | 2006* |
| I only | 265 | 264 |
| II only | 107 | 106 |
| III only | 15 | 15 |
| I & II | 9 | 9 |
| I & III | 1 | 1 |
| II & III | 3 | 3 |
| I, II & III | - | - |
| **TOTAL** | **400** | **398** |

*Provisional

During the year total numbers of working mines have increased from 565 in 2005 to 575 in 2006. Output of coal increased from 420.00 million tonnes in 2005 to 422.00 million tonnes in 2006. Coal mines under M/s.Coal India Limited contributed 337.00 million tonnes of coal during the year 2006. Average daily employment in mines marginally increased from 399,000 in 2005 to 400,000 in 2006. The output per manshift is remained same to 3.35. Trend in average daily employment and output per manshift in coalmines is given table: 15.

| TABLE: 15 | PLACEWISE DISTRIBUTION OF AVERAGE DAILY EMPLOYMENT AND OUTPUT AND PRODUCTIVITY IN COAL MINES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Belowground | | Opencast | | Above Ground | Total | | Output per manshift |
| | Employment (in '000 number | Output (in '000 tonnes) | Employment (in '000 number | Output (in '000 tonnes) | Employment (in '000 number) | Employment (in '000 number) | Output (in '000 tonnes) | |
| 1951 | 178 | 30199 | 36 | 4784 | 138 | 352 | 34983 | 0.35 |
| 1961 | 230 | 44887 | 60 | 10822 | 121 | 411 | 55709 | 0.45 |
| 1971 | 228 | 58552 | 43 | 17090 | 111 | 382 | 75642 | 0.67 |
| 1981 | 302 | 76205 | 55 | 51120 | 156 | 513 | 127325 | 0.81 |
| 1991 | 316 | 70731 | 67 | 167206 | 171 | 554 | 237757 | 1.40 |
| 1992 | 312 | 71062 | 67 | 178879 | 173 | 552 | 249941 | 1.47 |
| 1993 | 308 | 73672 | 68 | 186935 | 170 | 546 | 260607 | 1.53 |
| 1994 | 293 | 70644 | 67 | 196878 | 164 | 524 | 267522 | 1.63 |
| 1995 | 287 | 68512 | 68 | 216074 | 158 | 513 | 284586 | 1.80 |
| 1996 | 281 | 70127 | 68 | 233970 | 157 | 506 | 304097 | 1.91 |
| 1997 | 279 | 69062 | 68 | 247619 | 156 | 503 | 316681 | 2.01 |
| 1998 | 270 | 68571 | 69 | 251324 | 152 | 491 | 319895 | 2.09 |
| 1999 | 258 | 68101 | 71 | 247088 | 147 | 476 | 315189 | 2.12 |
| 2000 | 249 | 66225 | 69 | 268092 | 140 | 458 | 334317 | 2.34 |
| 2001 | 239 | 64134 | 69 | 277379 | 130 | 438 | 341513 | 2.51 |
| 2002 | 225 | 65330 | 69 | 297982 | 129 | 423 | 363312 | 2.75 |
| 2003 | 216 | 63632 | 69 | 315556 | 132 | 417 | 379188 | 2.91 |
| 2004 | 211 | 61921 | 70 | 347347 | 124 | 405 | 407268 | 3.19 |
| 2005 | 205 | 64087 | 70 | 356758 | 124 | 399 | 420845 | 3.35 |
| 2006* | 204 | 63000 | 71 | 359000 | 125 | 400 | 422000 | 3.35 |

*Provisional

## 2.2 Accidents

### 2.2.1 Major Accidents

Three major accidents took place during the year 2006 which have been described below:

(1) Bhatdee colliery, BCCL

Date of accident: 06.09.2006, Time: 1945 hours, Number of persons killed: 50

Court of Inquiry has been instituted.

(2) Shyamsundarpur colliery, ECL

Date of accident: 30.11.2006, Time: 0545 hours, Number of persons killed: 6

While thirteen loaders were loading coal from the rib of the last slice of a pillar in a caving district, a hanging roof measuring about 10m (length) x 5m (width) x 1.2 m (thick) came down without any prior sound, four loaders escaped while three loaders and the Mining Sirdar narrowly escaped receiving minor injuries, rest six loaders were trapped under the falled roof and were recovered dead.

(3) Venkatesh Khani No.7, SCCL

Date of accident: 11.12.2006, Time: 0930 hours, Number of persons killed: 4

While last slice in last fender (1/3 part pillar) of pillar in a depillaring panel was being worked by a continuous miner and shuttle car combination, a sudden massive roof fall measuring about 47m (L) x 13m (B) x 2m to 6m (Thick) occurred in the goaf extending to the immediate outbye junction, wherein six persons got trapped, of which four succumbed instantaneously to the injuries and the two with serious injuries could be rescued after about 5 hours.

### 2.2.2 Accident scenario

The year 2006 saw a downward trend in the number of fatal accidents as compared to 2005, but numbers of fatalities were more than the previous year. Number of fatal accidents during the year 2006 was 79 and number of fatalities was 138 as compared to 96 accidents and 117 fatalities during the year 2005.

Table: 16 indicate the trend of accidents and rates of fatalities.

| **TABLE: 16** | **TREND IN FATAL ACCIDENTS AND FATALITY RATES PER 1000 PERSONS EMPLOYED IN COAL MINES (10 YEARLY AVERAGE)** | | | |
|---|---|---|---|---|
| YEAR | Av. No. of accidents | Accident rate | Av. No. of fatality | Fatality rate |
| 1901-1910 | 74 | 0.77 | 92 | 0.94 |
| 1911-1920 | 138 | 0.94 | 176 | 1.29 |
| 1921-1930 | 174 | 0.99 | 219 | 1.24 |
| 1931-1940 | 172 | 0.98 | 228 | 1.33 |
| 1941-1950 | 236 | 0.87 | 273 | 1.01 |
| 1951-1960 | 222 | 0.61 | 295 | 0.82 |
| 1961-1970 | 202 | 0.48 | 260 | 0.62 |
| 1971-1980 | 187 | 0.46 | 264 | 0.55 |
| 1981-1990 | 162 | 0.30 | 186 | 0.35 |
| 1991-2000 | 140 | 0.27 | 170 | 0.33 |
| 2001-2006* | 89 | 0.21 | 117 | 0.28 |

Table: 17 gives year-wise fatal accidents, fatalities, and death rates in coalmines.

| TABLE: 17 | TREND IN FATAL ACCIDENTS AND DEATH RATES IN COAL MINES (YEAR-WISE) | | | | |
|---|---|---|---|---|---|
| Year | No. of fatal accidents | No. of persons killed | Death Rate | | |
| | | | Per '000 persons employed | Per 100,000 manshifts worked | Per million tonnes output |
| 1951 | 278 | 319 | 0.91 | 0.32 | 9.12 |
| 1961 | 222 | 268 | 0.65 | 0.22 | 4.81 |
| 1971 | 199 | 231 | 0.60 | 0.21 | 3.05 |
| 1981 | 165 | 184 | 0.36 | 0.12 | 1.45 |
| 1991 | 138 | 143 | 0.26 | 0.08 | 0.60 |
| 1992 | 165 | 183 | 0.33 | 0.11 | 0.73 |
| 1993 | 156 | 176 | 0.32 | 0.10 | 0.68 |
| 1994 | 156 | 241 | 0.46 | 0.15 | 0.90 |
| 1995 | 137 | 219 | 0.43 | 0.14 | 0.77 |
| 1996 | 131 | 146 | 0.29 | 0.09 | 0.48 |
| 1997 | 143 | 165 | 0.33 | 0.10 | 0.52 |
| 1998 | 128 | 146 | 0.30 | 0.10 | 0.46 |
| 1999 | 127 | 138 | 0.29 | 0.09 | 0.44 |
| 2000 | 117 | 144 | 0.31 | 0.10 | 0.43 |
| 2001 | 105 | 141 | 0.32 | 0.10 | 0.41 |
| 2002 | 81 | 97 | 0.23 | 0.07 | 0.27 |
| 2003 | 83 | 113 | 0.27 | 0.09 | 0.30 |
| 2004 | 87 | 96 | 0.24 | 0.07 | 0.23 |
| 2005 | 96 | 117 | 0.29 | 0.09 | 0.29 |
| 2006* | 79 | 138 | 0.36 | 0.11 | 0.34 |

* Provisional

Year 2006 saw a downward trend in the number of serious accidents and number of persons seriously injured. Number of serious accidents was 793 and number of persons injured was 823 as compared to 1106 and 1138 respectively during the year 2005. As far as the serious accident rate is concerned, it has decreased marginally. The serious injury rate per thousand persons employed in 2006 was 2.13 as compared to 2.85 in 2005. The above rate per lakh manshifts worked decreased to 0.67 in 2006 from 0.91 in 2005. The rate per million tonnes output decreased to 2.04 in 2006 from 2.70 in 2005. Table: 18 gives year-wise number of serious accidents, no. of persons injured and serious injury rate.

| TABLE: 18 | TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN COAL MINES (YEAR-WISE) | | | | |
|---|---|---|---|---|---|
| Year | No. of serious accidents | No. of persons injured | Serious injury rates | | |
| | | | Per '000 persons employed | Per 100,000 manshifts worked | Per million tonnes output |
| 1991 | 803 | 854 | 1.54 | 0.50 | 3.59 |
| 1992 | 810 | 894 | 1.62 | 0.53 | 3.58 |
| 1993 | 854 | 903 | 1.65 | 0.68 | 3.46 |
| 1994 | 717 | 775 | 1.48 | 0.47 | 2.90 |
| 1995 | 757 | 813 | 1.58 | 0.51 | 2.86 |
| 1996 | 677 | 723 | 1.43 | 0.45 | 2.38 |
| 1997 | 678 | 726 | 1.44 | 0.46 | 2.29 |
| 1998 | 523 | 560 | 1.14 | 0.37 | 1.75 |
| 1999 | 595 | 650 | 1.37 | 0.44 | 2.06 |
| 2000 | 661 | 707 | 1.54 | 0.49 | 2.11 |
| 2001 | 667 | 720 | 1.64 | 0.53 | 2.10 |
| 2002 | 629 | 665 | 1.57 | 0.50 | 1.83 |
| 2003 | 563 | 590 | 1.42 | 0.45 | 1.56 |
| 2004 | 962 | 991 | 2.45 | 0.77 | 2.42 |
| 2005 | 1106 | 1138 | 2.85 | 0.91 | 2.70 |
| 2006* | 793 | 823 | 2.13 | 0.67 | 2.04 |

* Provisional

### 2.2.3 Analysis of accidents

All fatal accidents and major serious accidents were inquired into by officers of DGMS. An analysis of accidents enumerated in the following paragraphs is based on the findings of such enquiry and information submitted by the mine management.

### 2.2.3A By place

Total 79 fatal accidents involving 138 persons occurred during the year 2006 compared to 96 fatal accidents and 117 fatalities during 2005. Fatality rate (overall) has increased to 0.36 in 2006 from 0.24 during the year 2005. Serious injury rate during the year 2006 has decreased to 2.13 as compared to 2.85 in 2005 for overall injury rates. 44(56%) fatal accidents occurred belowground with a fatality rate of 0.50, 24(30%) in opencast workings with fatality rate of 0.39 and 11(14%) in surface operation with fatality rate of 0.09 during the year 2006. It may be mentioned that out of 400,000 average daily employment 51% was in belowground workings, 18% was in opencast workings and the remaining 31% was engaged in surface operations. Table 19 gives the trend of fatal and serious accidents with fatality rate in different working places.

| TABLE: 19 | **TREND IN FATAL & SERIOUS ACCIDENTS AND DEATH & SERIOUS INJURY RATES; (PLACEWISE) - COAL MINES PER THOUSAND PERSONS EMPLOYED** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| YEAR | Fatal accidents & death rates | | | | Serious accidents & ser. injury rates | | | |
| | BG | OC | AG | Overall | BG | OC | AG | Overall |
| 1991 | 80 (0.26) | 25 (0.39) | 33 (0.20) | 138 (0.26) | 577 (1.96) | 60 (1.00) | 166 (0.98) | 803 (1.54) |
| 1992 | 107 (0.39) | 32 (0.52) | 26 (0.18) | 165 (0.33) | 587 (2.14) | 49 (0.79) | 174 (1.01) | 810 (1.62) |
| 1993 | 101 (0.39) | 24 (0.37) | 31 (0.19) | 156 (0.32) | 632 (2.19) | 57 (0.83) | 165 (1.01) | 854 (1.65) |
| 1994 | 93 (0.59) | 39 (0.64) | 24 (0.15) | 156 (2.08) | 560 (2.08) | 50 (0.86) | 107 (0.67) | 717 (1.48) |
| 1995 | 91 (0.60) | 26 (0.38) | 20 (0.13) | 137 (0.43) | 549 (2.07) | 69 (1.05) | 139 (0.93) | 757 (1.58) |
| 1996 | 75 (0.31) | 27 (0.42) | 29 (0.19) | 131 (0.29) | 478 (1.83) | 71 (1.10) | 128 (0.86) | 677 (1.43) |
| 1997 | 94 (0.41) | 27 (0.42) | 22 (0.14) | 143 (0.33) | 440 (1.71) | 79 (1.25) | 158 (1.05) | 677 (1.44) |
| 1998 | 80 (0.36) | 24 (0.35) | 24 (0.16) | 128 (0.30) | 346 (1.41) | 72 (1.06) | 105 (0.70) | 523 (1.14) |
| 1999 | 74 (0.33) | 30 (0.43) | 23 (0.16) | 127 (0.29) | 408 (1.73) | 77 (1.19) | 110 (0.81) | 595 (1.37) |
| 2000 | 62 (0.30) | 38 (0.74) | 17 (0.13) | 117 (0.31) | 444 (1.92) | 108 (1.67) | 109 (0.82) | 661 (1.54) |
| 2001 | 67 (0.43) | 26 (0.38) | 12 (0.10) | 105 (0.32) | 464 (2.10) | 73 (1.12) | 130 (1.07) | 667 (1.64) |
| 2002 | 48 (0.27) | 22 (0.32) | 11 (0.11) | 81 (0.23) | 434 (2.07) | 92 (1.43) | 103 (0.80) | 629 (1.57) |
| 2003 | 46 (0.33) | 23 (0.35) | 14 (0.13) | 83 (0.27) | 380 (1.85) | 82 (1.30) | 101 (0.77) | 563 (1.42) |
| 2004 | 49 (0.27) | 32 (0.47) | 06 (0.05) | 87 (0.24) | 757 (3.69) | 82 (1.24) | 123 (1.02) | 962 (2.45) |
| 2005 | 49 (0.34) | 28 (0.41) | 19 (0.16) | 96 (0.24) | 843 (4.23) | 98 (1.45) | 165 (1.37) | 1106 (2.8) |
| 2006 | 44 (0.50) | 24 (0.39 | 11 (0.09) | 79 (0.36) | 603 (3.03) | 72 (1.29) | 119 (1.02) | 793 (2.13) |

* Provisional

Note - Figures in bracket indicate death/injury rate

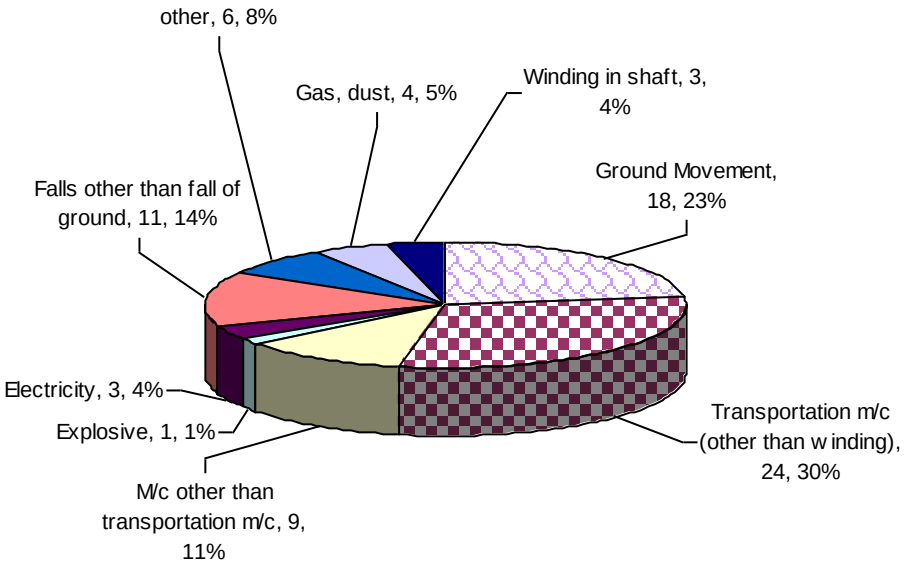
### 2.2.3B By cause

Tables 20 & 21 give the trend in fatal and serious accidents in coalmines due to different causes during the year 2006 compare with last four years followed by graphical representation. As can be seen 18 (23%) of fatal accident were caused by ground movement, 24 (30%) due to transportation machinery (other than winding), 9 (11%) due to machinery other than transportation machinery, and falls other than falls of ground contributed 11 (14%) while other causes such as electricity contributed 3 (4%) and explosives contributed 1 (1%). 793 serious accidents occurred during the year out of which 349 (44%) were caused by falls other than falls of ground, transportation machinery (other than winding) contributed 252 (32%), ground movement 50 (6%) while other causes contributed 86 (11%) of all serious accidents.

| TABLE:20 | TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES | | | | |
|---|---|---|---|---|---|
| Cause | 2002 | 2003 | 2004 | 2005 | 2006* |
| Ground movement | 35 (48) | 24 (33) | 33 (38) | 25 (32) | 18 (27) |
| Winding in shafts | - | 1 (1) | - | 1 (1) | 3 (3) |
| Transportation machinery (other than winding) | 22 (22) | 33 (34) | 29 (30) | 36 (37) | 24 (25) |
| Machinery other than transportation machinery | 9 (9) | 11 (14) | 6 (6) | 11 (11) | 9 (9) |
| Explosive | 4 (4) | 3 (3) | 5 (6) | 2 (2) | 1 (1) |
| Electricity | 4 (4) | 1 (1) | 4 (4) | 4 (4) | 3 (3) |
| Gas, Dust etc. | - | 2 (3) | 2 (2) | - | 4 (53) |
| Falls other than falls of ground | 6 (9) | 6 (6) | 5 (5) | 12 (12) | 11 (11) |
| Other causes | 1 (1) | 2 (18) | 3 (5) | 5 (18) | 6 (6) |
| **TOTAL** | **81 (97)** | **83 (113)** | **87 (96)** | **96 (117)** | **79 (138)** |

Note: Figures in parentheses denote the number of persons killed.
* Figures are provisional

**Trend in Fatal Accidents due to different causes in coal mines during 2006**



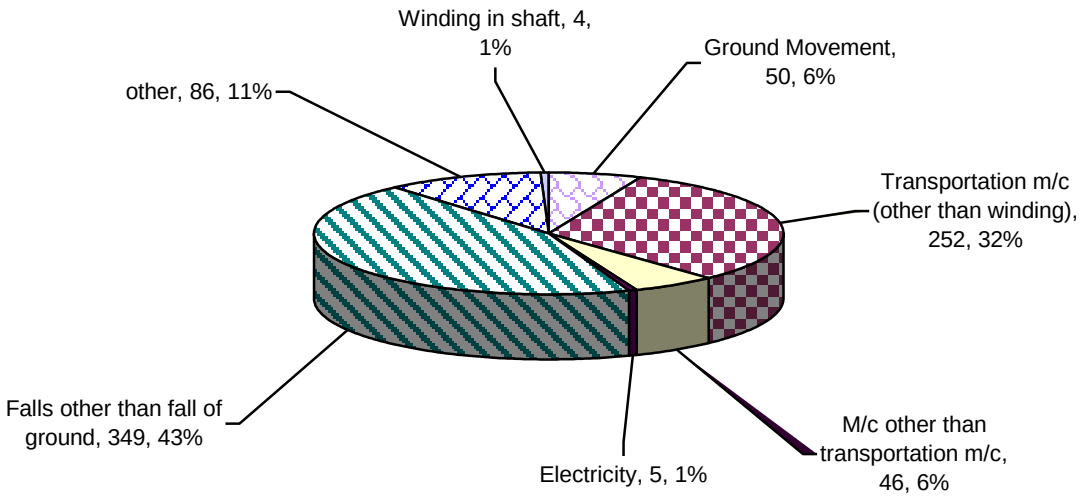

| TABLE:20A | TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF COAL MINES | | | | |
|---|---|---|---|---|---|
| **Place** | **2002** | **2003** | **2004** | **2005** | **2006*** |
| Belowground | 48 (61) | 46 (72) | 49 (57) | 49 (69) | 44 (102) |
| Opencast | 22 (22) | 23 (24) | 32 (33) | 28 (29) | 24(25) |
| Aboveground | 11 (14) | 14 (17) | 6 (6) | 19 (19) | 11 (11) |
| **Total** | **81 (97)** | **83 (113)** | **87 (96)** | **96 (117)** | **79 (138)** |

Note: Figures in parentheses denote the number of persons killed.
* Figures are provisional

| TABLE: 21 | TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES | | | | |
|---|---|---|---|---|---|
| **Cause** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Ground movement | 83 (97) | 66 (74) | 112 (124) | 84 (102) | 50 (54) |
| Winding in shafts | 4 (12) | 4 (5) | 5 (7) | 2 (2) | 4 (6) |
| Transportation machinery (other than winding) | 132 (137) | 134(140) | 157 (161) | 218 (222) | 252 (265) |
| Machinery other than transportation machinery | 39 (41) | 43 (47) | 28 (29) | 46 (46) | 46 (46) |
| Explosive | 9 (14) | 6 (11) | 8 (14) | 5 (6) | - |
| Electricity | 7 (9) | 3 (3) | 4 (5) | 5 (12) | 5 (5) |
| Gas, Dust etc. | 2 (2) | 6 (7) | 2 (2) | - | 1 (1) |
| Falls other than falls of ground | 258 (258) | 245(246) | 493 (495) | 550 (562) | 349 (350) |
| Other causes | 95 (95) | 56 (57) | 153 (154) | 196 (196) | 86 (86) |
| **TOTAL** | **629 (665)** | **563(590)** | **962(991)** | **1106(1138)** | **793 (823)** |

Note: Figures in parentheses denote the number of persons seriously injured.
* Figures are provisional

**Trend in Serious Accidents due to different causes in coal mines during 2006**




| TABLE: 21A | TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT PLACES IN COAL MINES | | | | |
|---|---|---|---|---|---|
| Place | 2002 | 2003 | 2004 | 2005 | 2006* |
| Belowground | 434 (464) | 380 (398) | 757 (778) | 843 (867) | 602 (621) |
| Opencast | 92 (98) | 82 (90) | 82 (87) | 98 (101) | 72 (83) |
| Aboveground | 103 (103) | 101 (102) | 123 (126) | 165 (170) | 119 (119) |
| Total | **629 (665)** | **563 (590)** | **962 (991)** | **1106 (1138)** | **793 (823)** |

Note: Figures in parentheses denote the number of persons seriously injured.
* Figures are provisional

### 2.2.3B.1 Ground movement

During the year 2006, ground movement accounted for 18 (22.78%) fatal accidents and 50 (6.31%) serious accidents. Further break-up of fatal accidents due to ground movement is given in table: 22.

| TABLE: 22 | FATAL ACCIDENTS DUE TO GROUND MOVEMENT IN COAL MINES DURING THE YEAR 2006 | | |
|---|---|---|---|
| Cause | No. of accidents | Persons killed | Persons seriously inj. |
| 1.Fall of roof | 13 | 22 | 9 |
| 2.Fall of side | | | |
| (a) belowground | 2 | 2 | 1 |
| (b) opencast | 1 | 1 | - |
| **Sub-Total** | **3** | **3** | **1** |
| 3.Others | | | |
| (a) bumps | - | - | - |
| (b) air blast | - | - | - |
| (c) land slide | - | - | - |
| (d) collapse of pillar | 1 | 1 | 1 |
| (e) over hang | 1 | 1 | 1 |
| **Sub-Total** | **2** | **2** | **1** |
| **GRAND TOTAL** | **18** | **27** | **11** |

### 2.2.3B.2 Roof fall

Strata control is a major problem affecting safety and productivity in underground mines. Experience of the past clearly brings out that roof fall is one of the predominant causes of fatalities in belowground coalmines and that trend continues even today. There were 18 accidents due to ground movement involving 27 fatalities and 11 serious injuries occurred due to this cause during the year 2006, out of which 13 accidents were due to fall of roof and 5 accidents were due to side fall and over hangs. Roof fall accidents accounted for 16.46% of all fatal accidents in coalmines and it contributed 29.55% of all fatal accidents in belowground operations. Further critical analysis of roof fall accidents for the last five years 2002 to 2006 revealed the following:

**I. Physical and Working Condition factors -**

1. **Method of work:** Accident mainly occurred in Bord and Pillar districts and equally both in development and depillaring. 53% of the fatal accidents occurred in B&P development, 27% in depillaring districts (27% in caving districts and 11% in stowing districts), 0% in longwall faces and 7% in other places.
2. **Height of working:** 85% of the fatal accidents occurred in gallery height upto 3m, 14% in 3m. to 5 m.
3. **Width of gallery:** 7% of the fatal accidents occurred in width of galleries between 0 - 3.0m and 7% in width between 3.01 -3.5m, 19% between 3.51-4.00m, 39% between 4.01 -4.50m and 28% above 4.50 m.
4. **Distance from face:** 63% of the accidents occurred within 5 m. of the working face and 9% between 5.01 to 10 m. 7% between 10.01-20m. Thus 72% of the accident occurred within 10 m. of the freshly exposed roof from the face of working. About 13%

of the accident occurred in other roadways where either roof supports were being replaced or no attention was paid for checking old existing supports.

5. **Type of support:** 37% of the fatal accidents accounted in areas supported by timber support only, 36% in roof bolts & others and in 3% of the cases supports were not provided at all. Areas supported by timbers were more prone for roof fall. Steel supports, especially roof bolts, are more stable if they are fixed properly and in time.
6. **Adequacy of support:** Accident analysis revealed that in 50% of cases supports provided was inadequate, which means sufficient number of supports are not provided before engaging persons at work and majority of the accidents could have been averted had proper supports were provided before engaging the persons at work and front line supervisors been attentive for providing adequate supports.
7. **Operation at the time of accident:** 27% of the fatal accidents occurred during loading operation, 11% during dressing, 14% during supporting, that is 52% of the accidents occurred during primary job of face preparation and manual loading. This can be avoided by adequately training the face workers for paying more attention towards identification of bad roof and testing for its weakness and by providing temporary supports before erecting permanent support. 12% of the cases occurred during withdrawal of supports and 19 % in other activities.
8. **Time elapsed after blasting:** 33% of the roof fall accidents occurred within 30 minutes of blasting operation which correlates with the operation at the time of accident as mentioned above. This also means that sufficient time is not allowed for the roof to settle before engaging persons. 3% occurred between ½ - 1 hour, 9% between 1 to 2 hours and 23% of the fatal accidents occurred beyond 2 hours of blasting operation and in 33% of cases no blasting operation was carried out within 4 hours.

**II. Geological factors -**

9. **Thickness of seam:** 44% of the fatal accidents occurred in coal seam having thickness upto 3.0 m., 29% in 3 to 6 m. and 7% in seams with thickness between 6-9m. Thus roof fall occurred in all types of coal seams irrespective of their thickness.
10. **Depth of cover:** 44% of the fatal accidents accounted in depth of cover upto 100 m, 29% in 101 to 200m. and 16% between 201 to 300. Practically roof fall accidents occurred at every place irrespective of the depth in proportion to the working plan at various depths.
11. **Thickness of fall:** In case of 27% of the fatal accidents thickness of fallen strata varying between 0 to 0.15m, in 31% between 0.16 to 30 m. (i.e. 58% of the accidents had thickness of fall between 0- 0.3m) and in 26% between 0.31 to 1.0 m. thick and in 15% beyond 1.00m thick. Fall of the roof was mainly due to geological reasons such as presence of slicken sides, hidden slip planes, or due to weathering of strata

etc. which could have been effectively controlled had adequate and timely supports been provided.

12. **Nature of fallen strata:** 39% of the fatal accidents occurred due to fall of sand stone roof, 27% due to coal and 22% due to shale, remaining due to combination of any two. Indicating that practically all types of roof is likely to fall in absence of adequate supports.

**III. Personal factors -**

13. **Designation:** 27% of the persons involved in roof fall accidents were supportmen, 47% loaders, 3% drillers and 4% subordinate supervisory staff. Mainly face workers were involved in the accidents as they are first to approach the face and stay beneath the green roof areas for longer duration.
14. **Age:** In 41% of the total accidents persons involved were in the age group of 31-40 years, 9% between 41-45, 18% between 46-50, and 32% 56-60 years. and 9% between 56-60 years. The available data indicates that more susceptible are between 56-60 years which accounts about 32% of the total fatalities.
15. **Shift of working:** 51% of the fatal accidents took place in 1st shift, 29% in 2nd shift and 20% 3rd shift. Thus roof fall occurred equally in all the shifts, but marginally more in first shift due to more number of persons employed during day time.
16. **Hours at work:** 10% of the roof fall accidents occurred in first two hours of the work, 40% between second and forth hour, 27% between fourth & fifth hours, 18% of the fatal accidents took place during fifth & seventh hours of the shift and 2% during last hour.

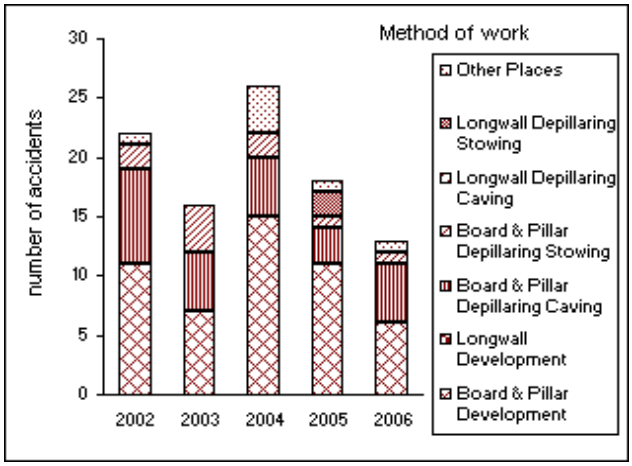
**IV. Management factors -**

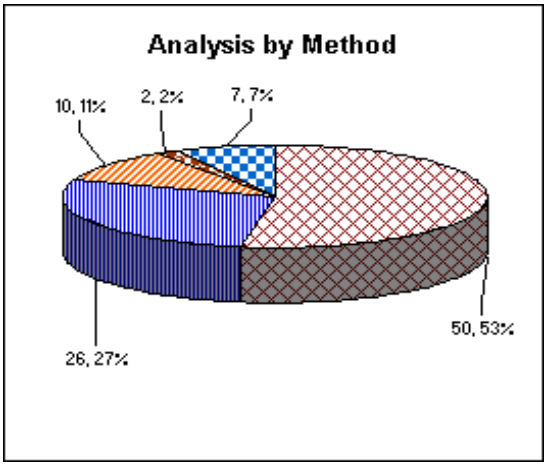
17. **Responsibility:** 29% of the fatal accidents were caused due to fault of management and Subordinate Supervisory Staff; 34% of the fatal accidents due to fault of Subordinate Supervisory Staff alone, in 8% of the cases management alone was responsible and 12% cases were declared as misadventure.
18. **Company:** Company-wise analysis indicates that 75% of roof fall accident occurred in CIL, Subsidiary-wise 18% in ECL, 21% in SECL, 9% in WCL, 15% in BCCL, 5% in CCL, 6% in MCL, 23% in SCCL and 3% in TISCO.

Detailed statistical analysis of roof fall accidents that occurred during last 5 years have been represented in tabular and graphically in the following tables:

**1. Distribution of fatal roof fall accidents by method of work**

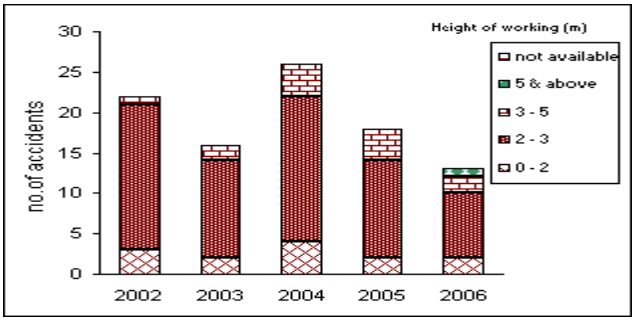
| Method of work | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| Board & Pillar Development | 11 | 50 | 7 | 44 | 15 | 58 | 11 | 61 | 6 | 46 | **50** | 53 |
| Longwall Development | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Depillaring Caving | 8 | 36 | 5 | 31 | 5 | 19 | 3 | 17 | 5 | 38 | **26** | 27 |
| Stowing | 2 | 9 | 4 | 25 | 2 | 8 | 1 | 6 | 1 | 8 | **10** | 11 |
| **Total Depillaring** | 10 | 45 | 9 | 56 | 7 | 27 | 4 | 22 | 6 | 46 | **36** | 38 |
| **Longwall** Depillaring Caving | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Stowing | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 0 | 0 | **2** | 2 |
| **Total Longwall** | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 0 | 0 | **2** | 2 |
| Other Places | 1 | 5 | 0 | 0 | 4 | 15 | 1 | 6 | 1 | 8 | **7** | 7 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

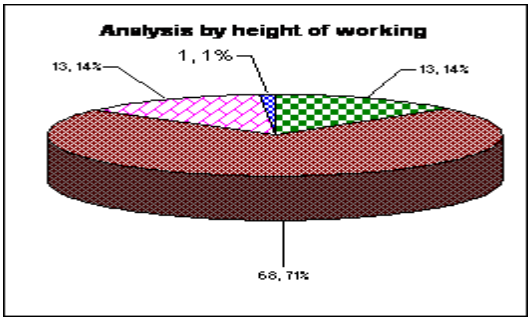


**2. Distribution of fatal roof fall accidents by height of working**

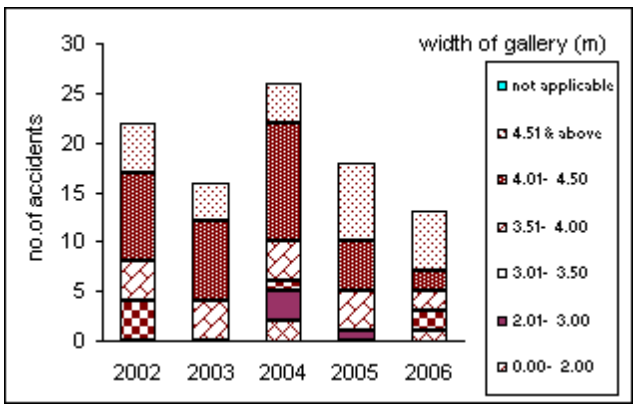
| Height of working (metres) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0 - 2 | 3 | 14 | 2 | 13 | 4 | 15 | 2 | 11 | 2 | 15 | 13 | 14 |
| 2 - 3 | 18 | 82 | 12 | 75 | 18 | 69 | 12 | 67 | 8 | 62 | 68 | 71 |
| 3 - 5 | 1 | 5 | 2 | 13 | 4 | 15 | 4 | 22 | 2 | 15 | 13 | 14 |
| 5 & above | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 1 | 1 |
| not available | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

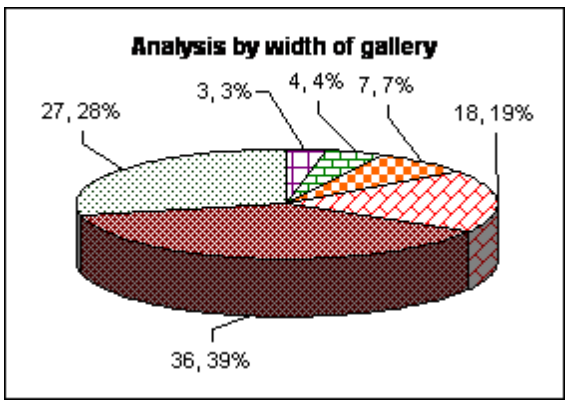



**3. Distribution of fatal roof fall accidents by width of gallery**

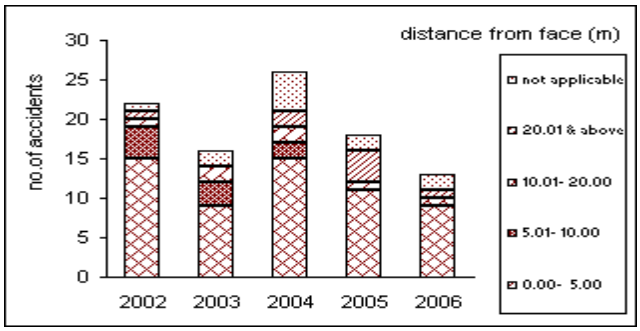
| width of gallery (metres) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2002** | **%** | **2003** | **%** | **2004** | **%** | **2005** | **%** | **2006** | **%** | **total** | **%** |
| 0.00- 2.00 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 0 | 1 | 8 | **3** | 3 |
| 2.01- 3.00 | 0 | 0 | 0 | 0 | 3 | 12 | 1 | 6 | 0 | 0 | **4** | 4 |
| 3.01- 3.50 | 4 | 18 | 0 | 0 | 1 | 4 | 0 | 0 | 2 | 15 | **7** | 7 |
| 3.51- 4.00 | 4 | 18 | 4 | 25 | 4 | 15 | 4 | 22 | 2 | 15 | **18** | 19 |
| 4.01- 4.50 | 9 | 41 | 8 | 50 | 12 | 46 | 5 | 28 | 2 | 15 | **36** | 39 |
| 4.51 & above | 5 | 23 | 4 | 25 | 4 | 15 | 8 | 44 | 6 | 46 | **27** | 28 |
| not applicable | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

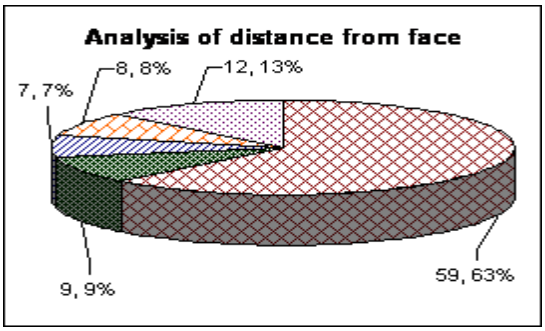


**4. Distribution of fatal roof fall accidents by distance from face**

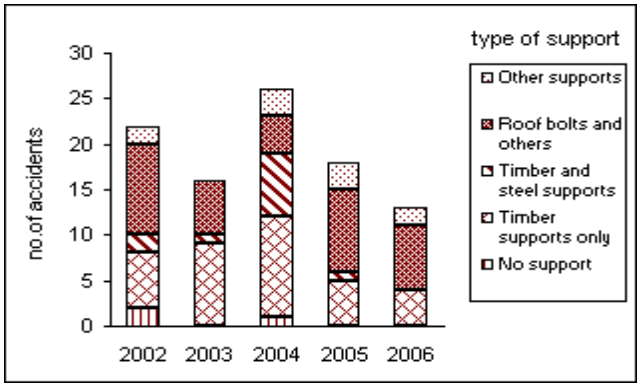
| Distance from face | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (metres) | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0.00- 5.00 | 15 | 68 | 9 | 56 | 15 | 58 | 11 | 61 | 9 | 69 | **59** | 63 |
| 5.01- 10.00 | 4 | 18 | 3 | 19 | 2 | 8 | 0 | 0 | 0 | 0 | **9** | 9 |
| 10.01- 20.00 | 1 | 5 | 2 | 13 | 2 | 8 | 1 | 6 | 1 | 8 | **7** | 7 |
| 20.01 & above | 1 | 5 | 0 | 0 | 2 | 8 | 4 | 22 | 1 | 8 | **8** | 8 |
| not applicable | 1 | 5 | 2 | 13 | 5 | 19 | 2 | 11 | 2 | 15 | **12** | 13 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

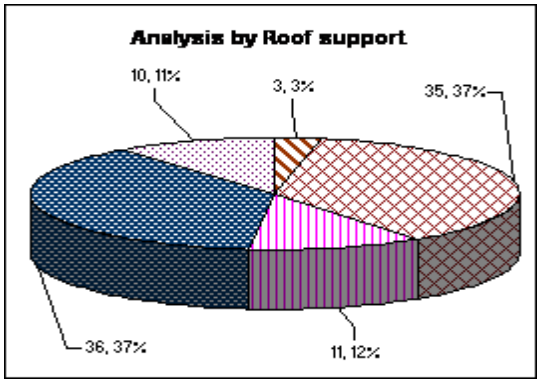



**5. Distribution of fatal roof fall accidents by type of roof support**

| Type of support | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| No support | 2 | 9 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | **3** | 3 |
| Timber supports only | 6 | 27 | 9 | 56 | 11 | 42 | 5 | 28 | 4 | 31 | **35** | 37 |
| Timber and steel supports | 2 | 9 | 1 | 6 | 7 | 27 | 1 | 6 | 0 | 0 | **11** | 12 |
| Roof bolts and others | 10 | 45 | 6 | 38 | 4 | 15 | 9 | 50 | 7 | 54 | **36** | 37 |
| Other supports | 2 | 9 | 0 | 0 | 3 | 12 | 3 | 17 | 2 | 15 | **10** | 11 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

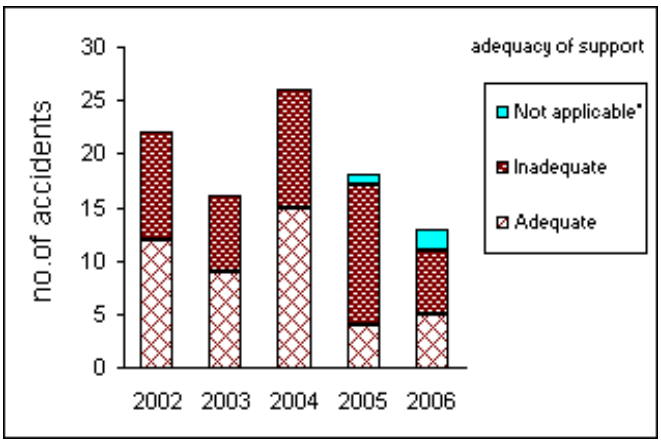


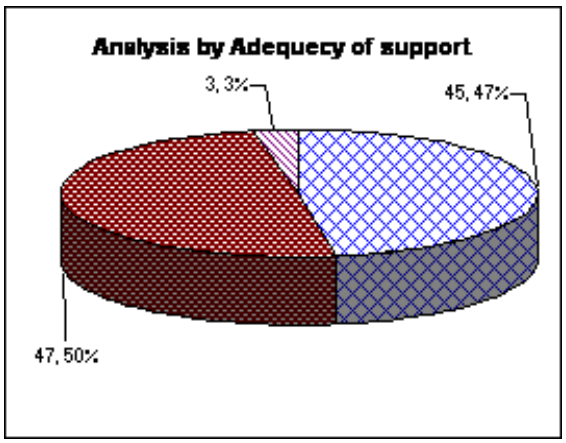



**6. Distribution of fatal roof fall accidents by adequacy of support**

| Adequacy of support | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | **%** |
| Adequate | 12 | 55 | 9 | 56 | 15 | 58 | 4 | 22 | 5 | 38 | 45 | 47 |
| Inadequate | 10 | 45 | 7 | 44 | 11 | 42 | 13 | 72 | 6 | 46 | 47 | 50 |
| Not applicable* | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 2 | 15 | 3 | 3 |
| Total | 22 | 100 | 16 | 100 | 26 | 100 | 18 | 100 | 13 | 100 | 95 | **100** |

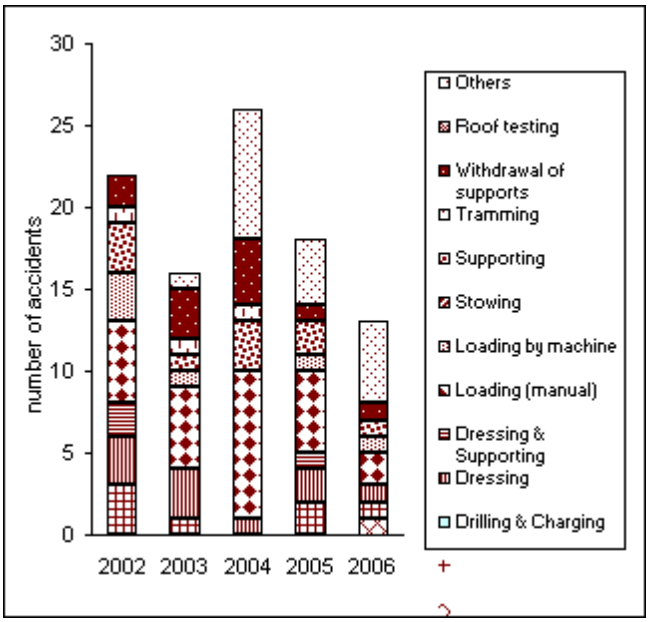
* Provisional

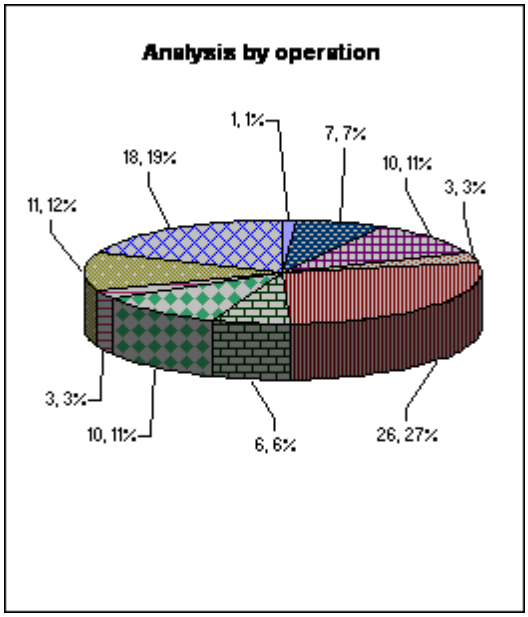


**7. Distribution of fatal roof fall accidents by operation at the time of accident**

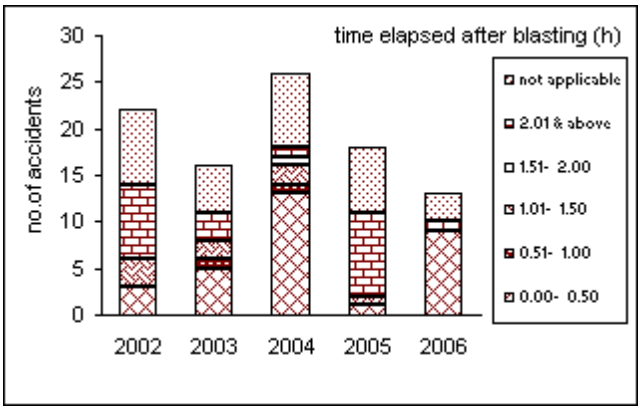
| operation at the time of accident | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| Cutting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | **1** | 1 |
| Charging | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Drilling | 3 | 14 | 1 | 6 | 0 | 0 | 2 | 11 | 1 | 8 | **7** | 7 |
| Drilling & Charging | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Dressing | 3 | 14 | 3 | 19 | 1 | 4 | 2 | 11 | 1 | 8 | **10** | 11 |
| Dressing & Supporting | 2 | 9 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | **3** | 3 |
| Loading (manual) | 5 | 23 | 5 | 31 | 9 | 35 | 5 | 28 | 2 | 15 | **26** | 27 |
| Loading by machine | 3 | 14 | 1 | 6 | 0 | 0 | 1 | 6 | 1 | 8 | **6** | 6 |
| Stowing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Supporting | 3 | 14 | 1 | 6 | 3 | 12 | 2 | 11 | 1 | 8 | **10** | 11 |
| Tramming | 1 | 5 | 1 | 6 | 1 | 4 | 0 | 0 | 0 | 0 | **3** | 3 |
| Withdrawal of supports | 2 | 9 | 3 | 19 | 4 | 15 | 1 | 6 | 1 | 8 | **11** | 12 |
| Roof testing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Others | 0 | 0 | 1 | 6 | 8 | 31 | 4 | 22 | 5 | 38 | **18** | 19 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

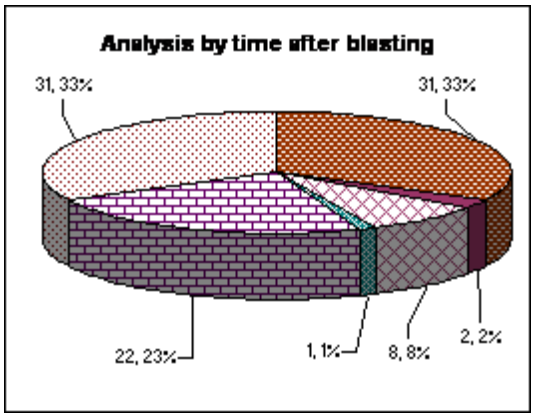


## 8. Distribution of fatal roof fall accidents by time elapsed after blasting

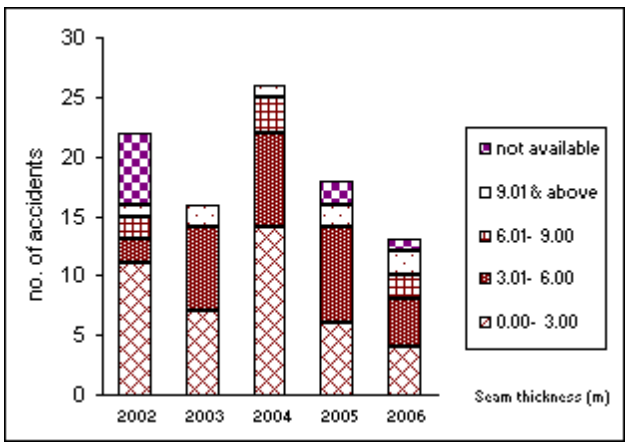
| time elapsed after blasting (hours) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0.00- 0.50 | 3 | 14 | 5 | 31 | 13 | 50 | 1 | 6 | 9 | 69 | **31** | 33 |
| 0.51- 1.00 | 0 | 0 | 1 | 6 | 1 | 4 | 0 | 0 | 0 | 0 | **2** | 2 |
| 1.01- 1.50 | 3 | 14 | 2 | 13 | 2 | 8 | 1 | 6 | 0 | 0 | **8** | 8 |
| 1.51- 2.00 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | **1** | 1 |
| 2.01 & above | 8 | 36 | 3 | 19 | 1 | 4 | 9 | 50 | 1 | 8 | **22** | 23 |
| not applicable | 8 | 36 | 5 | 31 | 8 | 31 | 7 | 39 | 3 | 23 | **31** | 33 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | 100 | **95** | **100** |

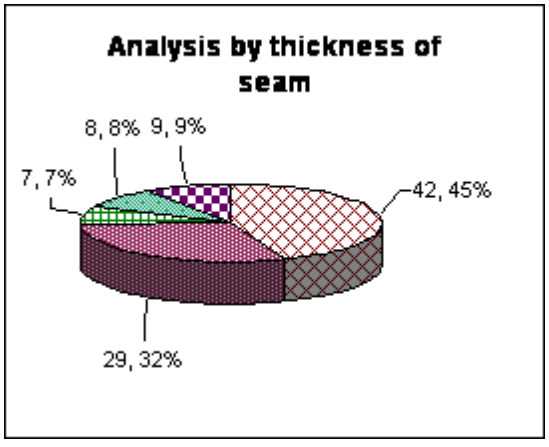



## 9. Distribution of fatal roof fall accidents by thickness of seam

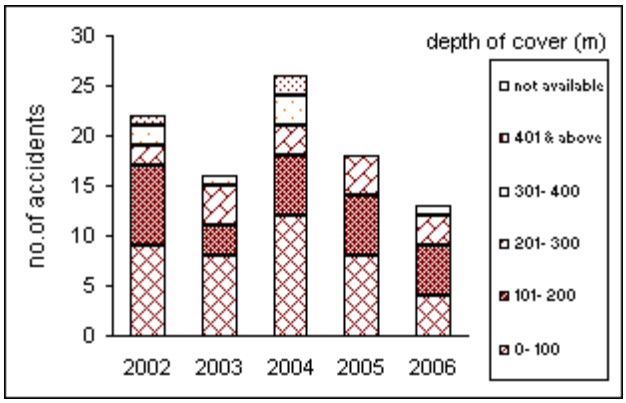
| Seam thickness (metres) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| **0.00- 3.00** | 11 | 50 | 7 | 44 | 14 | 54 | 6 | 33 | 4 | 31 | **42** | 44 |
| **3.01- 6.00** | 2 | 9 | 7 | 44 | 8 | 31 | 8 | 44 | 4 | 31 | **29** | 32 |
| **6.01- 9.00** | 2 | 9 | 0 | 0 | 3 | 12 | 0 | 0 | 2 | 15 | **7** | 7 |
| **9.01 & above** | 1 | 5 | 2 | 13 | 1 | 4 | 2 | 11 | 2 | 15 | **8** | 8 |
| **not available** | 6 | 27 | 0 | 0 | 0 | 0 | 2 | 11 | 1 | 8 | **9** | 9 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

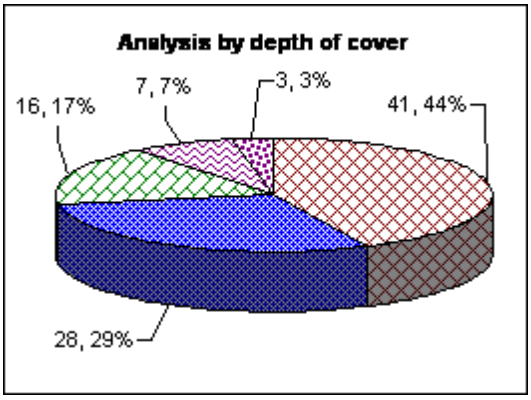


**10. Distribution of fatal roof fall accidents by depth of cover**

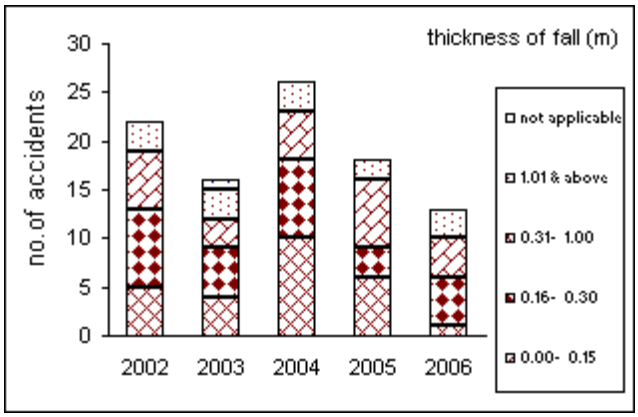
| Depth of cover (metres) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0- 100 | 9 | 41 | 8 | 50 | 12 | 46 | 8 | 44 | 4 | 31 | **41** | 44 |
| 101- 200 | 8 | 36 | 3 | 19 | 6 | 23 | 6 | 33 | 5 | 38 | **28** | 29 |
| 201- 300 | 2 | 9 | 4 | 25 | 3 | 12 | 4 | 22 | 3 | 23 | **16** | 17 |
| 301- 400 | 2 | 9 | 1 | 6 | 3 | 12 | 0 | 0 | 1 | 8 | **7** | 7 |
| 401 & above | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| not available | 1 | 5 | 0 | 0 | 2 | 8 | 0 | 0 | 0 | 0 | **3** | 3 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

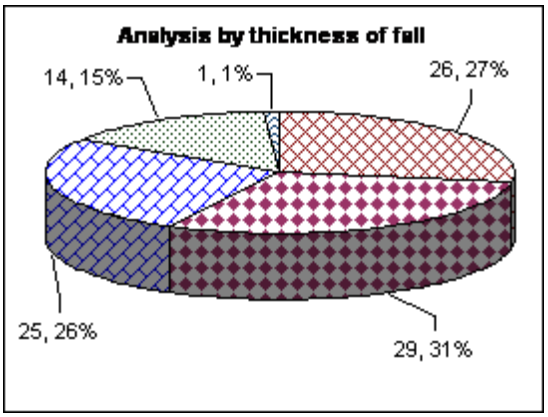



**11. Distribution of fatal roof fall accidents by thickness of fall**

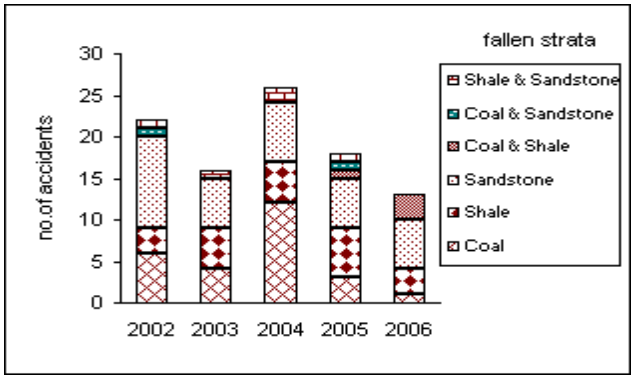
| Thickness of fall (metres) | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0.00- 0.15 | 5 | 23 | 4 | 25 | 10 | 38 | 6 | 33 | 1 | 8 | **26** | 27 |
| 0.16- 0.30 | 8 | 36 | 5 | 31 | 8 | 31 | 3 | 17 | 5 | 38 | **29** | 31 |
| 0.31- 1.00 | 6 | 27 | 3 | 19 | 5 | 19 | 7 | 39 | 4 | 31 | **25** | 26 |
| 1.01 & above | 3 | 14 | 3 | 19 | 3 | 12 | 2 | 11 | 3 | 23 | **14** | 15 |
| not applicable | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

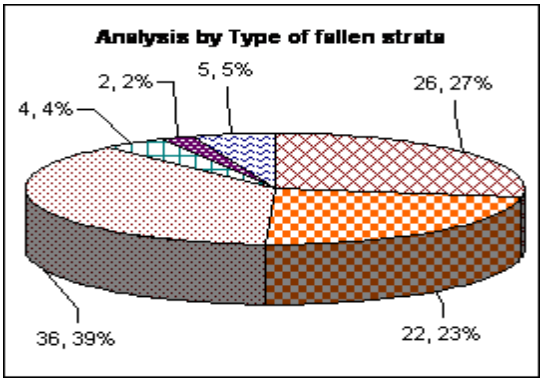


**12. Distribution of fatal roof fall accidents by nature of fallen strata**

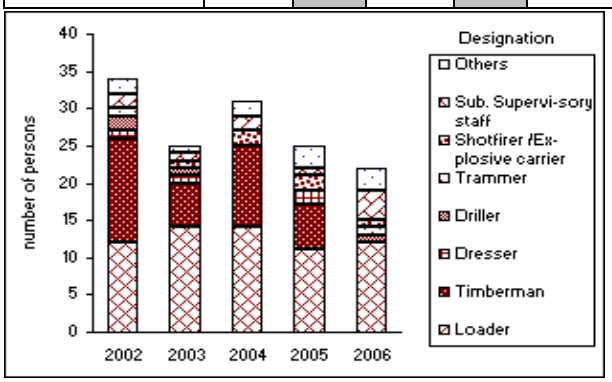
| Nature of fallen strata | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| Coal | 6 | 27 | 4 | 25 | 12 | 46 | 3 | 17 | 1 | 8 | **26** | 27 |
| Shale | 3 | 14 | 5 | 31 | 5 | 19 | 6 | 33 | 3 | 23 | **22** | 23 |
| Sandstone | 11 | 50 | 6 | 38 | 7 | 27 | 6 | 33 | 6 | 46 | **36** | 39 |
| Coal & Shale | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 3 | 23 | **4** | 4 |
| Coal & Sandstone | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | **2** | 2 |
| Shale & Sandstone | 1 | 5 | 1 | 6 | 2 | 8 | 1 | 6 | 0 | 0 | **5** | 5 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | 100 | **95** | **100** |

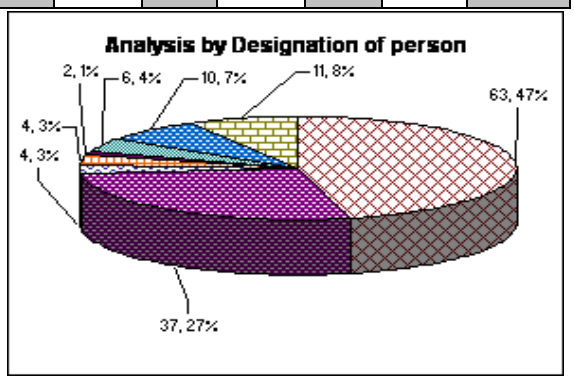



**13. Distribution of persons killed in roof fall accidents by designation**

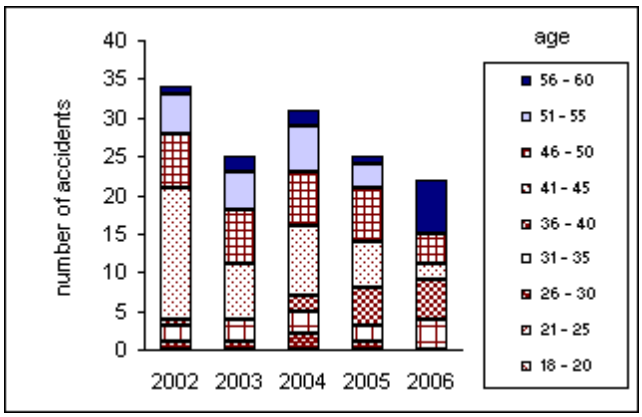
| Category of mine worker | | Number of persons killed | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| Loader | 12 | 35 | 14 | 56 | 14 | 45 | 11 | 44 | 12 | 55 | **63** | 47 |
| Timberman | 14 | 41 | 6 | 24 | 11 | 35 | 6 | 24 | 0 | 0 | **37** | 27 |
| Dresser | 1 | 3 | 1 | 4 | 0 | 0 | 2 | 8 | 0 | 0 | **4** | 3 |
| Driller | 2 | 6 | 1 | 4 | 0 | 0 | 0 | 0 | 1 | 5 | **4** | 3 |
| Trammer | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | **2** | 1 |
| Shotfirer /Ex-plosive carrier | 0 | 0 | 1 | 4 | 2 | 6 | 2 | 8 | 1 | 5 | **6** | 4 |
| Sub. Supervi-sory staff | 2 | 6 | 1 | 4 | 2 | 6 | 1 | 4 | 4 | 18 | **10** | 7 |
| Others | 2 | 6 | 1 | 4 | 2 | 6 | 3 | 12 | 3 | 14 | **11** | 8 |
| **Total** | **34** | **100** | **25** | **100** | **31** | **100** | **25** | **100** | **22** | **100** | **137** | **100** |

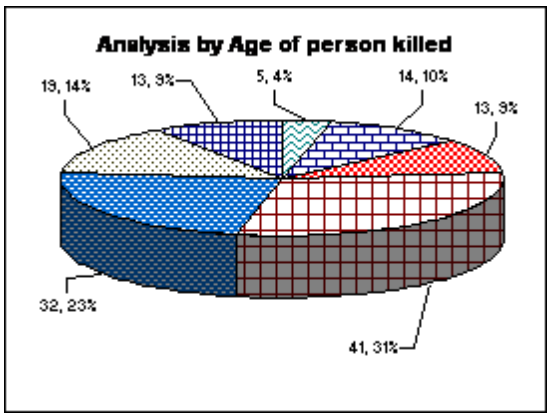


**14. Distribution of persons killed in roof fall accidents by age**

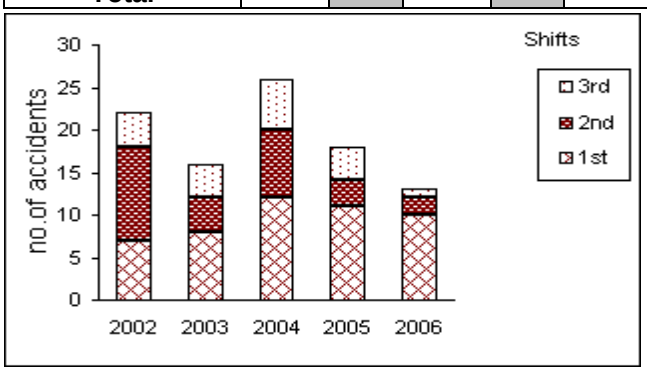
| age | Number of persons killed | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 18 – 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| 21 – 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| 26 – 30 | 1 | 3 | 1 | 4 | 2 | 6 | 1 | 4 | 0 | 0 | **5** | 4 |
| 31 – 35 | 2 | 6 | 3 | 12 | 3 | 10 | 2 | 8 | 4 | 18 | **14** | 10 |
| 36 – 40 | 1 | 3 | 0 | 0 | 2 | 6 | 5 | 20 | 5 | 23 | **13** | 9 |
| 41 – 45 | 17 | 50 | 7 | 28 | 9 | 29 | 6 | 24 | 2 | 9 | **41** | 31 |
| 46 – 50 | 7 | 21 | 7 | 28 | 7 | 23 | 7 | 28 | 4 | 18 | **32** | 23 |
| 51 – 55 | 5 | 15 | 5 | 20 | 6 | 19 | 3 | 12 | 0 | 0 | **19** | 14 |
| 56 – 60 | 1 | 3 | 2 | 8 | 2 | 6 | 1 | 4 | 7 | 32 | **13** | 9 |
| **Total** | **34** | **100** | **25** | **100** | **31** | **100** | **25** | **100** | **22** | **100** | **137** | **100** |

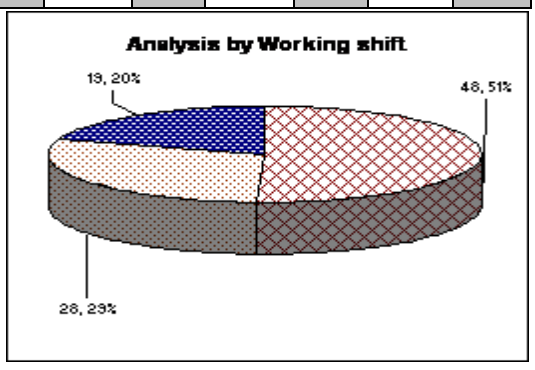



**15. Distribution of fatal roof fall accidents by shift during which accident occurred**

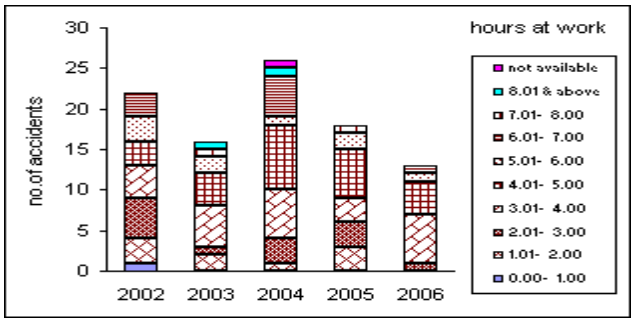
| Shift | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 1st (7/8 AM to 3/4 PM) | 7 | 32 | 8 | 50 | 12 | 46 | 11 | 61 | 10 | 77 | **48** | 41 |
| 2nd 3/4 PM to 11/12 M | 11 | 50 | 4 | 25 | 8 | 31 | 3 | 17 | 2 | 15 | **28** | 29 |
| 3rd 11/12M to 7/8 AM | 4 | 18 | 4 | 25 | 6 | 23 | 4 | 22 | 1 | 8 | **19** | 20 |
| **Total** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

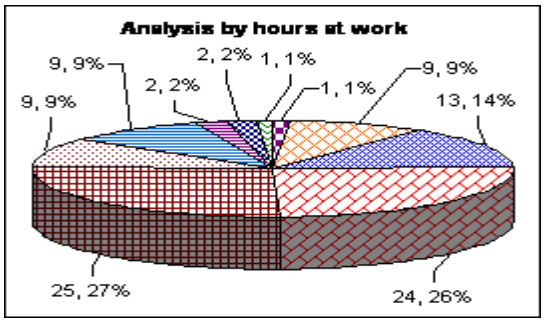


**16. Distribution of fatal roof fall accidents by hours spent at work prior to the accident**

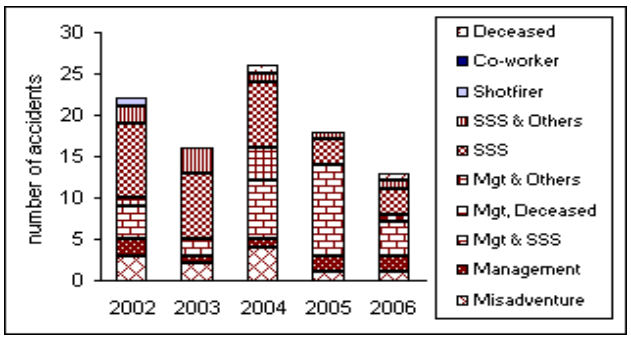
| Hours at Work | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| 0.00- 1.00 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 |
| 1.01- 2.00 | 3 | 14 | 2 | 13 | 1 | 4 | 3 | 17 | 0 | 0 | **9** | 9 |
| 2.01- 3.00 | 5 | 23 | 1 | 6 | 3 | 12 | 3 | 17 | 1 | 8 | **13** | 14 |
| 3.01- 4.00 | 4 | 18 | 5 | 31 | 6 | 23 | 3 | 17 | 6 | 46 | **24** | 26 |
| 4.01- 5.00 | 3 | 14 | 4 | 25 | 8 | 31 | 6 | 33 | 4 | 31 | **25** | 27 |
| 5.01- 6.00 | 3 | 14 | 2 | 13 | 1 | 4 | 2 | 11 | 1 | 8 | **9** | 9 |
| 6.01- 7.00 | 3 | 14 | 0 | 0 | 5 | 19 | 0 | 0 | 1 | 8 | **9** | 9 |
| 7.01- 8.00 | 0 | 0 | 1 | 6 | 0 | 0 | 1 | 6 | 0 | 0 | **2** | 2 |
| 8.01 & above | 0 | 0 | 1 | 6 | 1 | 4 | 0 | 0 | 0 | 0 | **2** | 2 |
| not available | 0 | 0 | **0** | 0 | 1 | 4 | 0 | 0 | 0 | 0 | **1** | 1 |
| Total | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

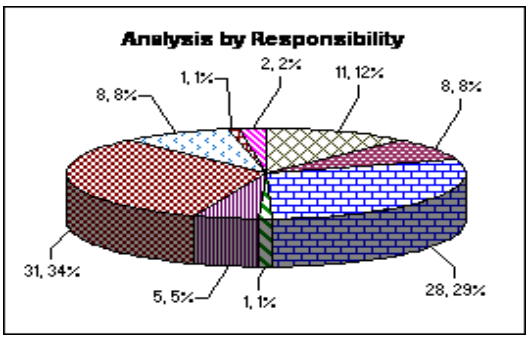



**17. Distribution of fatal roof fall accidents by responsibility**

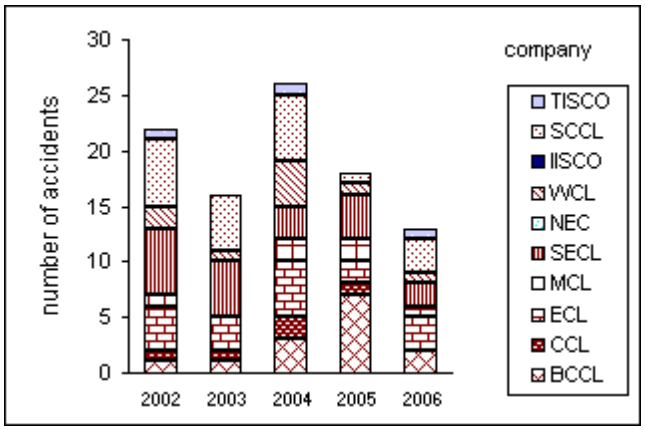
| Responsibility | Number of persons | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| Misadventure | 3 | 14 | 2 | 13 | 4 | 15 | 1 | 6 | 1 | 8 | **11** | 12 |
| Management | 2 | 9 | 1 | 6 | 1 | 4 | 2 | 11 | 2 | 15 | **8** | 8 |
| Mgt & SSS | 4 | 18 | 2 | 13 | 7 | 27 | 11 | 61 | 4 | 31 | **28** | 29 |
| Mgt, Deceased | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | **1** | 1 |
| Mgt & Others | 1 | 5 | 0 | 0 | 4 | 15 | 0 | 0 | 0 | 0 | **5** | 5 |
| SSS | 9 | 41 | 8 | 50 | 8 | 31 | 3 | 17 | 3 | 23 | **31** | 34 |
| SSS & Others | 2 | 9 | 3 | 19 | 1 | 4 | 1 | 6 | 1 | 8 | **8** | 8 |
| Shotfirer | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 |
| Co-worker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| Deceased | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 8 | **2** | 2 |
| Total | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **100** |

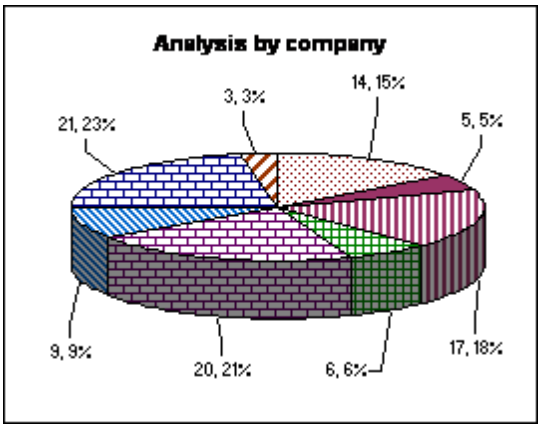


**18. Distribution of fatal roof fall accidents by company**

| Company | Number of accidents | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | % | 2003 | % | 2004 | % | 2005 | % | 2006 | % | total | % |
| BCCL | 1 | 5 | 1 | 6 | 3 | 12 | 7 | 39 | 2 | 15 | **14** | 15 |
| CCL | 1 | 5 | 1 | 6 | 2 | 8 | 1 | 6 | 0 | 0 | **5** | 5 |
| ECL | 4 | 18 | 3 | 19 | 5 | 19 | 2 | 11 | 3 | 23 | **17** | 18 |
| MCL | 1 | 5 | 0 | 0 | 2 | 8 | 2 | 11 | 1 | 8 | **6** | 6 |
| SECL | 6 | 27 | 5 | 31 | 3 | 12 | 4 | 22 | 2 | 15 | **20** | 21 |
| NEC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| WCL | 2 | 9 | 1 | 6 | 4 | 15 | 1 | 6 | 1 | 8 | **9** | 9 |
| **CIL: total** | **15** | **68** | **11** | **69** | **19** | **73** | **17** | **94** | **9** | **69** | **71** | 75 |
| IISCO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** | 0 |
| SCCL | 6 | 27 | 5 | 31 | 6 | 23 | 1 | 6 | 3 | 23 | **21** | 23 |
| TISCO | 1 | 5 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 8 | **3** | 3 |
| **All-India** | **22** | **100** | **16** | **100** | **26** | **100** | **18** | **100** | **13** | **100** | **95** | **101** |



**2.2.3B.3 Side fall and over hangs**

There were 4 (5.06%) fatal accidents involving as many casualties due to fall of sides and overhangs out of which three accidents took place in belowground workings and one in an opencast workings. Out of three belowground accidents, in two cases side fall occurred in the development area while in the other cases fall of over hang took place took place in developed area.

In an opencast working a dozer operator was crushed to death in a case of side fall.

All the above accidents in belowground mines could have been avoided had the sides and overhangs been properly dressed, supported and secured before engaging the persons and had the supervisors been careful on their jobs.

- Accident due to fall of sides and overhang accounted for 5.06% of all fatal accidents in coal mines and 9.09% of all accidents in belowground workings.

**2.2.3B.3 Air blast**

There was no accident due to this cause during the year 2006.

**2.2.3C Transportation machinery (Winding)**

There were only 3 fatal accidents involving three fatalities at winding installation during the year 2006 while ascending by cage in 2 cases person fell down to pit bottom and in one case on-setter was found pressed by the cage.

**2.2.3D Transportation machinery (Other than winding)**

There were 24 fatal accidents (30.38% of total accidents) due to transportation machinery other than winding reported during the year 2006. A detailed break–up of fatalities under this category are given in the table below:-

| **TABLE - 23** | **FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY OTHER THAN WINDING IN SHAFTS IN COAL MINES DURING 2006** | |
|---|---|---|
| **Cause** | **No. of fatal accidents** | **Persons killed** |
| 1. Rope Haulage | 8 | 8 |
| 2. Mechanical Conveyors | 4 | 4 |
| 3. Dumpers | 10 | 11 |
| 4. Truck & Tankers | 1 | 1 |
| 5. Others | - | - |
| **Total** | **24** | **25** |

It was seen that dumpers, rope haulages and belt conveyors were major contributing causes under fatalities due to transportation machinery other than winding.

### 2.2.3D.1 Rope Haulages

There were 8 fatalities (5.80% of all fatalities) caused due to rope haulages during the year 2006. Analysis of causes revealed that:-

- One accident caused due to snapping of haulage rope and while escaping and hited on a machine.
- Four accidents occurred due to hit by moving tubs.
- One accident occurred as while traveling sliped and hited by running tub
- One accident occurred due to derailment of tubs & hited by a tub
- One person was dragged by moving set of tubs and died.

### 2.2.3D.2 Mechanical / Belt Conveyors:

Five accidents resulting in five fatalities were caused by belt conveyors during 2006.

- All the five accidents causing death of five persons occurred due to entangle with moving tail end drum.

### 2.2.3D.3 Dumpers and tippers:

There were 10 fatalities (7.25% of all fatalities) caused due to dumpers during the year 2006. The analysis of above accident revealed that:

- 5 accidents occurred killing 5 persons due to collision of dumpers.
- 4 accidents occurred due to runover by speeding dumper killing four persons.
- 2 fatalities occurred while a dumper hit 2 persons.

### 2.2.3D4 Truck & Tankers:

One accident occurred causing one fatality due to truck and tankers contributing 1.27% of total accident.

- One fatality due to collision of truck and motor cycle.

### 2.2.3E Machinery other than transportation machinery:

There were 9 accidents reported during the year 2006, which were caused due to machinery other than transportation machinery. The analysis of the causes revealed that:-

| **Table – 24** | **FATAL ACCIDENTS IN COAL MINES DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY DURING 2006** | | |
|---|---|---|---|
| **S.No.** | **Cause** | **Number of accidents** | **Persons killed** |
| 1. | Drilling m/c | 1 | 1 |
| 2. | Loading m/c SDL | 1 | 1 |
| 3. | Haulage engine | 1 | 1 |
| 4. | Shovels/Draglines | 1 | 1 |
| 5. | Crushing & Screening Plant | 2 | 2 |
| 6. | Other HEMM | 2 | 2 |
| 7. | Other non-transportation machinery | 1 | 1 |
| | **Total :** | **9** | **9** |

Further analysis of the causes revealed that:-

- One accident occurred as cable man was crushed underneath the crawler chain of a drilling machine.
- One accident occurred while inflating tyre of a loader, the tyre lock ring slipped & hit the person who died.
- One accident occurred killing haulage operator who got entangled between rotating drum and rope.
- One General Mazdoor got entangled with unguarded rotating coupling of a EKG Shovel during trial run and died.
- One accident occurred killing one person while mechanical fitter was pressed between filler arm and vertical post of hopper structure.
- One contractor worker present near crusher roller of feeder braker in Coal handling plant got entangled with crusher roller.
- One person was run over by a dozer.
- A mobile crane hit and run over a person.

### 2.2.3F Explosives

There was 1 (1.27% of the total) fatal accidents involving one person however, there was no serious accident due to explosives during the year 2006.

### 2.2.3G Electricity

There were 3 (3.80% of the total) fatal accidents and 5 (0.63% of the total) serious accidents due to electricity during the year 2006.

### 2.2.3H Accidents due to Dust, Gas & Fire.

During the year 2006, there was 4 (5.06 of the total) fatal accident involving 53 (38.4%) fatalities which includes a disaster due to explosion killing 50 persons.

### 2.2.3I Falls other than falls of ground

Falls other than fall of ground caused 11 (13.92% of the total) fatal accidents involving same number of lives (8% of total fatalities).

### 2.2.3J Other causes

Six cases of fatal accident were reported due to miscellaneous causes during the year 2006.

### 2.2.4 Responsibility

Analysis of accidents as per the persons held responsible for the various causes of accidents during the year 2006 has been indicated in table:25.

| TABLE:25 | RESPONSIBILITY FOR FATAL ACCIDENTS IN COAL MINES DURING THE YEAR 2006 | |
|---|---|---|
| SL. NO. | Responsibility | No. of accidents |
| 1. | Misadventure | 7 |
| 2. | Management | 7 |
| 3. | Management & Subordinate Supervisory Staff (SSS) | 11 |
| 4. | Management, SSS, co-worker | 6 |
| 5. | Management, SSS & deceased | 1 |
| 6. | Management, SSS, co-worker & deceased | 1 |
| 7. | Management & co-worker | 4 |
| 8. | Management, co-worker & deceased | 0 |
| 9. | Management & deceased | 4 |
| 10. | Subordinate Supervisory Staff (SSS) | 6 |
| 11. | SSS & co-worker | 3 |
| 12. | SSS & deceased | 2 |
| 13. | Shotfirer | 3 |
| 14. | Co-worker | 0 |
| 15. | Co-worker & deceased | 8 |
| 16. | Deceased | 3 |
| 17. | Others | 10 |
| | **TOTAL** | 3 |
| | | **79** |

It can be seen that in 11(14%) cases management along with other subordinate staff were responsible. In 6 (7.6%) of the cases subordinate supervisory staff alone were found responsible. In 8(10.13%) cases coworker along with deceased and in 10(12.66%) cases the deceased alone were responsible. These revelations draw the attention towards better planning and implementation of safety status by the management, strict and disciplined supervision by the subordinate supervisory staff and knowledge based effective training for the workers.

## 2.3 Dangerous occurrences

During the year 2006, 29 (twenty-nine) dangerous occurrences were reported under the Coal Mines Regulations, 1957. Details of dangerous occurrences are given in table: 26.

| TABLE:26 | DANGEROUS OCCURRENCES IN COAL MINES DURING 2006 | |
|---|---|---|
| **Sl.No.** | **Cause** | **No. of cases** |
| 1. | Spontaneous heating belowground | 11 |
| 2. | Spontaneous heating in opencast working | 0 |
| 3. | Spontaneous heating at surface | 01 |
| 4. | Outbreak of fire underground from spontaneous heating | 0 |
| 5. | Outbreak of fire underground from causes other than spontaneous heating | 2 |
| 6. | Outbreak of fire in quarries from causes other than spontaneous heating | 0 |
| 7. | Outbreak of fire in surface from causes other than spontaneous heating | 0 |
| 8. | Premature collapse of workings or failure of pillars/ benches/major roof fall | 01 |
| 9. | Influx of noxious gases | 01 |
| 10. | Ignition or occurrence of inflammable gas | 01 |
| 11. | Over winding of cages etc. | 0 |
| 12. | Breakage of winding rope | 02 |
| 13. | Breakdown of winding engine, crank shaft, bearing etc. | 02 |
| 14. | Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered | 01 |
| 15. | Irruption of water | 02 |
| 16. | Subsidence/potholing | 0 |
| 17. | Explosives | 01 |
| 18. | Breakage, fracture etc. of essential parts of machinery or apparatus whereby safety of persons was endangered | 01 |
| 19. | Transportation machinery, wheeled trackless | 01 |
| 20. | Fall of machinery from heights in opencast workings | 01 |
| 21. | Others | 01 |
| | **TOTAL** | **29** |

### A. Spontaneous Heating

- 12 cases of spontaneous heating were reported, 13 in belowground workings and one on surface. Of the belowground heating three were in caved and sealed off goaf, four cases were of spontaneous heating in fallen coal, two were in stowing panels, one was in caving panel just before sealing and one was due to sluggish ventilation in old workings.

**Contributory factors for spontaneous heating:**

The prime contributory factors which lead to spontaneous heating and thereby fires:

- Not workings the mines in panel system.
- Not sectionalizing the old workings.
- Not cleaning the old galleries and return airways off fallen coal and not treating thoroughly with stone dust.

- Sluggish ventilation in old workings and depillaring areas.
- Poor and improper stowing. In some cases it was even observed that stowing borehole was located directly in the panel, thereby the workings outbye of it cannot be stowed effectively and safely.
- Working the depillaring panel beyond the incubation period.
- Not filling up the surface cracks formed due to subsidence and causing leakage of air into the sealed off areas.
- Not making and maintaining the isolation stoppings as prescribed.
- Non provision of latest carbon monoxide gas detecting devises.
- Most of the laboratories were not provided with Graham Lawrence apparatus to analyze carbon monoxide gas in the earlier stages.

The prime contributory factors which lead to fires in opencast equipment were:

- Not maintaining the electrical circuits of HEMM in proper working order.
- Not providing and maintaining the automatic fire fighting systems in HEMM, specially in dumpers.
- Not framing and implementing code of practice to prevent fires in opencast mines.
- Not maintaining the general fire fighting systems or improper training in fire fighting systems.

**B. Other fires:**

- There was one case of a fire which broke out in an opencast drill (HEMM) due to electrical short circuiting.

  Proper code of practice for prevention of fires in HEMM should be framed and enforced.

**C. Premature collapse of workings or failure of pillars/benches**

There were two cases of premature collapse of overburden benches.

- In one case failure of bench occurred due to rains along an already existing weak plane. In another case the coal rib left against slice had failed.

**D. Influx of noxious gases**

There was one case where carbon monoxide gas made influx into working area. Again, this was due to spontaneous heating.

**E. Ignition or occurrence of inflammable gas**

There was one case of ignition or occurrence of inflammable gas.

**F. Irruption of water**

There was no case of irruption of water.

**H. Subsidence/Potholing**

There were two cases of potholing due to low cover and in both cases water also gushed in thereafter.

**I. Explosives**

One case was due to blasting in opencast workings where a drill was buried and damaged. Machinery should be shifted to safe distances before blasting.

**J. Other causes in opencast workings.**

- One case was due to head on collision of two tippers in opencast workings.
- In one case boom of electric operated EKG shovel failed.

**K. Other causes in belowground workings.**

- Two cases of over winding of cages.
- One case of breakdown of winding engine, crank shaft, bearing etc.
- One case of failure of pillars.

Proper code of practices for different operations including maintenance should be framed and followed.

## 2.4 Technical Developments

❖ During the year 2006, 14.93% of the total production came from underground workings and 85.07% of the total production came from opencast mines. As far as average daily employment was concerned 51% were employed belowground, 17.75% were employed in opencast workings and the remaining 31.25% were employed for other surface operations.

❖ In opencast workings during 2006, there is increase in use of HEMM in comparison to 2005. Table 27 presents the trend in use of HEMM in opencast coalmines.

❖ During the 2006, 1039 Excavators, 4560 dumpers capacity varying from 35T to 120T, 925 drills of 50 mm to 250 mm, 60 draglines and 30 surface miners were used in opencast mines. As a result of improved mechanization 27 road headers, 927 SDLs, 281 LHDs, 3 continuous miners and 2 coal hauler were used in belowground coal mines.

| TABLE:27 | TREND IN USE OF HEAVY EARTH MOVING MACHINERY IN OPENCAST COAL MINES | | | | | |
|---|---|---|---|---|---|---|
| Year | Shovels | Draglines | Drills | Dumpers | Others | HP of the machinery |
| 1990 | 787 | 41 | 703 | 3663 | 1885 | 2,711,279 |
| 1991 | 864 | 41 | 703 | 3846 | 1746 | 2,972,990 |
| 1992 | 892 | 47 | 829 | 4223 | 2112 | 3,227,528 |
| 1993 | 910 | 44 | 802 | 4385 | 1952 | 3,409,140 |
| 1994 | 946 | 43 | 822 | 4437 | 1946 | 3,448,234 |
| 1995 | 956 | 42 | 871 | 4291 | 2116 | 3,639,816 |
| 1996 | 961 | 59 | 864 | 4038 | 1856 | 3,436,437 |
| 1997 | 1017 | 42 | 913 | 4399 | 2177 | 3,703,276 |
| 1998 | 1106 | 41 | 918 | 4520 | 2279 | 3,826,094 |
| 1999 | 1216 | 49 | 962 | 4776 | 2372 | 4,058,489 |
| 2000 | 1143 | 43 | 969 | 4602 | 2333 | 3,938,986 |
| 2001 | 1172 | 42 | 977 | 4666 | 2304 | 3,965,541 |
| 2002 | 1159 | 41 | 972 | 4721 | 2136 | 3,864,244 |
| 2003 | 1136 | 39 | 1003 | 4576 | 2163 | 4,095,742 |
| 2004 | 1135 | 45 | 978 | 4516 | 2367 | 3,995,550 |
| 2005 | 1073 | 34 | 922 | 4553 | 2085 | 4,035,171 |
| 2006* | 1070 | 36 | 925 | 4560 | 2150 | 4,040,000 |

* Provisional

**(a) Number of machines used in underground coal mines of different coal companies are as follows:**

| Table-28 | Number of machines used in underground coal mines during 2006 | | | | | |
|---|---|---|---|---|---|---|
| **Name of Company** | **Road header/ Dint header** | **SDL** | **LHD** | **Continuous Miners** | **Coal haulers** | **Other** |
| BCCL | 9 | 124 | 7 | 0 | 0 | 0 |
| ECL | 3 | 111 | 26 | 0 | 0 | 2 |
| CCL | 0 | 20 | 13 | 0 | 0 | 0 |
| SECL | 3 | 382 | 52 | 1 | 0 | 0 |
| WCL | 0 | 142 | 109 | 1 | 2 | 1 |
| NCL | 0 | 0 | 0 | 0 | 0 | 0 |
| MCL | 0 | 19 | 38 | 0 | 0 | 0 |
| NECL | 0 | 0 | 0 | 0 | 0 | 0 |
| GMDC | 0 | 0 | 0 | 0 | 0 | 0 |
| NLC | 0 | 0 | 0 | 0 | 0 | 0 |
| TATA | 1 | 29 | 0 | 0 | 0 | 0 |
| SCCL | 11 | 100 | 36 | 1 | 0 | 0 |
| GIPCL | 0 | 0 | 0 | 0 | 0 | 0 |
| JSMDC | 0 | 0 | 0 | 0 | 0 | 0 |
| RSMM | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **27** | **927** | **281** | **3** | **2** | **3** |

**(b) Number of machines used in opencast coal mines of different coal companies are as follows:**

| TABLE-29 | Number of machines used in opencast mines during 2006 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name of co. | | | | | Dumpers | | | | | Excavators | | | | Drills | | |
| | Bucket wheel Excavator | Dragline | Surface Miners | Others | 170 T | 120 T | 85 T | 50 T | 35 T | >20 cu m | 19-10 cu m | 9-5 cu m | < 5 cu m | > 250 mm | 249-150 mm | < 150 mm |
| BCCL | 0 | 2 | 0 | 0 | 0 | 0 | 54 | 2 | 539 | 0 | 8 | 66 | 82 | 0 | 97 | 45 |
| ECL | 0 | 1 | 0 | 0 | 15 | 26 | 35 | 19 | 171 | 5 | 12 | 18 | 46 | 15 | 35 | 15 |
| CCL | 0 | 0 | 5 | 0 | 0 | 0 | 125 | 73 | 391 | 1 | 14 | 46 | 49 | 50 | 73 | 18 |
| SECL | 0 | 9 | 2 | 0 | 0 | 83 | 29 | 81 | 174 | 0 | 20 | 28 | 28 | 52 | 67 | 5 |
| WCL | 0 | 4 | 0 | 170 | 0 | 0 | 0 | 207 | 493 | 0 | 0 | 40 | 119 | 21 | 91 | 0 |
| NCL | 0 | 19 | 0 | 372 | 24 | 153 | 367 | 0 | 0 | 3 | 69 | 9 | 30 | 97 | 35 | 3 |
| MCL | 0 | 6 | 21 | 254 | 0 | 0 | 33 | 282 | 13 | 0 | 4 | 23 | 50 | 31 | 49 | 8 |
| NECL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 173 | 0 | 0 | 0 | 22 | 0 | 0 | 12 |
| GMDC | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 88 | 0 | 0 | 3 | 66 | 0 | 0 | 1 |
| NLC | 22 | 0 | 0 | 539 | 0 | 0 | 0 | 3 | 17 | 0 | 0 | 2 | 68 | 10 | 13 | 14 |
| TATA | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 47 | 0 | 0 | 5 | 12 | 0 | 0 | 19 | 0 |
| SCCL | 0 | 2 | 1 | 0 | 0 | 0 | 143 | 0 | 217 | 0 | 22 | 0 | 48 | 22 | 24 | 0 |
| GIPCL | 1 | 17 | 1 | 7 | 0 | 0 | 0 | 26 | 74 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| JSMDC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 5 | 0 | 0 | 2 |
| RSMM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 58 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| **TOTAL** | **25** | **60** | **30** | **1342** | **39** | **262** | **827** | **750** | **2427** | **9** | **154** | **249** | **627** | **298** | **503** | **123** |

## 2.5 Occupational Health

**Medical Examination by Appellate Medical Board**

Initial and periodical medical examination under Rule 29B of the Mines Rules, 1955 are conducted by management and medical re-examination by Appellate Medical Board constituted by Central Government under Rule 29K.

**(a) Progress of Medical Examination in Coal Mines:**

| **TABLE: 30** | **PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2006 IN COAL MINES** | | | |
|---|---|---|---|---|
| Name of Company | Initial Medical Examination | | Periodical Medical Exam. | |
| | Required | Provided | Required | Provided |
| BCCL | 1421 | 1421 | 15611 | 20219 |
| MCL | 482 | 482 | 3755 | 4206 |
| WCL | 471 | 471 | 13761 | 13855 |
| CCL | 39 | 39 | 8783 | 7803 |
| NECL | - | - | 524 | 524 |
| ECL | 1824 | 1824 | 21434 | 19944 |
| SECL | 663 | 663 | 17210 | 17207 |
| NCL | 65 | 65 | 3246 | 3084 |
| SCCL | - | - | 12168 | 13475 |
| TATA | 30 | 65 | 1217 | 1178 |
| GIPCL | 168 | 168 | - | - |
| NLC | 135 | 135 | 1492 | 669 |
| GMDC | 367 | 360 | 300 | 246 |
| JSMDC | 5 | 5 | 20 | 25 |
| RSMM | 15 | 15 | 13 | - |

**(b) Cases of Notified Diseases in Coal Mines:**

| **TABLE: 31** | **CASES OF NOTIFIED DISEASES IN COAL MINES DURING THE YEAR 2006** | |
|---|---|---|
| Mining Companies | Name of Disease | Number of cases |
| Nil | Nil | Nil |

## 2.6 Vocational Training

Recognizing the need for safety education to enable the mineworkers to prepare them to face the challenges of mining, the Mines Vocational Training Rules were framed in 1966. These rules provide the provision for construction of mine vocational training centers, initial, refresher and special training to mine workers, appointment of training officers, instructors, proper training aids and equipments. It also provides for payment to trainees during the training period. Progress of vocational training in coalmines during the year 2006 was reported to be as follows.

**TABLE: 32** **PROGRESS OF VOCATIONAL TRAINING IN COAL MINES DURING THE YEAR 2006**

| Name of the Company. | No. of VT Centers | Basic Training | | Refresher Training | | Special Training Provided |
|---|---|---|---|---|---|---|
| | | Required | Provided | Required | Provided | |
| BCCL | 13 | - | 468 | 10230 | 8308 | 2043 |
| MCL | 5 | 482 | 482 | 2689 | 2674 | 1256 |
| WCL | 11 | 428 | 428 | 8661 | 8578 | 1315 |
| CCL | 14 | 227 | 227 | 6720 | 5115 | 622 |
| NECL | 3 | - | 194 | 568 | 692 | 362 |
| ECL | 21 | 1685 | 1685 | 15821 | 1147 | 4515 |
| SECL | 26 | 530 | 530 | 8450 | 9372 | 2034 |
| NCL | 8 | 65 | 65 | 2210 | 2194 | 2769 |
| TATA | 2 | 75 | 1458 | 1912 | 2699 | 2237 |
| GIPCL | 1 | 85 | 85 | 10 | 10 | 0 |
| NLC | 1 | 4924 | 6453 | 1256 | 1243 | 1000 |
| SCCL | 8 | 939 | 939 | 14560 | 14560 | 4921 |
| GMDC | 2 | 645 | 1030 | 240 | 183 | 30 |
| JSMDC | 1 | 5 | 5 | 20 | 25 | 5 |
| RSMM | 1 | 113 | 113 | 12 | 12 | 10 |

## 2.7 Workmen's Inspector, Safety Committee & Welfare Officers

Much greater strides in safety can be achieved by participation of workmen in safety programme, the twin institutions of 'Safety Committee & 'Workmen's Inspector' have been conceived and given the statutory backing. DGMS is also associated with training of Workmen's Inspectors to make them effective in discharge of their duties. In coal mines almost all the eligible mines had Workmen's Inspector and Safety Committee. The table below shows the status of appointment of Welfare Officer, Workmen's Inspector and formation of Safety Committees during the year 2006.

| **TABLE: 33** | **NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN COAL MINES DURING 2006** | | | | | |
|---|---|---|---|---|---|---|
| Name of Company | Welfare Officers | | Workmen Inspectors | | Safety Committee | |
| | Required | Provided | Required | Provided | Required | Provided |
| BCCL | 217 | 217 | 71 | 71 | 73 | 73 |
| MCL | 20 | 22 | 60 | 65 | 20 | 20 |
| WCL | 81 | 81 | 230 | 230 | 81 | 81 |
| CCL | 61 | 61 | 183 | 183 | 61 | 61 |
| NECL | 5 | 4 | 15 | 15 | 5 | 5 |
| ECL | 107 | 90 | 315 | 315 | 105 | 105 |
| SECL | 91 | 91 | 273 | 273 | 86 | 86 |
| NCL | 8 | 8 | 29 | 29 | 8 | 8 |
| TATA | 5 | 6 | 42 | 55 | 8 | 9 |
| GIPCL | 4 | 4 | 1 | 1 | 1 | 1 |
| NLC | 4 | 4 | 20 | 23 | 7 | 7 |
| SCCL | 55 | 55 | 165 | 165 | 62 | 62 |
| GMDC | 2 | 3 | 9 | 10 | 4 | 4 |
| JSMDC | - | - | 2 | 2 | 1 | 1 |
| RSMM | - | - | - | 2 | 1 | 1 |

## 2.8 Owner-wise consolidated fatal accident statistics for last 8(Eight) years in coal mines

| Owner | Year | Fatal Accidents | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | Killed | Acc | Killed | Acc | Killed | Acc | Killed | | | | |
| BCCL | 1999 | 20 | 22 | 3 | 3 | 3 | 3 | 26 | 28 | 0.52 | 0.27 | 0.11 | 0.35 |
| | 2000 | 12 | 16 | 2 | 2 | 1 | 1 | 15 | 19 | 0.41 | 0.18 | 0.04 | 0.25 |
| | 2001 | 9 | 37 | 3 | 3 | 2 | 2 | 14 | 42 | 0.99 | 0.28 | 0.09 | 0.60 |
| | 2002 | 4 | 5 | 3 | 3 | 3 | 3 | 10 | 11 | 0.14 | 0.25 | 0.14 | 0.16 |
| | 2003 | 7 | 8 | 2 | 2 | 3 | 3 | 12 | 13 | 0.24 | 0.20 | 0.15 | 0.21 |
| | 2004 | 7 | 8 | 3 | 3 | 1 | 1 | 11 | 12 | 0.25 | 0.31 | 0.05 | 0.20 |
| | 2005 | 10 | 15 | 1 | 1 | 4 | 4 | 15 | 20 | 0.50 | 0.10 | 0.23 | 0.35 |
| | 2006 | 7 | 56 | 5 | 5 | 0 | 0 | 12 | 61 | 1.85 | 0.52 | 0.00 | 1.07 |
| CCL | 1999 | 2 | 2 | 3 | 3 | 1 | 1 | 6 | 6 | 0.11 | 0.18 | 0.05 | 0.11 |
| | 2000 | 1 | 2 | 8 | 11 | 3 | 3 | 12 | 16 | 0.12 | 0.7 | 0.17 | 0.32 |
| | 2001 | 2 | 2 | 3 | 3 | 0 | 0 | 5 | 5 | 0.13 | 0.19 | 0.00 | 0.1 |
| | 2002 | 3 | 3 | 7 | 7 | 1 | 1 | 11 | 11 | 0.21 | 0.5 | 0.06 | 0.24 |
| | 2003 | 3 | 3 | 2 | 2 | 1 | 1 | 6 | 6 | 0.21 | 0.14 | 0.06 | 0.14 |
| | 2004 | 5 | 5 | 5 | 5 | 0 | 0 | 10 | 10 | 0.37 | 0.41 | 0.00 | 0.24 |
| | 2005 | 3 | 16 | 4 | 5 | 0 | 0 | 7 | 21 | 1.21 | 0.43 | 0.00 | 0.52 |
| | 2006 | 2 | 2 | 1 | 1 | 2 | 2 | 5 | 5 | 0.15 | 0.09 | 0.13 | 0.12 |
| ECL | 1999 | 13 | 17 | 3 | 3 | 5 | 5 | 21 | 25 | 0.29 | 0.56 | 0.15 | 0.25 |
| | 2000 | 10 | 11 | 2 | 2 | 3 | 3 | 15 | 16 | 0.2 | 0.39 | 0.09 | 0.17 |
| | 2001 | 16 | 17 | 2 | 2 | 0 | 0 | 18 | 19 | 0.32 | 0.39 | 0.00 | 0.21 |
| | 2002 | 5 | 5 | 3 | 3 | 1 | 4 | 9 | 12 | 0.1 | 0.74 | 0.14 | 0.14 |
| | 2003 | 10 | 10 | 3 | 3 | 0 | 0 | 13 | 13 | 0.21 | 0.66 | 0.00 | 0.16 |
| | 2004 | 10 | 11 | 5 | 5 | 1 | 1 | 16 | 17 | 0.24 | 1.09 | 0.04 | 0.22 |
| | 2005 | 9 | 10 | 3 | 3 | 4 | 4 | 16 | 17 | 0.22 | 0.62 | 0.15 | 0.22 |
| | 2006 | 7 | 12 | 1 | 1 | 0 | 0 | 8 | 13 | 0.27 | 0.21 | 0.00 | 0.17 |
| MCL | 1999 | 1 | 1 | 3 | 3 | 3 | 3 | 7 | 7 | 0.18 | 0.56 | 0.43 | 0.39 |
| | 2000 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.19 | 0.14 | 0.11 |
| | 2001 | 1 | 1 | 2 | 2 | 1 | 1 | 4 | 4 | 0.2 | 0.44 | 0.16 | 0.25 |
| | 2002 | 1 | 1 | 2 | 2 | 0 | 0 | 3 | 3 | 0.21 | 0.41 | 0.00 | 0.18 |
| | 2003 | 0 | 0 | 6 | 6 | 1 | 1 | 7 | 7 | 0.00 | 0.92 | 0.13 | 0.38 |
| | 2004 | 2 | 2 | 2 | 2 | 0 | 0 | 4 | 4 | 0.39 | 0.39 | 0.00 | 0.23 |
| | 2005 | 3 | 3 | 4 | 4 | 3 | 3 | 10 | 10 | 0.67 | 0.60 | 0.50 | 0.58 |
| | 2006 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 0.22 | 0.15 | 0.00 | 0.12 |
| NCL | 1999 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 0.00 | 0.43 | 0.00 | 0.23 |
| | 2000 | 0 | 0 | 5 | 5 | 1 | 1 | 6 | 6 | 0.00 | 0.74 | 0.16 | 0.46 |
| | 2001 | 0 | 0 | 3 | 3 | 1 | 1 | 4 | 4 | 0.00 | 0.46 | 0.17 | 0.32 |
| | 2002 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.16 | 0.00 | 0.08 |
| | 2003 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.16 | 0.15 | 0.15 |
| | 2004 | 0 | 0 | 3 | 4 | 0 | 0 | 3 | 4 | 0.00 | 0.59 | 0.00 | 0.31 |
| | 2005 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 0.00 | 0.15 | 0.31 | 0.22 |
| | 2006 | 0 | 0 | 3 | 4 | 1 | 1 | 4 | 5 | 0.00 | 0.59 | 0.15 | 0.37 |
| NEC | 1999 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 2.34 | 0.00 | 0.33 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.64 | 0.00 | 0.00 | 0.33 |

| Owner | Year | Fatal Accidents | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | Killed | Acc | Killed | Acc | Killed | Acc | Killed | | | | |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 0.86 | 1.39 | 0.00 | 0.74 |
| | 2005 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.88 | 0.00 | 0.00 | 0.36 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| SECL | 1999 | 9 | 12 | 4 | 4 | 5 | 5 | 18 | 21 | 0.29 | 0.68 | 0.29 | 0.33 |
| | 2000 | 10 | 11 | 3 | 3 | 2 | 2 | 15 | 16 | 0.27 | 0.5 | 0.12 | 0.25 |
| | 2001 | 6 | 6 | 4 | 4 | 4 | 5 | 14 | 15 | 0.16 | 0.66 | 0.32 | 0.25 |
| | 2002 | 8 | 11 | 2 | 2 | 3 | 3 | 13 | 16 | 0.3 | 0.30 | 0.19 | 0.27 |
| | 2003 | 7 | 7 | 0 | 0 | 4 | 4 | 11 | 11 | 0.19 | 0.00 | 0.24 | 0.19 |
| | 2004 | 5 | 6 | 1 | 1 | 1 | 1 | 7 | 8 | 0.17 | 0.15 | 0.06 | 0.14 |
| | 2005 | 7 | 8 | 5 | 5 | 2 | 2 | 14 | 15 | 0.23 | 0.71 | 0.13 | 0.26 |
| | 2006 | 3 | 3 | 3 | 3 | 1 | 1 | 7 | 7 | 0.09 | 0.43 | 0.06 | 0.12 |
| WCL | 1999 | 6 | 6 | 3 | 3 | 2 | 2 | 11 | 11 | 0.21 | 0.43 | 0.12 | 0.21 |
| | 2000 | 8 | 9 | 5 | 14 | 1 | 1 | 14 | 24 | 0.31 | 2.02 | 0.06 | 0.45 |
| | 2001 | 9 | 14 | 1 | 1 | 1 | 1 | 11 | 16 | 0.53 | 0.14 | 0.06 | 0.32 |
| | 2002 | 11 | 11 | 2 | 2 | 2 | 2 | 15 | 15 | 0.45 | 0.28 | 0.12 | 0.32 |
| | 2003 | 4 | 4 | 2 | 2 | 3 | 6 | 9 | 12 | 0.17 | 0.24 | 0.35 | 0.24 |
| | 2004 | 6 | 6 | 5 | 5 | 2 | 2 | 13 | 13 | 0.26 | 0.60 | 0.13 | 0.27 |
| | 2005 | 5 | 5 | 4 | 4 | 1 | 1 | 10 | 10 | 0.23 | 0.56 | 0.07 | 0.23 |
| | 2006 | 7 | 7 | 1 | 1 | 6 | 6 | 14 | 14 | 0.32 | 0.14 | 0.41 | 0.32 |
| **CIL** | **1999** | **51** | **60** | **23** | **23** | **19** | **19** | **93** | **102** | **0.31** | **0.39** | **0.15** | **0.27** |
| | **2000** | **42** | **50** | **26** | **38** | **12** | **12** | **80** | **100** | **0.27** | **0.66** | **0.10** | **0.27** |
| | **2001** | **43** | **77** | **18** | **18** | **9** | **10** | **70** | **105** | **0.44** | **0.32** | **0.09** | **0.3** |
| | **2002** | **32** | **36** | **20** | **20** | **10** | **13** | **62** | **69** | **0.22** | **0.36** | **0.11** | **0.21** |
| | **2003** | **31** | **32** | **16** | **16** | **13** | **16** | **60** | **64** | **0.20** | **0.29** | **0.14** | **0.19** |
| | **2004** | **36** | **39** | **25** | **26** | **5** | **5** | **66** | **70** | **0.25** | **0.48** | **0.05** | **0.22** |
| | 2005 | 38 | 58 | 22 | 23 | 16 | 16 | 76 | 97 | 0.38 | 0.42 | 0.15 | 0.31 |
| | 2006 | 27 | 81 | 15 | 16 | 10 | 10 | 52 | 107 | 0.54 | 0.29 | 0.10 | 0.35 |
| DVC | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 9.26 | 0.00 | 4.33 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| GMDC | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.27 | 0.00 | 0.70 |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.09 | 0.00 | 0.66 |
| | 2002 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.34 | 0.00 | 0.74 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.36 | 0.00 | 0.69 |

| Owner | Year | Fatal Accidents | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | Killed | Acc | Killed | Acc | Killed | Acc | Killed | | | | |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| JSMDC | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 16.95 | 0.00 | 7.41 |
| IISCO | 1999 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.52 | 0.00 | 0.00 | 0.28 |
| | 2001 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0.96 | 0.00 | 0.00 | 0.56 |
| | 2004 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 4.46 | 0.00 | 0.63 |
| | 2005 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.59 | 0.00 | 0.00 | 0.32 |
| | 2006 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1.18 | 0.00 | 0.00 | 0.64 |
| J&K | 1999 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.90 | 0.00 | 0.00 | 1.56 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| NLC | 1999 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.31 | 0.24 | 0.27 |
| | 2000 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 | 0.00 | 0.67 | 0.24 | 0.42 |
| | 2001 | 0 | 0 | 4 | 4 | 1 | 1 | 5 | 5 | 0.00 | 1.05 | 0.28 | 0.68 |
| | 2002 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.26 | 0.00 | 0.14 |
| | 2003 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 0.47 | 0.00 | 0.22 |
| | 2004 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 | 0.00 | 0.32 | 0.28 | 0.31 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.20 | 0.00 | 0.08 |
| | 2006 | 0 | 0 | 5 | 5 | 0 | 0 | 5 | 5 | 0.00 | 0.99 | 0.00 | 0.41 |
| SCCL | 1999 | 17 | 18 | 5 | 6 | 3 | 3 | 25 | 27 | 0.33 | 1.12 | 0.33 | 0.39 |
| | 2000 | 18 | 23 | 8 | 9 | 1 | 2 | 27 | 34 | 0.43 | 1.59 | 0.25 | 0.51 |
| | 2001 | 21 | 21 | 2 | 2 | 2 | 2 | 25 | 25 | 0.40 | 0.37 | 0.29 | 0.38 |
| | 2002 | 13 | 22 | 0 | 0 | 1 | 1 | 14 | 23 | 0.45 | 0.00 | 0.14 | 0.37 |
| | 2003 | 12 | 37 | 6 | 6 | 1 | 1 | 19 | 44 | 0.80 | 1.04 | 0.12 | 0.73 |
| | 2004 | 10 | 13 | 1 | 1 | 0 | 0 | 11 | 14 | 0.28 | 0.17 | 0.00 | 0.23 |
| | 2005 | 8 | 8 | 2 | 2 | 1 | 1 | 11 | 11 | 0.17 | 0.37 | 0.14 | 0.19 |
| | 2006 | 13 | 16 | 3 | 3 | 0 | 0 | 16 | 19 | 0.35 | 0.55 | 0.00 | 0.32 |
| TISCO | 1999 | 4 | 4 | 1 | 1 | 0 | 0 | 5 | 5 | 0.68 | 0.91 | 0.00 | 0.56 |
| | 2000 | 2 | 2 | 0 | 0 | 2 | 2 | 4 | 4 | 0.38 | 0.00 | 1.08 | 0.49 |
| | 2001 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0.37 | 0.00 | 0.00 | 0.24 |
| | 2002 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0.57 | 0.00 | 0.00 | 0.37 |
| | 2003 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0.58 | 0.00 | 0.00 | 0.33 |
| | 2004 | 3 | 5 | 0 | 0 | 0 | 0 | 3 | 5 | 1.01 | 0.00 | 0.00 | 0.63 |
| | 2005 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0.38 | 0.00 | 0.00 | 0.24 |

| Owner | Year | Fatal Accidents | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | Killed | Acc | Killed | Acc | Killed | Acc | Killed | | | | |
| | 2006 | 2 | 3 | 0 | 0 | 1 | 1 | 3 | 4 | 0.57 | 0.00 | 0.50 | 0.47 |
| GIPCL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 4.52 | 0.00 | 3.31 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| JINDAL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0 | 14.08 | 3.82 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| BECML | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 3.32 | 0.00 | 2.91 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 2.92 | 0.00 | 2.26 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| BLAI | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 10.87 | 0.00 | 5.71 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| ICML | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.59 | 0.00 | 1.12 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| MIL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Owner | Year | Fatal Accidents | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | Killed | Acc | Killed | Acc | Killed | Acc | Killed | | | | |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 33.90 | 6.62 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| **ALL INDIA** | **1999** | **74** | **84** | **30** | **31** | **23** | **23** | **127** | **138** | **0.33** | **0.43** | **0.16** | **0.29** |
| | **2000** | **62** | **75** | **38** | **51** | **17** | **18** | **117** | **144** | **0.3** | **0.74** | **0.13** | **0.31** |
| | **2001** | **67** | **102** | **26** | **26** | **12** | **13** | **105** | **141** | **0.43** | **0.38** | **0.1** | **0.32** |
| | **2002** | **48** | **61** | **22** | **22** | **11** | **14** | **81** | **97** | **0.27** | **0.32** | **0.11** | **0.23** |
| | **2003** | **46** | **72** | **23** | **24** | **14** | **17** | **83** | **113** | **0.33** | **0.35** | **0.13** | **0.27** |
| | **2004** | **49** | **57** | **32** | **33** | **6** | **6** | **87** | **96** | **0.27** | **0.47** | **0.05** | **0.24** |
| | **2005** | **49** | **69** | **28** | **29** | **19** | **19** | **96** | **117** | **0.34** | **0.42** | **0.15** | **0.29** |
| | **2006** | **44** | **102** | **24** | **25** | **11** | **11** | **79** | **138** | **0.50** | **0.36** | **0.09** | **0.35** |

Note: Figures for the year 2006 are provisional.

## 2.9 Owner-wise consolidated serious accident statistics for last 8 (eight) years in coal mines

| Owner | Year | Serious Accidents | | | | | | | | Serious Injury Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | | | | |
| BCCL | 1999 | 46 | 51 | 14 | 16 | 11 | 13 | 71 | 80 | 1.22 | 1.41 | 0.48 | 1.00 |
| | 2000 | 53 | 58 | 12 | 12 | 17 | 17 | 82 | 87 | 1.48 | 1.06 | 0.70 | 1.16 |
| | 2001 | 49 | 54 | 8 | 8 | 11 | 11 | 68 | 73 | 1.45 | 0.74 | 0.50 | 1.04 |
| | 2002 | 44 | 56 | 16 | 17 | 8 | 8 | 68 | 81 | 1.6 | 1.44 | 0.37 | 1.18 |
| | 2003 | 39 | 42 | 9 | 9 | 12 | 12 | 60 | 63 | 1.27 | 0.91 | 0.61 | 1.00 |
| | 2004 | 58 | 60 | 8 | 8 | 11 | 11 | 77 | 79 | 1.89 | 0.84 | 0.60 | 1.32 |
| | 2005 | 20 | 31 | 11 | 11 | 10 | 12 | 41 | 54 | 1.03 | 1.15 | 0.69 | 0.95 |
| | 2006 | 19 | 20 | 10 | 12 | 3 | 3 | 32 | 35 | 0.66 | 1.26 | 0.17 | 0.61 |
| CCL | 1999 | 22 | 23 | 7 | 10 | 7 | 7 | 36 | 40 | 1.31 | 0.59 | 0.36 | 0.75 |
| | 2000 | 12 | 14 | 16 | 22 | 7 | 8 | 35 | 44 | 0.84 | 1.41 | 0.44 | 0.87 |
| | 2001 | 7 | 8 | 2 | 2 | 8 | 16 | 17 | 26 | 0.51 | 0.13 | 0.96 | 0.54 |
| | 2002 | 9 | 9 | 9 | 11 | 8 | 8 | 26 | 28 | 0.62 | 0.78 | 0.47 | 0.61 |
| | 2003 | 11 | 11 | 7 | 9 | 9 | 9 | 27 | 29 | 0.79 | 0.64 | 0.58 | 0.67 |
| | 2004 | 15 | 18 | 7 | 9 | 5 | 5 | 27 | 32 | 1.34 | 0.75 | 0.32 | 0.78 |
| | 2005 | 7 | 7 | 11 | 11 | 7 | 7 | 25 | 25 | 0.53 | 0.95 | 0.44 | 0.62 |
| | 2006 | 5 | 5 | 5 | 5 | 2 | 2 | 12 | 12 | 0.38 | 0.43 | 0.13 | 0.30 |
| ECL | 1999 | 173 | 182 | 9 | 9 | 35 | 36 | 217 | 227 | 3.08 | 1.67 | 1.05 | 2.3 |
| | 2000 | 155 | 164 | 12 | 12 | 30 | 30 | 197 | 206 | 2.98 | 2.36 | 0.92 | 2.22 |
| | 2001 | 164 | 174 | 5 | 7 | 30 | 30 | 199 | 211 | 3.23 | 1.35 | 0.98 | 2.35 |
| | 2002 | 161 | 162 | 6 | 6 | 24 | 24 | 191 | 192 | 3.26 | 1.47 | 0.81 | 2.30 |
| | 2003 | 141 | 147 | 9 | 11 | 21 | 21 | 171 | 179 | 3.06 | 2.41 | 0.72 | 2.19 |
| | 2004 | 148 | 151 | 14 | 15 | 24 | 24 | 186 | 190 | 3.25 | 3.28 | 0.86 | 2.41 |
| | 2005 | 54 | 56 | 7 | 7 | 14 | 14 | 75 | 77 | 1.24 | 1.44 | 0.51 | 1.00 |
| | 2006 | 60 | 63 | 2 | 2 | 9 | 9 | 71 | 74 | 1.40 | 0.41 | 0.33 | 0.96 |
| MCL | 1999 | 9 | 10 | 2 | 2 | 5 | 5 | 16 | 17 | 1.85 | 0.37 | 0.72 | 0.96 |
| | 2000 | 9 | 9 | 7 | 7 | 1 | 2 | 17 | 18 | 1.69 | 1.36 | 0.28 | 1.02 |
| | 2001 | 6 | 6 | 3 | 3 | 2 | 2 | 11 | 11 | 1.19 | 0.66 | 0.32 | 0.69 |
| | 2002 | 9 | 9 | 6 | 6 | 2 | 2 | 17 | 17 | 1.86 | 1.24 | 0.30 | 1.04 |
| | 2003 | 5 | 5 | 4 | 4 | 3 | 3 | 12 | 12 | 1.11 | 0.61 | 0.40 | 0.65 |
| | 2004 | 5 | 5 | 7 | 7 | 5 | 5 | 17 | 17 | 0.96 | 1.36 | 0.68 | 0.96 |
| | 2005 | 6 | 6 | 5 | 5 | 3 | 3 | 14 | 14 | 1.34 | 0.75 | 0.50 | 0.81 |
| | 2006 | 6 | 6 | 3 | 11 | 3 | 3 | 12 | 20 | 1.34 | 1.65 | 0.50 | 1.16 |
| NCL | 1999 | 0 | 0 | 11 | 12 | 8 | 9 | 19 | 21 | 0.00 | 1.71 | 1.46 | 1.59 |
| | 2000 | 0 | 0 | 9 | 10 | 1 | 1 | 10 | 11 | 0.00 | 1.47 | 0.16 | 0.85 |
| | 2001 | 0 | 0 | 9 | 9 | 7 | 7 | 16 | 16 | 0.00 | 1.38 | 1.19 | 1.29 |
| | 2002 | 0 | 0 | 5 | 5 | 4 | 4 | 9 | 9 | 0.00 | 0.80 | 0.59 | 0.69 |
| | 2003 | 0 | 0 | 11 | 11 | 7 | 7 | 18 | 18 | 0.00 | 1.76 | 1.05 | 1.39 |
| | 2004 | 0 | 0 | 5 | 5 | 4 | 5 | 9 | 10 | 0.00 | 0.74 | 0.81 | 0.77 |
| | 2005 | 0 | 0 | 10 | 11 | 3 | 3 | 13 | 14 | 0.00 | 1.61 | 0.46 | 1.05 |
| | 2006 | 0 | 0 | 4 | 4 | 5 | 5 | 9 | 9 | 0.00 | 0.59 | 0.77 | 0.67 |
| NEC | 1999 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1.23 | 0.00 | 0.00 | 0.65 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.64 | 0.00 | 0.00 | 0.33 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Owner | Year | Serious Accidents | | | | | | | | Serious Injury Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | | | | |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.86 | 0.00 | 0.00 | 0.37 |
| | 2005 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.88 | 0.00 | 0.00 | 0.36 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| SECL | 1999 | 29 | 33 | 6 | 7 | 18 | 21 | 53 | 61 | 0.81 | 1.19 | 1.23 | 0.96 |
| | 2000 | 70 | 78 | 15 | 15 | 22 | 22 | 107 | 115 | 1.93 | 2.52 | 1.33 | 1.83 |
| | 2001 | 80 | 80 | 12 | 12 | 26 | 26 | 118 | 118 | 2.1 | 1.98 | 1.66 | 1.97 |
| | 2002 | 78 | 84 | 16 | 18 | 17 | 17 | 111 | 119 | 2.26 | 2.71 | 1.06 | 1.99 |
| | 2003 | 64 | 67 | 12 | 13 | 16 | 16 | 92 | 96 | 1.83 | 2.49 | 0.95 | 1.64 |
| | 2004 | 73 | 74 | 13 | 13 | 22 | 22 | 108 | 109 | 2.05 | 2.00 | 1.35 | 1.85 |
| | 2005 | 68 | 72 | 9 | 9 | 18 | 19 | 95 | 100 | 2.06 | 1.28 | 1.20 | 1.73 |
| | 2006 | 39 | 42 | 6 | 6 | 5 | 5 | 50 | 53 | 1.20 | 0.86 | 0.31 | 0.92 |
| WCL | 1999 | 36 | 37 | 9 | 9 | 8 | 8 | 53 | 54 | 1.29 | 1.29 | 0.47 | 1.02 |
| | 2000 | 65 | 66 | 20 | 20 | 13 | 15 | 98 | 101 | 2.27 | 2.88 | 0.85 | 1.88 |
| | 2001 | 61 | 70 | 14 | 14 | 25 | 25 | 100 | 109 | 2.64 | 1.97 | 1.51 | 2.17 |
| | 2002 | 36 | 38 | 11 | 12 | 13 | 13 | 60 | 63 | 1.56 | 1.69 | 0.81 | 1.32 |
| | 2003 | 41 | 43 | 13 | 13 | 13 | 14 | 67 | 70 | 1.83 | 1.56 | 0.81 | 1.42 |
| | 2004 | 38 | 41 | 11 | 12 | 17 | 17 | 66 | 70 | 1.79 | 1.43 | 1.06 | 1.48 |
| | 2005 | 30 | 31 | 6 | 7 | 5 | 5 | 41 | 43 | 1.40 | 0.98 | 0.34 | 0.98 |
| | 2006 | 29 | 32 | 7 | 8 | 10 | 10 | 46 | 50 | 1.45 | 1.11 | 0.68 | 1.14 |
| **CIL** | **1999** | **317** | **338** | **58** | **65** | **92** | **99** | **467** | **502** | **1.73** | **1.09** | **0.77** | **1.31** |
| | **2000** | **365** | **390** | **91** | **98** | **91** | **95** | **547** | **583** | **2.08** | **1.71** | **0.77** | **1.58** |
| | **2001** | **367** | **392** | **53** | **55** | **109** | **117** | **529** | **564** | **2.22** | **0.99** | **1.03** | **1.63** |
| | **2002** | **337** | **358** | **69** | **75** | **76** | **76** | **482** | **509** | **2.16** | **1.37** | **0.67** | **1.52** |
| | **2003** | **301** | **315** | **65** | **70** | **81** | **82** | **447** | **467** | **1.96** | **1.26** | **0.72** | **1.42** |
| | **2004** | **338** | **350** | **65** | **69** | **88** | **89** | **491** | **508** | **2.23** | **1.28** | **0.82** | **1.59** |
| | **2005** | **185** | **204** | **59** | **61** | **60** | **63** | **304** | **328** | **1.35** | **1.12** | **0.60** | **1.06** |
| | **2006** | **158** | **168** | **37** | **48** | **37** | **37** | **232** | **253** | 1.11 | **0.88** | **0.35** | **0.82** |
| DVC | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 9.26 | 0.00 | 4.33 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| GMDC | 1999 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 0.00 | 0.93 | 2.31 | 1.55 |
| | 2000 | 0 | 0 | 2 | 2 | 2 | 2 | 4 | 4 | 0.00 | 2.54 | 3.13 | 2.8 |
| | 2001 | 0 | 0 | 4 | 4 | 2 | 2 | 6 | 6 | 0.00 | 4.36 | 3.31 | 3.94 |
| | 2002 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 1.34 | 1.66 | 1.48 |
| | 2003 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 0.00 | 4.18 | 0.00 | 2.16 |
| | 2004 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 3.34 | 1.60 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.36 | 0.00 | 0.69 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Owner | Year | Serious Accidents | | | | | | | | Serious Injury Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | | | | |
| IISCO | 1999 | 8 | 8 | 0 | 0 | 2 | 2 | 10 | 10 | 4.18 | 0.00 | 1.49 | 2.83 |
| | 2000 | 4 | 4 | 1 | 1 | 2 | 2 | 7 | 7 | 1.97 | 3.83 | 1.90 | 2.09 |
| | 2001 | 8 | 9 | 0 | 0 | 1 | 1 | 9 | 10 | 4.31 | 0.00 | 0.86 | 2.79 |
| | 2002 | 9 | 9 | 0 | 0 | 0 | 0 | 9 | 9 | 4.47 | 0.00 | 0.00 | 2.72 |
| | 2003 | 9 | 9 | 0 | 0 | 3 | 3 | 12 | 12 | 4.15 | 0.00 | 2.55 | 3.29 |
| | 2004 | 15 | 15 | 3 | 3 | 0 | 0 | 18 | 18 | 8.85 | 6.70 | 0.00 | 5.69 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.36 | 0.00 | 0.69 |
| J&K | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.37 | 0.00 | 0.00 | 1.09 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.24 | 0.00 | 0.00 | 0.99 |
| | 2004 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3.36 | 0.00 | 0.00 | 2.92 |
| | 2005 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 3 | 0.00 | 0.00 | 21.90 | 3.08 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| NLC | 1999 | 0 | 0 | 2 | 2 | 3 | 3 | 5 | 5 | 0.00 | 0.62 | 0.71 | 0.67 |
| | 2000 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.67 | 0.00 | 0.28 |
| | 2001 | 0 | 0 | 5 | 5 | 1 | 2 | 6 | 7 | 0.00 | 1.32 | 0.56 | 0.95 |
| | 2002 | 0 | 0 | 9 | 9 | 2 | 2 | 11 | 11 | 0.00 | 2.31 | 0.59 | 1.51 |
| | 2003 | 0 | 0 | 7 | 10 | 1 | 1 | 8 | 11 | 0.00 | 2.33 | 0.21 | 1.21 |
| | 2004 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 0.00 | 0.16 | 0.56 | 0.31 |
| | 2005 | 0 | 0 | 2 | 3 | 0 | 0 | 2 | 3 | 0.00 | 0.59 | 0.00 | 0.25 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.20 | 0.00 | 0.08 |
| SCCL | 1999 | 72 | 87 | 13 | 14 | 9 | 11 | 94 | 112 | 1.6 | 2.61 | 1.22 | 1.63 |
| | 2000 | 63 | 69 | 11 | 11 | 11 | 11 | 85 | 91 | 1.29 | 1.94 | 1.36 | 1.35 |
| | 2001 | 83 | 93 | 8 | 10 | 14 | 14 | 105 | 117 | 1.76 | 1.84 | 2.00 | 1.79 |
| | 2002 | 85 | 93 | 12 | 12 | 20 | 20 | 117 | 125 | 1.89 | 2.01 | 2.83 | 2.00 |
| | 2003 | 68 | 72 | 7 | 7 | 13 | 13 | 88 | 92 | 1.55 | 1.21 | 1.56 | 1.52 |
| | 2004 | 396 | 405 | 12 | 12 | 29 | 30 | 437 | 447 | 8.70 | 2.04 | 4.10 | 7.48 |
| | 2005 | 656 | 661 | 35 | 35 | 104 | 104 | 795 | 800 | 14.38 | 6.47 | 14.19 | 13.63 |
| | 2006 | 443 | 451 | 32 | 32 | 81 | 81 | 556 | 564 | 9.81 | 5.91 | 11.06 | 9.61 |
| TISCO | 1999 | 11 | 13 | 2 | 2 | 2 | 2 | 15 | 17 | 2.2 | 1.81 | 1.02 | 1.89 |
| | 2000 | 11 | 13 | 1 | 1 | 2 | 2 | 14 | 16 | 2.48 | 0.89 | 1.08 | 1.95 |
| | 2001 | 6 | 10 | 3 | 3 | 3 | 3 | 12 | 16 | 1.86 | 2.29 | 1.67 | 1.89 |
| | 2002 | 3 | 4 | 1 | 1 | 4 | 4 | 8 | 9 | 0.76 | 0.85 | 2.37 | 1.11 |
| | 2003 | 1 | 1 | 0 | 0 | 3 | 3 | 4 | 4 | 0.19 | 0.00 | 1.07 | 0.44 |
| | 2004 | 5 | 5 | 1 | 1 | 2 | 3 | 8 | 9 | 1.01 | 0.77 | 1.84 | 1.14 |
| | 2005 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0.38 | 0.00 | 0.00 | 0.24 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.79 | 0.00 | 0.12 |
| RSMDC | 1999 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 7.75 | 0.00 | 5.85 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Owner | Year | Serious Accidents | | | | | | | | Serious Injury Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | | | | |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| GIPCL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.50 | 1.45 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| JINDAL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0.00 | 0.00 | 28.17 | 7.63 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| BECM | **1999** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **2000** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **2001** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **2002** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **2003** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **2004** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0.00** | **2.92** | **0.00** | **2.26** |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| MIL | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 16.95 | 3.31 |

| Owner | Year | Serious Accidents | | | | | | | | Serious Injury Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | Total |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | | | | |
| ALL INDIA | 1999 | 408 | 446 | 77 | 85 | 110 | 119 | 595 | 650 | 1.73 | 1.19 | 0.81 | 1.37 |
| | 2000 | 444 | 477 | 108 | 115 | 109 | 115 | 661 | 707 | 1.92 | 1.67 | 0.82 | 1.54 |
| | 2001 | 464 | 504 | 73 | 77 | 130 | 139 | 667 | 720 | 2.1 | 1.12 | 1.07 | 1.64 |
| | 2002 | 434 | 464 | 92 | 98 | 103 | 103 | 629 | 665 | 2.07 | 1.43 | 0.8 | 1.57 |
| | 2003 | 380 | 398 | 82 | 90 | 101 | 102 | 563 | 590 | 1.85 | 1.30 | 0.77 | 1.42 |
| | 2004 | 757 | 778 | 82 | 87 | 123 | 126 | 962 | 991 | 3.69 | 1.24 | 1.02 | 2.45 |
| | 2005 | 843 | 867 | 98 | 101 | 165 | 170 | 1106 | 1138 | 4.23 | 1.45 | 1.37 | 2.85 |
| | 2006 | 602 | 621 | 72 | 83 | 119 | 119 | 793 | 823 | 3.03 | 1.19 | 0.96 | 2.13 |

Note: Figures for the year 2006 are provisional

# 3.0 Non-Coal Mines

## 3.1 General

Information presented in the following paragraphs relates to non-coal mines coming under the purview of the Mines Act, 1952.

Estimated number of notified working non-coal mines are over about 6000 out of which 1940 non-coal mines including 45 oil mines submitted returns at the end of the year.

Average daily employment in non-coal mines during the year 2006 was 153,305 as compared to 156,582 in 2005. Average daily employment in workings belowground, opencast and aboveground during the year 2006 was 7,665; 84,318 & 61,322 as compared to 9,874; 83,811 & 62,897 respectively during the year 2005. The average daily employment in various minerals is depicted in the table below:

| TABLE: 34 | Average daily employment and output in non-coal mines during 2006 | | | | | |
|---|---|---|---|---|---|---|
| **Mineral** | **No. of mine** | **Average daily employment** | | | | **Output ('000 tonnes)** |
| | | **U / G** | **O/C** | **Surface** | **Total** | |
| Bauxite | 80 | - | 4330 | 650 | 4980 | 10,060 |
| Copper | 4 | 980 | 320 | 630 | 1930 | 2545 |
| Gold | 4 | 1560 | - | 1660 | 3220 | 650 |
| Granites | 165 | - | 5090 | 1540 | 6630 | 850 |
| Lime Stone | 450 | - | 17700 | 6330 | 24030 | 203411 |
| Iron-ore | 250 | - | 20300 | 12211 | 32511 | 15911 |
| Manganese | 115 | 2650 | 7305 | 3945 | 13900 | 2550 |
| Marble | 15 | - | 1100 | 450 | 1550 | 2009 |
| Stone | 215 | - | 4240 | 2165 | 6405 | 19980 |
| Galena & sphalarite | 11 | 1100 | 700 | 1400 | 3200 | 4310 |
| Others | 631 | 1375 | 23233 | 10191 | 34799 | - |
| Oil | 45 | - | - | 20150 | 20150 | 17500 |
| Natural Gas | - | - | - | - | - | 6570 ($) |
| **Total Non-Coal** | **1985** | **7665** | **84318** | **61322** | **153305** | **286346** |

Note: Figures are provisional
$ Production of Natural Gas (Expressed in '000 Cu Meter)

## 3.2 Accidents

There were two major accidents involving ten persons in non-coal mines during the year.

(1) Name of Mine: Surya Granite Opencast Mine, Owner: M/s.Surya Granite
Date of accident: 03.11.2006, Time: 1730 hours, Persons killed: 4

While five mazdoors were at work on the slope of a hillock having numerous loose boulders, there was a sudden roll down of boulders through a height of about 7.34 m along the slope due to which four of them received fatal injuries.

(2) Name of Mine: Tollem Group I/Ore Mine, Owner: Smt. Kunda R. Gharse
Date of accident: 09.12.2006, Time: 1255 hours, Persons killed: 6

While ten persons were engaged at the floor of 3rd clay bench (67 MRL) to reduce the width of the bench with Heavy Earth Moving Machinery, a portion of overlying three clay benches alongwith a part of the dump situated on low lying weak ground near the top edge of the quarry, measuring about 160 m (L) x 25m – 30m (W) x 46 m (H) slid and collapsed burying the machinery and six of them persons deployed, asphyxiating them to death.

### 3.2.1 Accident scenario

Contrary to the down fall in fatal accidents in the year 2005 as compared to 2004, there had been rise in fatal accidents in the year 2006 wherein there had been 62 fatal accidents involving 62 fatalities and 78 serious accidents during the year 2006 as compared to 48 fatal accidents involving 52 fatalities and 108 serious accidents during 2005. Table: 35 & 36 given below shows trend in fatal accidents death rates, serious accident & injury rate in non-coal mines.

| **TABLE: 35** | **TREND IN FATAL ACCIDENTS & DEATH RATES IN NON-COAL MINES** | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Number of accidents | | | Death rate per 1000 persons employed | | | |
| | Fatal | Persons killed | Persons ser. injured | Below ground | Open-cast | Above ground | Overall |
| 1991 | 84 | 102 | 27 | 0.42 | 0.45 | 0.41 | 0.43 |
| 1992 | 68 | 78 | 24 | 0.52 | 0.39 | 0.20 | 0.33 |
| 1993 | 58 | 73 | 9 | 0.44 | 0.37 | 0.22 | 0.31 |
| 1994 | 61 | 86 | 17 | 1.46 | 0.32 | 0.21 | 0.38 |
| 1995 | 66 | 74 | 5 | 0.35 | 0.39 | 0.26 | 0.33 |
| 1996 | 72 | 83 | 14 | 0.42 | 0.54 | 0.23 | 0.40 |
| 1997 | 70 | 77 | 13 | 0.42 | 0.47 | 0.28 | 0.38 |
| 1998 | 56 | 65 | 15 | 0.33 | 0.43 | 0.23 | 0.33 |
| 1999 | 61 | 72 | 13 | 0.49 | 0.55 | 0.19 | 0.39 |
| 2000 | 51 | 55 | 2 | 0.49 | 0.37 | 0.19 | 0.30 |
| 2001 | 71 | 81 | 8 | 0.52 | 0.72 | 0.38 | 0.54 |
| 2002 | 52 | 64 | 3 | 0.49 | 0.54 | 0.21 | 0.40 |
| 2003 | 52 | 62 | 16 | 0.39 | 0.46 | 0.31 | 0.40 |
| 2004 | 57 | 64 | 9 | 0.62 | 0.47 | 0.26 | 0.39 |
| 2005 | 48 | 52 | 4 | 0.38 | 0.43 | 0.17 | 0.32 |
| 2006* | 62 | 75 | 9 | 0.38 | 0.66 | 0.34 | 0.48 |

* Provisional

Table: 36 indicate trend in serious accidents and serious injury rates in non-coal mines.

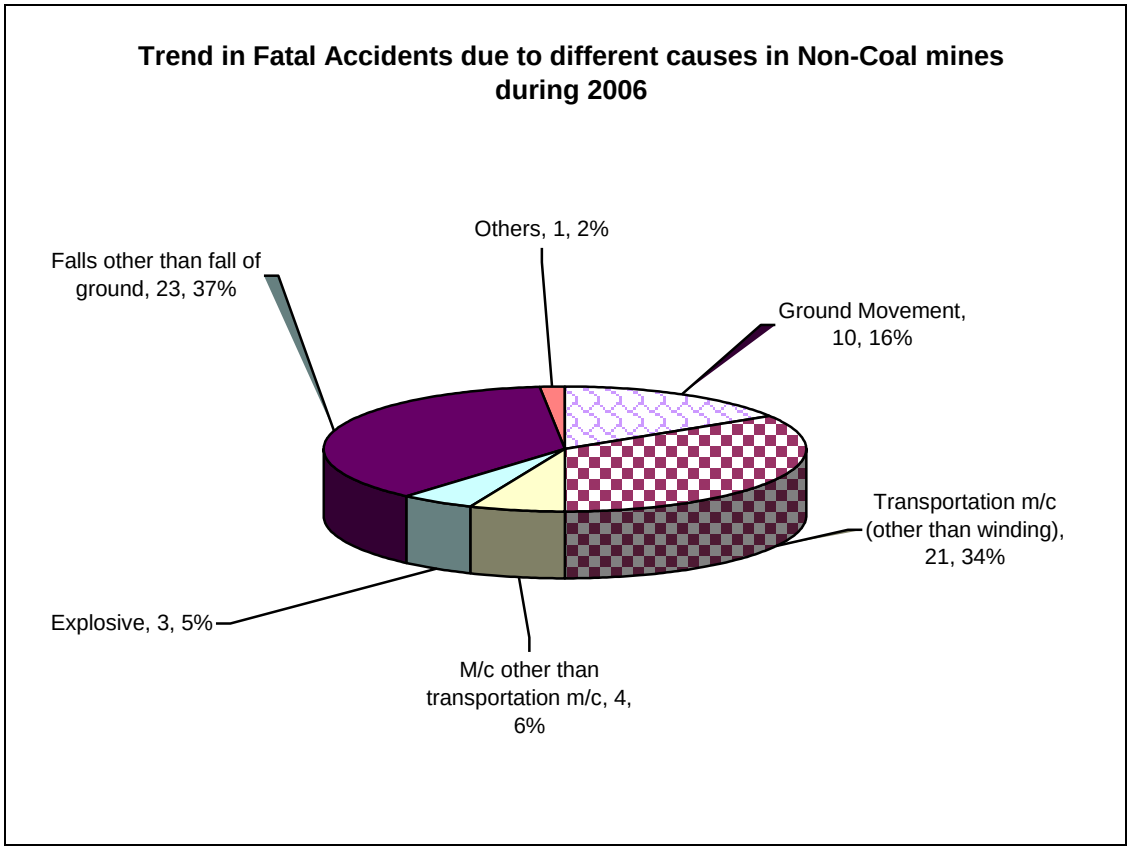
| TABLE:36 | TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN NON-COAL MINES | | | | | |
|---|---|---|---|---|---|---|
| YEAR | Number of | | Serious injury rate per 1000 persons employed | | | |
| | Serious accidents | Persons seriously injured | Below ground | Open cast | Above ground | Overall |
| 1991 | 291 | 295 | 5.71 | 0.40 | 1.46 | 1.37 |
| 1992 | 282 | 285 | 4.98 | 0.49 | 1.40 | 1.29 |
| 1993 | 315 | 321 | 6.06 | 0.49 | 1.45 | 1.42 |
| 1994 | 246 | 249 | 5.46 | 0.39 | 1.16 | 1.18 |
| 1995 | 268 | 274 | 3.93 | 0.60 | 1.45 | 1.25 |
| 1996 | 263 | 269 | 4.78 | 0.59 | 1.48 | 1.35 |
| 1997 | 265 | 272 | 5.57 | 0.42 | 1.60 | 1.42 |
| 1998 | 254 | 258 | 5.07 | 0.60 | 1.52 | 1.40 |
| 1999 | 230 | 238 | 6.16 | 0.45 | 1.42 | 1.37 |
| 2000 | 187 | 192 | 4.65 | 0.46 | 1.14 | 1.08 |
| 2001 | 199 | 200 | 6.28 | 0.61 | 1.57 | 1.42 |
| 2002 | 205 | 206 | 5.06 | 0.53 | 1.72 | 1.31 |
| 2003 | 168 | 169 | 7.36 | 0.43 | 1.43 | 1.18 |
| 2004 | 188 | 194 | 6.70 | 0.52 | 1.57 | 1.25 |
| 2005 | 108 | 109 | 3.41 | 0.37 | 0.83 | 0.71 |
| 2006* | 75 | 76 | 3.03 | 0.31 | 0.54 | 0.54 |

* Provisional

Table: 37 depicts trend in accidents due to different cause group for the years 2002-2006.

| TABLE:37 | TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES | | | | |
|---|---|---|---|---|---|
| Cause | 2002 | 2003 | 2004 | 2005 | 2006 |
| Ground movement | 11 (19) | 8 (13) | 14 (17) | 6 (7) | 10 (19) |
| Winding in shafts | Nil | Nil | Nil | Nil | Nil |
| Transportation machinery (other than winding) | 13 (13) | 15 (16) | 21 (22) | 13 (14) | 21 (22) |
| Machinery other than transportation machinery | 6 (7) | 6 (7) | 5 (6) | 10 (11) | 4 (4) |
| Explosive | 8 (11) | 5 (6) | 3 (4) | 4 (5) | 3 (3) |
| Electricity | 1 (1) | 3 (3) | 2 (3) | Nil | Nil |
| Gas, Dust etc. | Nil | 1 (2) | Nil | Nil | Nil |
| Falls other than falls of ground | 12 (12) | 14 (15) | 10 (10) | 15 (15) | 23 (26) |
| Other causes | 1 (1) | Nil | 2 (2) | Nil | 1 (1) |
| **TOTAL** | **52 (64)** | **52 (62)** | **57 (64)** | **48 (52)** | **62 (75)** |

Note: Figures in parentheses denote the number of persons killed.



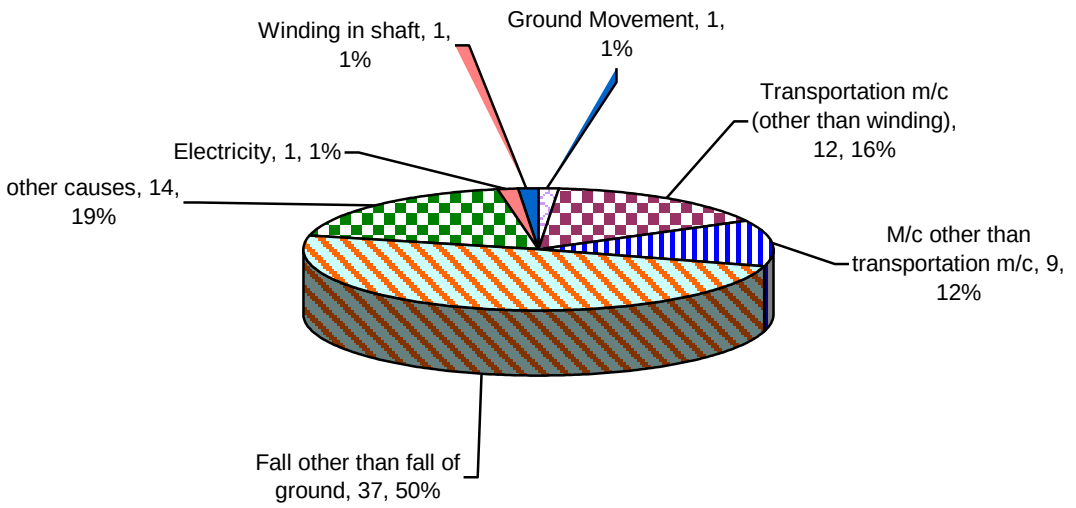

| TABLE:37A | TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES | | | | |
|---|---|---|---|---|---|
| **Place** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Belowground | 5 (5) | 3 (4) | 5 (5) | 3 (3) | 3 (3) |
| Opencast | 33 (45) | 31 (38) | 36 (42) | 38 (38) | 44 (57) |
| Aboveground | 14 (14) | 18 (20) | 16 (17) | 11 (11) | 15 (15) |
| **Total** | **52 (64)** | **52 (62)** | **57 (64)** | **48 (52)** | **62 (75)** |

Note: Figures in parentheses denote the number of persons killed.

| TABLE: 38 | TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES | | | | |
|---|---|---|---|---|---|
| Cause | **2002** | **2003** | **2004** | **2005** | **2006** |
| Ground movement | 2 (5) | 2 (9) | 5 (12) | 2 (3) | 1 (4) |
| Winding in shafts | 1 (1) | Nil | Nil | Nil | 1 (2) |
| Transportation machinery (other than winding) | 18 (19) | 19 (22) | 13 (18) | 14 (16) | 12 (16) |
| Machinery other than transportation machinery | 23 (23) | 25 (27) | 22 (22) | 15 (15) | 9 (9) |
| Explosive | 2 (2) | 1 (4) | Nil | 1 (2) | Nil |
| Electricity | 4 (4) | 1 (1) | 0 (1) | - | 1 (1) |
| Gas, Dust etc. | Nil | Nil | Nil | 3 (4) | Nil |
| Falls other than falls of ground | 89 (89) | 68 (69) | 80 (81) | 44 (44) | 37 (39) |
| Other causes | 66 (66) | 52 (53) | 68 (69) | 29 (29) | 14 (14) |
| **TOTAL** | **205 (209)** | **168(185)** | **188 (203)** | **108 (113)** | **75 (85)** |

Note: Figures in parentheses denote the number of persons seriously injured. This also includes serious injury out of fatal accidents.

**Trend in Serious Accidents due to different causes in Non-Coal mines during 2006**




| TABLE: 38A | TREND IN SERIOUS ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES | | | | |
|---|---|---|---|---|---|
| **Place** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Belowground | 52 (52) | 57 (57) | 54 (54) | 27 (27) | 22 (24) |
| Opencast | 40 (44) | 25 (36) | 34 (46) | 28 (33) | 19 (27) |
| Aboveground | 113 (113) | 86 (92) | 100 (103) | 53 (53) | 34 (34) |
| **Total** | **205 (209)** | **168 (185)** | **188 (203)** | **108 (113)** | **75 (85)** |

Note: Figures in parentheses denote the number of persons seriously injured.

Table: 39 shows fatal and serious accidents mineral-wise for the year 2002-2006.

| TABLE: 39 | FATAL AND SERIOUS ACCIDENTS MINERAL-WISE IN NON-COAL MINES DURING 2001-2005 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Mineral** | **Fatal accidents** | | | | | **Serious accidents** | | | | |
| | **2002** | **2003** | **2004** | **2005** | **2006** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Copper | 1 | - | - | - | - | 5 | 4 | 1 | 4 | - |
| Gold | - | - | - | - | 1 | 40 | 45 | 35 | 10 | 9 |
| Galena & sphalerite | 1 | - | 3 | 1 | 1 | 23 | 22 | 30 | 24 | 12 |
| Manganese ore | 4 | 1 | 3 | - | 2 | 14 | 11 | 9 | 5 | 5 |
| Iron-ore | 10 | 13 | 12 | 15 | 16 | 60 | 37 | 45 | 34 | 21 |
| Lime stone | 10 | 6 | 12 | 7 | 12 | 8 | 13 | 14 | 9 | 6 |
| Granite | 3 | 7 | 2 | 6 | 6 | 1 | - | - | 1 | - |
| Marble | 1 | 6 | 6 | 3 | 4 | - | - | - | - | - |
| Stone | 7 | 6 | 8 | 8 | 4 | 1 | - | 2 | - | - |
| Oil | 2 | 1 | 2 | 1 | 4 | 31 | 21 | 38 | 15 | 14 |
| Others | 13 | 12 | 9 | 7 | 12 | 22 | 15 | 14 | 6 | 8 |
| **TOTAL** | **52** | **52** | **57** | **48** | **62** | **205** | **168** | **188** | **108** | **75** |

Note: Data for 2006 are provisional.

### 3.2.2 Analysis of Accidents

The analysis of accidents presented below is based on the findings of enquiries into fatal accidents conducted by officers of DGMS and information regarding serious accidents received from the mine management.

#### 3.2.2.1 Ground Movement

Number of accidents and fatalities due to ground movement shows a wavy trend in the last five years 2002, 2004 & 2006 being the crest whereas 2003 & 2005 being the tough indicating that it is the high time for the mine management to think and execute an effective plan to reduce fatal accidents due this cause. Percentage wise there were 10 (16.13% of the total) fatal accidents due to ground movement in the year 2006 as compared to 6 (12.50% of the total) fatal accidents due to ground movement in the year 2005.

#### 3.2.2.1A Roof fall Accidents

There was no accident due to this cause during the year 2006 in non-coal mines.

#### 3.2.2.1B Side fall Accidents

There were 6 (9.68% of total accident) fatal accidents due to side fall during the year 2006 involving 13 persons when compared to 5 involving 6 persons during previous year indicating abrupt increase due to occurrence of two major accidents in this category.

#### 3.2.2.2 Transportation machinery (Winding)

There had not been any fatal accident due to winding machinery during last five the years i.e. 2002-2006. However, there had been only one serious accident in the year 2002 and again in the year 2006.

### 3.2.2.3 Transportation machinery (other than winding)

There were altogether 21 (33.87% of all fatal accidents) accidents involving 22 fatalities due to transportation machinery (other than winding) during the year 2006.

The cause-wise details may be seen from the following table:-

| TABLE-40 | FATAL & SERIOUS ACCIDENTS DUE TO TRANSPORTATION MACHINERY IN NON COAL MINES IN YEAR 2006 | | |
|---|---|---|---|
| Sl. No. | Causes | No. of fatal accidents | Persons killed |
| 1. | Rope Haulages | - | - |
| 2. | Conveyors | - | - |
| 3. | Dumpers | 12 | 13 |
| 4. | Truck & Tankers | 7 | 7 |
| 5. | Other | 2 | 2 |
| | **Total** | **21** | **22** |

The analysis of causes revealed the following:

**Dumper/Tipper**

- Three fatalities occurred in 3 different accidents due to falling of dumper from height.
- Four fatalities occurred in 4 different accidents due to runover by Tipper.
- In one case a dumper runover light motor vehicle (Jeep) with two occupant and both the occupant died.
- One fatality occurred due to rolling back of a tipper which hit a mine foreman who died.
- One person died due to hit by a reversing tipper's.
- Two persons died in two different cases due to rolling back of dumper.

**Truck & Tanker**

- One accident occurred killing a person by over turning of a truck.
- One person died due to sliding of loaded truck backward and Loader operator standing behind was crushed.
- Two persons died due in two accidents due to runover by a running truck.
- A dozer operator was hit by a moving truck.
- One person died due to falling of tractor.

**Other (Wagon)**

- One accident occurred killing open person due to runover by a moving wagon.
- One person killed while working with a crowbar slipped entrapping between the locomotive and wagon.

### 3.2.2.5 Accidents due to machinery other than transportation machinery.

| TABLE-41 | BREAK UP OF SERIOUS & FATAL ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON COAL MINES DURING 2006 | | | |
|---|---|---|---|---|
| | FATAL | | SERIOUS | |
| Causes | Surface | Underground | Surface | Underground |
| 1. Drills | 1 | - | 2 | 1 |
| 2. Shovel etc. | 1 | - | - | - |
| 3. Crane | - | - | - | - |
| 4. Crushing Plant | - | - | 2 | 1 |
| 5. Tractors | - | - | - | - |
| 6. Wiresaw cutting machine | - | - | - | - |
| 7. Others | 2 | 1 | 2 | 1 |
| **Total** | **4** | **1** | **6** | 3 |

**Drill machine**

- One person died due to disconnection of pressurized Hose Pipe from coupling.

**Shovel Dragline**

- A Pay Loader Operator died due to squeezing by the movement of bucket arm and chasis.

**Other machinery**

- One person died as swivel nut of compressed air hose pipe came off and foreman working there lost balance and collided against the wall receiving head injury.
- One person died when he fell down on an unguarded coupling of a running generator while checking for oil level.

Table: 42 - Detail break-up of serious accidents due to this cause during 2006.

| **TABLE : 42** | **BREAK-UP OF SERIOUS ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON-COAL MINES DURING 2006** | | | |
|---|---|---|---|---|
| **Cause** | **Number of serious accidents** | | | |
| | Belowground | Opencast | Aboveground | Total |
| Drills | 1 | 2 | - | 3 |
| Shovels, draglines, excavators etc. | - | - | - | - |
| Crushing & screening plants | 1 | - | 2 | 3 |
| Others | 1 | - | 2 | 3 |
| **TOTAL** | **3** | **2** | **4** | **9** |

### 3.2.2.5 Explosives

There were 3 (4.84% of the total) fatal accidents involving 3 persons and nil serious accident in 2006 as compared to 4 fatal accidents and one serious accident in 2005.

### 3.2.2.6 Electricity

There is no fatal accident and no serious accident due to electricity during the year 2006.

### 3.2.2.7 Dust, Gas & other combustible material

There was no fatal and serious accident due to this cause during the year 2006.

### 3.2.2.8 Falls other than falls of ground

23 (37.10%) fatal accidents and 37 serious accidents occurred due to this cause during the year 2006, while 15 fatal accidents and 44 serious accidents during the year 2005.

### 3.2.2.9 Other causes

There was one fatal accident and 14 serious accidents occurred due to miscellaneous causes during the year 2006.

## 3.3 Responsibility

The responsibilities fixed as a result of fatal accident enquiry conducted by officers of DGMS in the year 2006 is indicated in the table below:

| TABLE:43 | RESPONSIBILITY FOR FATAL ACCIDENTS IN NON-COAL MINES DURING THE YEAR 2006 | |
|---|---|---|
| SL. NO. | Responsibility | No. of accidents |
| 1. | Misadventure | 5 |
| 2. | Management | 13 |
| 3. | Management & Subordinate Supervisory Staff (SSS) | 9 |
| 4. | Management, SSS & Co-worker | Nil |
| 5. | Management & Co-worker | 3 |
| 6. | Management, Co-worker & Deceased | 1 |
| 7. | Management & Deceased | 1 |
| 8. | Subordinate Supervisory Staff (SSS) | 5 |
| 9. | SSS & Co-worker | 1 |
| 10. | SSS, Co-worker & Deceased | 1 |
| 11. | SSS & deceased | 2 |
| 12. | Shot-firer | Nil |
| 13. | Co-worker | 5 |
| 14. | Co-worker & Deceased | 1 |
| 15. | Deceased | 11 |
| 16. | Others | 4 |
| | **TOTAL** | **62** |

## 3.4 Dangerous Occurrence

The table indicated below gives dangerous occurrences reported during the year 2006 under various causes:

| TABLE:44 | DANGEROUS OCCURRENCES IN NON-COAL MINES DURING 2006 | |
|---|---|---|
| Sl.No. | Cause | No. of cases |
| 1. | Overwinding of cages etc. | Nil |
| 2. | Outbreak of fire belowground | Nil |
| 3. | Outbreak of fire at surface | Nil |
| 4. | Premature collapse of workings or failure of pillars | Nil |
| 5. | Breakage of winding rope | Nil |
| 6. | Breakdown of winding engine, crank shaft, bearing etc. | Nil |
| 7. | Ignition or occurrence of inflammable gas | 3 |
| 8. | Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered | 2 |
| 9. | Irruption of water | Nil |
| 10. | Rock burst | 1 |
| 11. | Bursting of equipment under high pressure | Nil |
| 12. | Oil well blowout without fire | 1 |
| 13. | Fire in pipeline/well heads | 1 |
| 14. | Others | Nil |
| | **TOTAL** | **8** |

## 3.5 Technical Developments

Total numbers of mines working by deploying HEMM is 640. Total number of machines and capacity of shovels and dumpers used is mines have been increased. The following table shows the different types of machines deployed in mines since 1990.

| TABLE: 45 | TREND IN USE OF HEMM IN NON-COAL OPENCAST MINES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | No. of mines | Shovels | | | Dumper | Others | Machinery | |
| | | Elec. | Diesel | Total | | | Total No. | Total HP |
| 1990 | 300 | 80 | 474 | 554 | 2263 | 1253 | 4070 | 833780 |
| 1991 | 368 | 92 | 553 | 645 | 2744 | 1357 | 4746 | 979076 |
| 1992 | 397 | 99 | 566 | 665 | 3067 | 1457 | 5189 | 1060897 |
| 1993 | 438 | 92 | 697 | 789 | 3221 | 1505 | 5515 | 1111029 |
| 1994 | 479 | 103 | 720 | 823 | 3416 | 1597 | 5836 | 1185407 |
| 1995 | 448 | 97 | 753 | 850 | 2814 | 1354 | 5018 | 1034650 |
| 1996 | 457 | 68 | 841 | 909 | 3409 | 1261 | 5579 | 1197829 |
| 1997 | 470 | 60 | 851 | 911 | 3704 | 1442 | 6057 | 1142679 |
| 1998 | 534 | 44 | 939 | 983 | 4286 | 1433 | 6702 | 1215549 |
| 1999 | 539 | 63 | 965 | 1028 | 3662 | 1513 | 6203 | 1232870 |
| 2000 | 589 | 76 | 1055 | 1131 | 4038 | 1585 | 6754 | 1413520 |
| 2001 | 542 | 86 | 1026 | 1112 | 3696 | 1763 | 6571 | 1337737 |
| 2002 | 577 | 95 | 1107 | 1202 | 3928 | 1741 | 6871 | 1351329 |
| 2003 | 560 | 90 | 1020 | 1010 | 3945 | 1630 | 6485 | 1310221 |
| 2004 | 561 | 91 | 1025 | 1116 | 3960 | 1670 | 6746 | 1313450 |
| 2005 | 653 | 52 | 1452 | 1504 | 5509 | 1819 | 8832 | 1784635 |
| 2006* | 640 | 53 | 1330 | 1383 | 4960 | 1760 | 8103 | 1644000 |

*Provisional

Following table shows the various types and quality of explosives used in non-coal and quality in mines since 1990.

| TABLE:46 | TREND IN USE OF EXPLOSIVES IN NON-COAL MINES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| YEAR | Consumption of explosives in tonnes | | | | | | | |
| | NG Based | ANFO | LOX | Slurry large dia | Slurry small dia | Booster | Gun powder | Total |
| 1990 | 4650 | 7912 | 1786 | 15703 | 1554 | 44 | 71 | 31720 |
| 1991 | 5793 | 10272 | 1148 | 20690 | 2262 | 44 | 63 | 40272 |
| 1992 | 4293 | 11868 | 648 | 23831 | 3309 | 51 | 59 | 44059 |
| 1993 | 3765 | 14087 | 244 | 22264 | 3601 | 37 | 60 | 44058 |
| 1994 | 3065 | 13448 | 260 | 22400 | 4015 | 29 | 68 | 43285 |
| 1995 | 3766 | 13767 | 171 | 23781 | 4546 | 42 | 105 | 46178 |
| 1996 | 3429 | 14520 | 124 | 23993 | 5053 | 30 | 93 | 47243 |
| 1997 | 1020 | 17964 | 39 | 15182 | 7256 | 42 | 113 | 43356 |
| 1998 | 1713 | 18719 | 154 | 17199 | 9126 | 52 | 111 | 47074 |
| 1999 | 1826 | 22151 | 153 | 18353 | 7159 | 30 | 86 | 49760 |
| 2000 | 1227 | 21071 | 148 | 24611 | 9632 | 94 | 116 | 56899 |
| 2001 | 1021 | 21476 | 140 | 24303 | 7879 | 81 | 92 | 55809 |
| 2002 | 1092 | 21111 | 368 | 26186 | 6640 | 128 | 88 | 55613 |
| 2003 | 1085 | 20189 | 345 | 25176 | 6310 | 119 | 80 | 53304 |
| 2004 | 1090 | 20190 | 347 | 25310 | 6350 | 120 | 81 | 53389 |
| 2005 | 1384 | 28087 | 168 | 40538 | 9892 | 501 | 130 | 80700 |
| 2006* | 1390 | 28101 | 170 | 40600 | 9900 | 510 | 132 | 80803 |

*Provisional

## 3.6 Occupational Health & Environments

**(a) Progress of Medical Examination in Non-Coal Mines:**

| TABLE: 47 | PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2006 IN NON-COAL MINES | | | |
|---|---|---|---|---|
| Name of Company | Initial Medical Examination | | Periodical Medical Exam. | |
| | Required | Provided | Required | Provided |
| OIL | - | 154 | 1350 | 1421 |
| ONGC | 20 | 20 | 2770 | 4923 |
| MOIL | 152 | 366 | 989 | 1028 |
| HGMCL | - | 217 | 649 | 658 |
| TATA | 142 | 142 | 342 | 322 |
| SAIL | 211 | 211 | 1562 | 1429 |
| UCIL | 473 | 462 | 277 | 288 |
| NMDC | 211 | 281 | 823 | 95 |
| NALCO | 217 | 217 | 95 | 96 |
| BALCO | - | - | 200 | 310 |
| HCL | 176 | 176 | 274 | 264 |
| HZL | - | 662 | 393 | 577 |
| ACC | 593 | 597 | 169 | 170 |
| MML | 1124 | 1060 | 979 | 874 |
| IREL | 15 | 15 | 431 | 528 |
| GMDC | - | - | 49 | 49 |
| OMC | 2442 | 1623 | 769 | 824 |
| APMDC | - | - | 278 | 278 |

**(b) Cases of Notified Diseases in non-coal mines:**

| TABLE: 48 | NUMBER OF NOTIFIED DISEASES DURING 2006 IN NON-COAL MINES | |
|---|---|---|
| Mining Companies | Name of disease | Number of cases |
| SAIL | Pneumoconiosis | 06 |

## 3.7 Vocational Training

Progress of vocational training imparted during the year in major non-coal mining companies has been reported in table below:

| TABLE: 49 | PROGRESS OF VOCATIONAL TRAINING IN NON-COAL MINES DURING THE YEAR 2006 | | | | | |
|---|---|---|---|---|---|---|
| Cos. | No. of VT Centers | Basic Training | | Refresher Training | | Special Training Provided |
| | | Required | Provided | Required | Provided | |
| OIL | 4 | 19 | 19 | 542 | 520 | 1465 |
| ONGC | 10 | 294 | 305 | 234 | 846 | 907 |
| MOIL | 7 | 98 | 273 | 1010 | 1098 | 1980 |
| HGMCL | 3 | 248 | 248 | 667 | 637 | 82 |
| TATA | 3 | 1492 | 1492 | 487 | 436 | 14649 |
| SAIL | 10 | 120 | 142 | 1181 | 1803 | 1162 |
| UCIL | 2 | 549 | 549 | 316 | 320 | 365 |
| NMDC | 4 | 371 | 371 | 661 | 690 | 1362 |
| NALCO | 1 | 346 | 346 | 65 | 61 | - |
| BALCO | 1 | 270 | 113 | 275 | 179 | - |
| HCL | 3 | 472 | 472 | 316 | 234 | 346 |
| HZL | 3 | - | 628 | 498 | 590 | 325 |
| ACC | 9 | 256 | 256 | 177 | 192 | 155 |
| MML | 8 | 1127 | 1047 | 937 | 852 | 78 |
| IREL | 3 | 12 | 12 | 308 | 379 | 1154 |
| GMDC | 1 | - | - | 38 | 16 | 1 |
| OMC | 11 | 2083 | 1432 | 699 | 647 | 81 |
| APMDC | 1 | 158 | 158 | - | - | 230 |

## 3.8 Workmen's Inspector, Welfare Officer & Safety Committee

| TABLE: 50 | NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN NON-COAL MINES DURING 2006 | | | | | |
|---|---|---|---|---|---|---|
| Name of Company | Welfare Officers | | Workmen Inspectors | | Safety Committee | |
| | Required | Provided | Required | Provided | Required | Provided |
| OIL | 5 | 5 | 15 | 15 | 5 | 17 |
| ONGC | 7 | 7 | 52 | 80 | 59 | 58 |
| MOIL | 7 | 7 | 21 | 24 | 8 | 8 |
| HGMCL | 2 | 4 | 4 | 5 | 3 | 5 |
| TATA | 4 | 4 | 14 | 18 | 5 | 5 |
| SAIL | 11 | 11 | 33 | 40 | 21 | 24 |
| UCIL | 2 | 2 | 15 | 14 | 6 | 6 |
| NMDC | 5 | 5 | 19 | 19 | 5 | 5 |
| NALCO | 1 | 1 | 3 | 6 | 1 | 1 |
| BALCO | 2 | 2 | 3 | 3 | 2 | 2 |
| HCL | 3 | 3 | 9 | 11 | 3 | 3 |
| HZL | 3 | 3 | 11 | 11 | 10 | 11 |
| ACC | 2 | 3 | 9 | 8 | 9 | 13 |
| MML | - | 2 | - | - | - | 6 |
| IREL | 3 | 3 | 9 | 9 | 3 | 3 |
| GMDC | - | - | - | - | 1 | 1 |
| OMC | 11 | 14 | 18 | 19 | 32 | 39 |
| APMDC | 1 | 1 | 3 | 3 | 1 | 1 |

## 3.9 Mineral wise consolidated fatal accident statistics for the last 8 (eight) years in non-coal mines

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| Oil | 1999 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 0.08 | 0.08 |
| | 2000 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.04 | 0.04 |
| | 2001 | 0 | 0 | 0 | 0 | 9 | 9 | 9 | 9 | 0.00 | 0.00 | 0.37 | 0.37 |
| | 2002 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 0.09 | 0.09 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.05 | 0.05 |
| | 2004 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 0.10 | 0.10 |
| | 2005 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.05 | 0.05 |
| | 2006 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 0.00 | 0.00 | 0.21 | 0.21 |
| Apatite | 1999 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.84 | 0.37 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.37 | 0.00 | 0.51 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.09 | 0.49 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 1.09 | 0.00 | 0.54 |
| Asbestos | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 46.51 | 0.00 | 7.94 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 27.78 | 4.24 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 43.48 | 0.00 | 4.83 |
| | 2006 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 86.96 | 0.00 | 9.66 |
| Barytes | 1999 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.92 | 1.17 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 35.71 | 0.00 | 0.00 | 1.2 |
| | 2001 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 41.67 | 0.00 | 0.00 | 2.2 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 3.79 | 2.24 |
| | 2003 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 12.66 | 0.00 | 5.21 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bauxite | 1999 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.84 | 0.17 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.53 | 0.00 | 0.44 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.23 | 0.00 | 0.20 |
| China Clay | 1999 | 0 | 0 | 2 | 3 | 1 | 1 | 3 | 4 | 0.00 | 1.28 | 0.56 | 0.97 |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 0.96 | 0.00 | 0.57 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Chromite | 1999 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.18 | 0.00 | 0.00 | 0.12 |
| | 2000 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | 3.02 | 0.00 | 0.44 | 0.29 |
| | 2001 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.25 | 0.49 | 0.31 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.73 | 0.00 | 0.00 | 0.13 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.53 | 0.00 | 0.00 | 0.14 |
| Copper | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.24 | 0.00 | 0.00 | 0.15 |
| | 2001 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.38 | 0.00 | 0.00 | 0.25 |
| | 2002 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.46 | 0.00 | 0.00 | 0.3 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Diamond | 1999 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 22.73 | 0.00 | 5.15 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dolomite | 1999 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.86 | 0.00 | 0.66 |
| | 2000 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.47 | 0.00 | 0.36 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.43 | 0.41 |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.56 | 0.00 | 0.44 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Felspar | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 7.19 | 0.00 | 5.85 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fluorite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Galena & Sphalarite | 1999 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.36 | 0.18 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.50 | 0.00 | 0.00 | 0.22 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | 1.80 | 0.00 | 0.49 | 0.79 |
| | 2005 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.68 | 0.31 |
| | 2006 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.96 | 0.00 | 0.00 | 0.31 |
| Garnet | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Gold | 1999 | 1 | 3 | 0 | 0 | 1 | 1 | 2 | 4 | 0.84 | 0.00 | 0.45 | 0.68 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.54 | 0.00 | 0.00 | 0.28 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.65 | 0.00 | 0.00 | 0.32 |
| Granite | 1999 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 0.00 | 0.82 | 0.00 | 0.68 |
| | 2000 | 0 | 0 | 5 | 5 | 2 | 2 | 7 | 7 | 0.00 | 1.13 | 2.33 | 1.32 |
| | 2001 | 0 | 0 | 7 | 7 | 2 | 2 | 9 | 9 | 0.00 | 1.70 | 1.05 | 1.50 |
| | 2002 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 | 0.00 | 0.44 | 0.69 | 0.50 |
| | 2003 | 0 | 0 | 5 | 6 | 2 | 2 | 7 | 8 | 0.00 | 1.03 | 1.46 | 1.29 |
| | 2004 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.20 | 0.61 | 0.30 |
| | 2005 | 0 | 0 | 6 | 7 | 0 | 0 | 6 | 7 | 0.00 | 1.28 | 0.00 | 0.98 |
| | 2006 | 0 | 0 | 6 | 9 | 0 | 0 | 6 | 9 | 0.00 | 1.65 | 0.00 | 1.25 |
| Graphite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 2.54 | 0.00 | 2.30 |
| Gypsum | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 3.86 | 0.00 | 2.84 |
| Iron | 1999 | 0 | 0 | 4 | 4 | 4 | 4 | 8 | 8 | 0.00 | 0.18 | 0.28 | 0.22 |
| | 2000 | 0 | 0 | 6 | 7 | 3 | 3 | 9 | 10 | 0.00 | 0.34 | 0.21 | 0.28 |
| | 2001 | 0 | 0 | 7 | 7 | 4 | 5 | 11 | 12 | 0.00 | 0.38 | 0.36 | 0.37 |
| | 2002 | 0 | 0 | 5 | 5 | 5 | 5 | 10 | 10 | 0.00 | 0.24 | 0.38 | 0.30 |
| | 2003 | 1 | 1 | 6 | 6 | 7 | 8 | 14 | 15 | 0.00 | 0.25 | 0.57 | 0.39 |
| | 2004 | 0 | 0 | 5 | 5 | 7 | 8 | 12 | 13 | 0.00 | 0.22 | 0.50 | 0.34 |
| | 2005 | 0 | 0 | 7 | 8 | 8 | 8 | 15 | 16 | 0.00 | 0.36 | 0.53 | 0.43 |
| | 2006 | 0 | 0 | 11 | 17 | 5 | 5 | 16 | 22 | 0.00 | 0.76 | 0.33 | 0.59 |
| Limestone | 1999 | 0 | 0 | 12 | 13 | 0 | 0 | 12 | 13 | 0.00 | 0.60 | 0.00 | 0.44 |
| | 2000 | 0 | 0 | 5 | 5 | 4 | 4 | 9 | 9 | 0.00 | 0.22 | 0.47 | 0.29 |
| | 2001 | 0 | 0 | 8 | 8 | 3 | 3 | 11 | 11 | 0.00 | 0.44 | 0.5 | 0.45 |
| | 2002 | 0 | 0 | 8 | 11 | 2 | 2 | 10 | 13 | 0.00 | 0.58 | 0.32 | 0.52 |
| | 2003 | 0 | 0 | 6 | 8 | 0 | 0 | 6 | 8 | 0.00 | 0.43 | 0.00 | 0.33 |
| | 2004 | 0 | 0 | 11 | 12 | 1 | 1 | 12 | 13 | 0.00 | 0.63 | 0.17 | 0.52 |
| | 2005 | 0 | 0 | 6 | 6 | 1 | 1 | 7 | 7 | 0.00 | 0.30 | 0.17 | 0.28 |
| | 2006 | 0 | 0 | 10 | 13 | 2 | 2 | 12 | 15 | 0.00 | 0.65 | 0.34 | 0.58 |
| Magnesite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0.00 | 0.00 | 15.79 | 1.65 |
| Manganese | 1999 | 3 | 3 | 0 | 0 | 1 | 1 | 4 | 4 | 1.09 | 0.00 | 0.20 | 0.24 |
| | 2000 | 2 | 2 | 3 | 3 | 0 | 0 | 5 | 5 | 0.76 | 0.33 | 0.00 | 0.31 |
| | 2001 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.4 | 0.00 | 0.00 | 0.07 |
| | 2002 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 0.39 | 0.13 | 0.54 | 0.29 |
| | 2003 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.41 | 0.00 | 0.00 | 0.08 |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2004 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 0.33 | 0.13 | 0.29 | 0.21 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.26 | 0.00 | 0.14 |
| Marble | 1999 | 0 | 0 | 3 | 4 | 0 | 0 | 3 | 4 | 0.00 | 3.93 | 0.00 | 3.05 |
| | 2000 | 0 | 0 | 2 | 4 | 0 | 0 | 2 | 4 | 0.00 | 3.66 | 0.00 | 2.75 |
| | 2001 | 0 | 0 | 7 | 11 | 0 | 0 | 7 | 11 | 0.00 | 9.07 | 0.00 | 6.54 |
| | 2002 | 0 | 0 | 2 | 3 | 0 | 0 | 2 | 3 | 0.00 | 2.58 | 0.00 | 1.95 |
| | 2003 | 1 | 2 | 5 | 5 | 0 | 0 | 6 | 7 | N.A. | 4.46 | 0.00 | 4.64 |
| | 2004 | 0 | 0 | 6 | 9 | 1 | 1 | 7 | 10 | 0.00 | 7.85 | 2.60 | 6.53 |
| | 2005 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 0.00 | 2.51 | 0.00 | 1.85 |
| | 2006 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 | 0.00 | 3.35 | 0.00 | 2.47 |
| Mica | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.50 | 0.00 | 0.00 | 1.02 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2.31 | 0.00 | 0.00 | 1.60 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2.39 | 0.00 | 0.00 | 1.58 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pyrite | 1999 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2.56 | 0.00 | 0.00 | 2.22 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Quartz | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 17.86 | 1.29 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 2.62 | 0.00 | 2.39 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sandstone | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Silica | 1999 | 0 | 0 | 4 | 4 | 2 | 2 | 6 | 6 | 0.00 | 1.64 | 3.83 | 2.03 |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2001 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.68 | 0.39 |
| | 2002 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.93 | 0.00 | 0.71 |
| | 2003 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.47 | 1.46 | 0.71 |
| | 2004 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 3 | 0.00 | 0.90 | 1.22 | 0.98 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sillimanite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.55 | 0.33 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Slate | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 4.42 | 0.00 | 3.77 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Steatite | 1999 | 0 | 0 | 3 | 8 | 0 | 0 | 3 | 8 | 0.00 | 3.19 | 0.00 | 2.44 |
| | 2000 | 1 | 1 | 2 | 2 | 0 | 0 | 3 | 3 | 5.21 | 0.60 | 0.00 | 0.70 |
| | 2001 | 1 | 1 | 3 | 5 | 0 | 0 | 4 | 6 | 3.27 | 1.50 | 0.00 | 1.39 |
| | 2002 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.62 | 0.00 | 0.48 |
| | 2003 | 0 | 0 | 2 | 3 | 3 | 3 | 5 | 6 | 0.00 | 0.99 | 4.46 | 1.54 |
| | 2004 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.31 | 0.00 | 0.25 |
| | 2005 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.63 | 0.00 | 0.49 |
| | 2006 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 | 0.00 | 0.63 | 1.43 | 0.73 |
| Stone | 1999 | 0 | 0 | 6 | 6 | 0 | 0 | 6 | 6 | 0.00 | 1.87 | 0.00 | 1.16 |
| | 2000 | 0 | 0 | 6 | 7 | 3 | 3 | 9 | 10 | 0.00 | 1.65 | 1.38 | 1.56 |
| | 2001 | 0 | 0 | 9 | 9 | 1 | 4 | 10 | 13 | 0.00 | 2.14 | 1.93 | 2.07 |
| | 2002 | 0 | 0 | 6 | 13 | 1 | 1 | 7 | 14 | 0.00 | 2.70 | 0.34 | 1.79 |
| | 2003 | 0 | 0 | 6 | 9 | 0 | 0 | 6 | 9 | 0.00 | 1.82 | 0.00 | 1.13 |
| | 2004 | 0 | 0 | 8 | 9 | 0 | 0 | 8 | 9 | 0.00 | 1.78 | 0.00 | 1.13 |
| | 2005 | 0 | 0 | 8 | 9 | 0 | 0 | 8 | 9 | 0.00 | 1.83 | 0.00 | 1.28 |
| | 2006 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 | 0.00 | 1.11 | 0.00 | 0.83 |
| Atomic | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N.A. | N.A. | N.A. | N.A. |
| Mineral | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N.A. | N.A. | N.A. | N.A. |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | N.A. | N.A. | N.A. | N.A. |
| | 2002 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | N.A. | N.A. | N.A. | N.A. |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N.A. | N.A. | N.A. | N.A. |

| Mineral | Fatal Accidents | | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | BG | OC | AG | TOT |
| | Year | Acc | Kill | Acc | Kill | Acc | Kill | Acc | Kill | | | | |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N.A. | N.A. | N.A. | N.A. |
| | 2005 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | N.A. | N.A. | N.A. | N.A. |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N.A. | N.A. | N.A. | N.A. |
| Total | **1999** | **6** | **8** | **40** | **49** | **15** | **15** | **61** | **72** | **0.49** | **0.55** | **0.19** | **0.39** |
| | **2000** | **7** | **7** | **30** | **34** | **14** | **14** | **51** | **55** | **0.49** | **0.37** | **0.19** | **0.30** |
| | **2001** | **5** | **5** | **45** | **51** | **21** | **25** | **71** | **81** | **0.52** | **0.72** | **0.38** | **0.54** |
| | **2002** | **5** | **5** | **33** | **45** | **14** | **14** | **52** | **64** | **0.49** | **0.54** | **0.21** | **0.40** |
| | **2003** | **3** | **4** | **31** | **38** | **18** | **20** | **52** | **62** | **0.39** | **0.46** | **0.31** | **0.40** |
| | **2004** | **5** | **5** | **36** | **42** | **16** | **17** | **57** | **64** | **0.62** | **0.47** | **0.26** | **0.39** |
| | **2005** | **3** | **3** | **38** | **38** | **11** | **11** | **48** | **52** | **0.37** | **0.43** | **0.16** | **0.32** |
| | **2006** | **3** | **3** | **44** | **57** | **15** | **15** | **62** | **75** | **0.38** | **0.66** | **0.24** | **0.48** |

Note : Figures for the year 2006 are provisional.
N.A. = Employment Figures not Available.

## 3.10 Mineral wise consolidated serious accident statistics for the last 8 (eight) years in non-coal mines

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| Oil | 1999 | 0 | 0 | 0 | 0 | 23 | 23 | 23 | 23 | 0.00 | 0.00 | 0.90 | 0.90 |
| | 2000 | 0 | 0 | 0 | 0 | 27 | 28 | 27 | 28 | 0.00 | 0.00 | 1.19 | 1.19 |
| | 2001 | 0 | 0 | 0 | 0 | 21 | 22 | 21 | 22 | 0.00 | 0.00 | 0.90 | 0.90 |
| | 2002 | 0 | 0 | 0 | 0 | 31 | 31 | 31 | 31 | 0.00 | 0.00 | 1.39 | 1.39 |
| | 2003 | 0 | 0 | 0 | 0 | 21 | 22 | 21 | 22 | 0.00 | 0.00 | 1.13 | 1.13 |
| | 2004 | 0 | 0 | 0 | 0 | 38 | 40 | 38 | 40 | 0.00 | 0.00 | 2.09 | 2.09 |
| | 2005 | 0 | 0 | 0 | 0 | 15 | 15 | 15 | 15 | 0.00 | 0.00 | 0.78 | 0.78 |
| | 2006 | 0 | 0 | 0 | 0 | 14 | 14 | 14 | 14 | 0.00 | 0.00 | 0.73 | 0.73 |
| Apatite | 1999 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 3 | 0.00 | 0.84 | 1.69 | 1.11 |
| | 2000 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 | 0.00 | 1.95 | 0.93 | 1.25 |
| | 2001 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.06 | 0.51 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Asbestos | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Barytes | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 3.79 | 2.24 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bauxite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 2.80 | 0.41 |
| | 2004 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.58 | 0.17 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.56 | 0.20 |
| China Clay | 1999 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.00 | 0.00 | 0.56 | 0.24 |
| | 2000 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 0.00 | 0.00 | 1.15 | 0.49 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.00 | 0.48 | 0.00 | 0.28 |

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.54 | 0.00 | 0.31 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Chromite | 1999 | 1 | 1 | 1 | 1 | 3 | 3 | 5 | 5 | 1.18 | 0.22 | 1.12 | 0.62 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.41 | 0.14 |
| | 2003 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.28 | 0.00 | 0.15 |
| | 2004 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.73 | 0.00 | 0.00 | 0.13 |
| | 2005 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.33 | 0.14 |
| | 2006 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.33 | 0.14 |
| Copper | 1999 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.22 | 0.00 | 0.00 | 0.13 |
| | 2000 | 1 | 1 | 3 | 3 | 3 | 3 | 7 | 7 | 0.24 | 7.65 | 1.25 | 1.02 |
| | 2001 | 1 | 3 | 2 | 2 | 5 | 5 | 8 | 10 | 1.15 | 7.63 | 4.45 | 2.50 |
| | 2002 | 2 | 2 | 2 | 3 | 1 | 1 | 5 | 6 | 0.92 | 11.90 | 1.09 | 1.79 |
| | 2003 | 0 | 0 | 2 | 2 | 2 | 2 | 4 | 4 | 0.00 | 8.40 | 1.77 | 1.58 |
| | 2004 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.50 | 0.49 |
| | 2005 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 | 0.00 | 12.90 | 0.00 | 2.07 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Diamond | 1999 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0.00 | 0.00 | 11.10 | 7.73 |
| | 2000 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 12.50 | 3.97 | 5.52 |
| | 2001 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 0.00 | 0.00 | 19.10 | 15.63 |
| | 2002 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 40.00 | 0.00 | 9.71 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 5.65 | 4.41 |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 20.00 | 0.00 | 4.76 |
| | 2005 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 6.76 | 5.13 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dolomite | 1999 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0.00 | 0.00 | 4.13 | 0.98 |
| | 2000 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 0.00 | 0.47 | 2.85 | 1.07 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 1.35 | 0.45 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.00 | 0.56 | 2.20 | 0.89 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Felspar | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fluorite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| | 2002 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 7.69 | 0.00 | 6.71 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Galena & Sphalarite | 1999 | 41 | 41 | 0 | 0 | 9 | 9 | 50 | 50 | 14.80 | 0.00 | 3.28 | 9.07 |
| | 2000 | 23 | 24 | 0 | 0 | 11 | 11 | 34 | 35 | 9.17 | 0.00 | 4.16 | 6.65 |
| | 2001 | 26 | 26 | 1 | 1 | 17 | 17 | 44 | 44 | 11.60 | 3.24 | 6.41 | 8.44 |
| | 2002 | 9 | 9 | 2 | 2 | 12 | 12 | 23 | 23 | 4.46 | 7.07 | 5.46 | 5.12 |
| | 2003 | 11 | 11 | 1 | 1 | 10 | 10 | 22 | 22 | 8.16 | 1.66 | 6.34 | 6.24 |
| | 2004 | 21 | 21 | 2 | 2 | 7 | 7 | 30 | 30 | 18.90 | 3.26 | 3.42 | 7.94 |
| | 2005 | 14 | 14 | 0 | 0 | 10 | 10 | 24 | 24 | 13.46 | 0.00 | 6.75 | 7.43 |
| | 2006 | 7 | 7 | 3 | 3 | 2 | 2 | 12 | 12 | 6.73 | 4.23 | 1.35 | 3.72 |
| Garnet | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 2.04 | 0.39 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Gold | 1999 | 44 | 48 | 0 | 0 | 19 | 19 | 63 | 67 | 13.40 | 0.00 | 8.62 | 11.38 |
| | 2000 | 31 | 31 | 0 | 0 | 8 | 8 | 39 | 39 | 9.92 | 0.00 | 3.79 | 7.31 |
| | 2001 | 25 | 25 | 0 | 0 | 7 | 7 | 32 | 32 | 13.60 | 0.00 | 4.16 | 8.84 |
| | 2002 | 27 | 27 | 0 | 0 | 13 | 13 | 40 | 40 | 15.60 | 0.00 | 8.52 | 11.97 |
| | 2003 | 46 | 46 | 0 | 0 | 15 | 15 | 61 | 61 | 26.70 | 0.00 | 7.79 | 16.38 |
| | 2004 | 22 | 22 | 0 | 0 | 13 | 13 | 35 | 35 | 16.70 | 0.00 | 9.57 | 12.83 |
| | 2005 | 9 | 9 | 0 | 0 | 1 | 1 | 10 | 10 | 5.83 | 0.00 | 0.64 | 3.21 |
| | 2006 | 7 | 7 | 0 | 0 | 2 | 3 | 9 | 10 | 4.53 | 0.00 | 1.92 | 3.21 |
| Granite | 1999 | 0 | 0 | 5 | 8 | 0 | 0 | 5 | 8 | 0.00 | 2.20 | 0.00 | 1.82 |
| | 2000 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 0.00 | 0.45 | 0.00 | 0.38 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.69 | 0.17 |
| | 2003 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0.00 | 0.21 | 0.73 | 0.32 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 0.37 | 0.00 | 0.28 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Iron | 1999 | 0 | 0 | 12 | 13 | 24 | 26 | 36 | 39 | 0.00 | 0.60 | 1.80 | 1.08 |
| | 2000 | 0 | 0 | 19 | 19 | 15 | 15 | 34 | 34 | 0.00 | 0.92 | 1.03 | 0.96 |
| | 2001 | 0 | 0 | 27 | 28 | 27 | 27 | 54 | 55 | 0.00 | 1.51 | 1.96 | 1.70 |
| | 2002 | 0 | 0 | 24 | 24 | 36 | 36 | 60 | 60 | 0.00 | 1.17 | 2.73 | 1.78 |
| | 2003 | 0 | 0 | 16 | 19 | 22 | 24 | 38 | 43 | 0.00 | 0.84 | 1.59 | 1.17 |
| | 2004 | 0 | 0 | 21 | 23 | 24 | 24 | 45 | 47 | 0.00 | 1.09 | 1.53 | 1.28 |
| | 2005 | 0 | 0 | 10 | 12 | 24 | 24 | 34 | 36 | 0.00 | 0.54 | 1.58 | 0.96 |
| | 2006 | 0 | 0 | 10 | 10 | 11 | 12 | 21 | 22 | 0.00 | 0.45 | 0.79 | 0.59 |
| Limestone | 1999 | 0 | 0 | 6 | 9 | 12 | 12 | 18 | 21 | 0.00 | 0.41 | 1.50 | 0.71 |
| | 2000 | 0 | 0 | 8 | 8 | 9 | 9 | 17 | 17 | 0.00 | 0.35 | 1.07 | 0.55 |

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| | 2001 | 0 | 0 | 6 | 6 | 8 | 8 | 14 | 14 | 0.00 | 0.33 | 1.34 | 0.58 |
| | 2002 | 0 | 0 | 4 | 4 | 4 | 4 | 8 | 8 | 0.00 | 0.21 | 0.64 | 0.32 |
| | 2003 | 0 | 0 | 5 | 5 | 8 | 8 | 13 | 13 | 0.00 | 0.27 | 1.38 | 0.54 |
| | 2004 | 0 | 0 | 6 | 6 | 8 | 8 | 14 | 14 | 0.00 | 0.37 | 1.38 | 0.61 |
| | 2005 | 0 | 0 | 5 | 5 | 4 | 4 | 9 | 9 | 0.00 | 0.25 | 0.69 | 0.35 |
| | 2006 | 0 | 0 | 2 | 2 | 4 | 5 | 6 | 7 | 0.00 | 0.10 | 0.86 | 0.27 |
| Magnesite | 1999 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 3.69 | 0.37 |
| | 2000 | 0 | 0 | 2 | 4 | 1 | 1 | 3 | 5 | 0.00 | 1.48 | 2.42 | 1.61 |
| | 2001 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.40 | 0.00 | 0.35 |
| | 2002 | 0 | 0 | 2 | 2 | 2 | 2 | 4 | 4 | 0.00 | 1.04 | 5.97 | 1.78 |
| | 2003 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.59 | 0.00 | 0.47 |
| | 2004 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 3.70 | 0.58 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Manganese | 1999 | 4 | 6 | 3 | 3 | 1 | 1 | 8 | 10 | 2.19 | 0.35 | 0.20 | 0.61 |
| | 2000 | 6 | 6 | 0 | 0 | 1 | 1 | 7 | 7 | 2.29 | 0.00 | 0.23 | 0.43 |
| | 2001 | 2 | 2 | 0 | 0 | 4 | 4 | 6 | 6 | 0.80 | 0.00 | 1.00 | 0.44 |
| | 2002 | 5 | 5 | 2 | 2 | 7 | 7 | 14 | 14 | 1.96 | 0.27 | 1.88 | 1.02 |
| | 2003 | 4 | 4 | 1 | 1 | 6 | 6 | 11 | 11 | 1.63 | 0.14 | 1.75 | 0.83 |
| | 2004 | 6 | 6 | 0 | 0 | 3 | 3 | 9 | 9 | 1.99 | 0.00 | 0.77 | 0.62 |
| | 2005 | 2 | 2 | 1 | 1 | 2 | 2 | 5 | 5 | 0.71 | 0.13 | 0.50 | 0.34 |
| | 2006 | 5 | 6 | 0 | 0 | 0 | 0 | 5 | 6 | 2.13 | 0.00 | 0.00 | 0.61 |
| Marble | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.00 | 0.91 | 0.00 | 0.69 |
| | 2001 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.00 | 0.82 | 0.00 | 0.59 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mica | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1.50 | 0.00 | 0.00 | 1.02 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pyrite | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Quartz | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Silica | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 4 | 0.00 | 0.94 | 2.92 | 1.42 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sillimanite | 1999 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 1.81 | 1.59 |
| | 2000 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.95 | 0.83 |
| | 2001 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 1.46 | 1.21 |
| | 2002 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.79 | 0.65 |
| | 2003 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.00 | 0.00 | 0.54 | 0.29 |
| | 2004 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 1.10 | 0.66 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.00 | 0.00 | 1.12 | 0.70 |
| Slate | 1999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Steatite | 1999 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 3 | 0.00 | 1.20 | 0.00 | 0.91 |
| | 2000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2001 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0.00 | 0.60 | 0.00 | 0.46 |
| | 2002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2004 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.00 | 0.31 | 0.00 | 0.25 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Stone | 1999 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0.00 | 0.62 | 0.00 | 0.39 |
| | 2000 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.00 | 0.24 | 0.00 | 0.16 |
| | 2001 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0.00 | 0.48 | 0.00 | 0.32 |
| | 2002 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 3 | 0.00 | 0.62 | 0.00 | 0.38 |
| | 2003 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | 0.00 | 1.01 | 0.00 | 0.63 |
| | 2004 | 0 | 0 | 2 | 5 | 0 | 0 | 2 | 5 | 0.00 | 1.98 | 0.00 | 1.26 |
| | 2005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| Atomic | 1999 | 4 | 4 | 0 | 0 | 5 | 5 | 9 | 9 | N.A. | N.A. | N.A. | N.A. |
| Minerals | 2000 | 4 | 4 | 0 | 0 | 2 | 2 | 6 | 6 | N.A. | N.A. | N.A. | N.A. |

| Mineral | Year | Serious Accident | | | | | | | | Death Rate per 1000 persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Belowground | | Opencast | | Aboveground | | Total | | | | | |
| | | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | Acc | S/Inj | BG | OC | AG | TOT |
| | 2001 | 5 | 5 | 0 | 0 | 6 | 6 | 11 | 11 | N.A. | N.A. | N.A. | N.A. |
| | 2002 | 9 | 9 | 0 | 0 | 2 | 2 | 11 | 11 | N.A. | N.A. | N.A. | N.A. |
| | 2003 | 8 | 8 | 0 | 0 | 1 | 1 | 9 | 9 | N.A. | N.A. | N.A. | N.A. |
| | 2004 | 4 | 4 | 0 | 0 | 1 | 1 | 5 | 5 | N.A. | N.A. | N.A. | N.A. |
| | 2005 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | N.A. | N.A. | N.A. | N.A. |
| | 2006 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | N.A. | N.A. | N.A. | N.A. |
| **Total** | **1999** | **96** | **102** | **29** | **39** | **105** | **110** | **230** | **251** | **6.20** | **0.50** | **1.42** | **1.37** |
| | **2000** | **66** | **67** | **38** | **42** | **83** | **85** | **187** | **194** | **4.70** | **0.50** | **1.14** | **1.08** |
| | **2001** | **59** | **61** | **37** | **43** | **103** | **104** | **199** | **208** | **6.30** | **0.60** | **1.57** | **1.42** |
| | **2002** | **52** | **52** | **40** | **44** | **113** | **113** | **205** | **209** | **5.10** | **0.50** | **1.72** | **1.31** |
| | **2003** | **57** | **57** | **25** | **36** | **86** | **92** | **168** | **185** | **7.40** | **0.40** | **1.43** | **1.18** |
| | **2004** | **54** | **54** | **34** | **39** | **100** | **103** | **188** | **203** | **6.70** | **0.50** | **1.57** | **1.25** |
| | **2005** | **27** | **27** | **22** | **23** | **59** | **59** | **108** | **109** | **3.35** | **0.30** | **0.90** | **0.69** |
| | **2006** | **23** | **24** | **15** | **15** | **37** | **40** | **75** | **79** | **3.03** | **0.31** | **0.54** | **0.54** |

Note : Figures for the year 2006 are provisional.
N.A. = Employment Figures not available.

# 4.0 Approval of Equipment, Appliances, Material and Machinery

Several equipments, appliances, materials and machineries meant for use in mines are required to be approved by DGMS; a list of such equipments is given at Appendix: V.
Table below shows particulars of items approved during the year 2006.

| **Equipment, appliances, materials and machinery approved during the year 2006** | | |
|---|---|---|
| Sl. No. | Equipment/appliances/materials/ machinery | No. of approvals granted/renewed/ extended during the year |
| 1. | Self Rescuer | 2 |
| 2. | Methanometer | 1 |
| 3. | Helmet | 6 |
| 4. | Cap Lamp | 6 |
| 5. | Footwear | 23 |
| 6. | Gas Detector/Monitor | 6 |
| 7. | Cap Lamp Bulb | 3 |
| 8. | Dust Respirator | 2 |
| 9. | Breathing Apparatus | 1 |
| 10. | Fire-resistant plastic sheeting | 0 |
| 11. | Fire-resistant brattice cloth | 0 |
| 12. | Ventilation ducting | 1 |
| 13. | Personal dust sampler | 1 |
| 14. | Co detector tubes/aspirator | 0 |
| 15. | Environmental monitoring system | 2 |
| 16. | Hydraulic props | 0 |
| 17. | Powered support & its components | 10 |
| 18. | Friction props | 2 |
| 19. | Linc bar | 1 |
| 20. | STDA Legs | 4 |
| 21. | Explosives | 25 |
| 22. | Exploders | 2 |
| 23. | Detonators | 12 |
| 24. | Flame proof equipment - motor, switches, circuit breakers etc | 55 |
| 25. | Intrinsically safe apparatus | 16 |
| 26. | Equipment for use in hazardous area | 34 |
| 27. | Cables | 18 |
| 28. | Cage suspension gears | 24 |
| 29. | Fire resistant conveyor belting | 9 |
| 30. | Automatic contrivance | 4 |
| 31. | Man riding system | 9 |
| 32. | Fire resistant hydraulic fluid | 12 |
| 33. | High pressure hose | 7 |
| 34. | Accreditation of Test House | 4 |
| 35. | Power brake and emergency stop valve | 3 |
| 36. | Chair lift system | 2 |
| 37. | Head rope attachment | 0 |
| 38. | Tail rope attachment | 2 |
| 39. | Winding Rope | 0 |
| 40. | Automatic recording speed indicator | 1 |
| | **TOTAL** | **310** |

# 5.0 Coal & Metalliferous Mining Examinations during 2006

**(i) Board of Mining Examinations under the CMR, 1957**

| | |
|---|---|
| Shri B.Bhattacharjee | Chairman, Board of Mining Examination, (upto 27.10.2006) |
| Shri MM Sharma | Chairman, Board of Mining Examination (from 28.10.2006) |
| Shri Sashi Kumar | CMD, CIL (Retd.) |
| Shri V.K.Singh | CMD, NCL |
| Shri M.K.Thapar | CMD,SECL (Retd.) |
| Shri P. Vasudeva Rao | Director(Tech), SCC Ltd. |
| Prof. A. Bhattacharjee | Department of Mining Engineering, IIT, Kharagpur |

**(ii) Board of Mining Examinations under the MMR, 1961**

| | |
|---|---|
| Shri B.Bhattacharjee | Chairman, Board of Mining Examination, (upto 27.10.2006) |
| Shri MM Sharma | Chairman, Board of Mining Examination (from 28.10.2006) |
| Shri R.Gupta | CMD,UCIL, |
| Prof.S.B.Srivastava | Department of Mining Engineering, ISM, Dhanbad |
| Shri P.M.Reddy | CMD., MOI Ltd. (Retd.) |
| Shri B.Ramesh Kumar | CMD,NMDC |
| Shri K.S.Chowdary | Ex.Director, H.Z.Ltd., |

**Examiners for Certificates of Competency.**

**Coal Mining Examinations**

(a) Following were the Examiners for Manager's Certificates of Competency Examinations held in 2006

| Subject | Ist. Class Manager's Certificate | IInd Class Manager's Certificate |
|---|---|---|
| Mine Management, Legislation & General Safety | Shri SJ Sibal | Shri JP Kashyap |
| Winning & Working | Shri J.V.Duttatreyulu | Shri CH Diwakar |
| Mine Ventilation | Shri SN Katiyar | Shri JS Prasad |
| Mining Machinery | Shri AK Pal | Shri N. Das |
| Mine Surveying | Shri Anup Biswas | Shri SP Singh |

(b) Following were the Examiners for Surveyor's Certificates of Competency Examination held in 2006.

| | |
|---|---|
| Surveying Paper-I | Shri BP Ahuja |
| Surveying Paper-II | Shri SP Chand |

**Metal Mining Examinations**

(a) Following were the examiners for Manager's certificate of Competency Exam held in 2006.

| **Subject** | **Ist. Class Manager's Certificate (Un-restricted)** | **IInd Class Manager's Certificate (Un-restricted)** |
|---|---|---|
| Mine Management, Legislation and General Safety | Shri S. Puri | Shri SI Hussain |
| Winning & Working | Shri A.C.Kundu | Shri B.N.Shukla |
| Mine Ventilation, Explosion, Fires & Inundation | Shri C.P.N.Pathak | Shri D.Acharya |
| Mining Machinery | Shri Akhilesh Joshi | Shri A.K.Sen |
| Mine Surveying | Shri HR Kalihari | Shri Kabir Ghosh |

| **Subject** | **Ist Class Manager's Certificate (Restricted)** | **IInd Class Manager's Certificate (Restricted)** |
|---|---|---|
| Mine Management Legislation And General Safety | Shri R. Guha | Shri RB Chakraborty |
| Winning & Working | Shri VK Jain | Shri VK Mitra |
| Mining Machinery | Shri AR Ansari | Shri Ravi Kumar |
| Mine Surveying | Shri M. Venkataiah | Shri AC Basak |

(b) Following were the examiners for Surveyor's Certificate of Competency Examination held in 2006.

| | |
|---|---|
| Surveyor's Certificate Restricted to Opencast Mines | Shri P.K.Sharma |
| Surveyor's Certificate (Un-restricted) Part-I | Shri AK Megharaj |
| Part-II | Shri SC Bhowmick |

Other particulars regarding various examinations held are given in **Appendix-IV**.

# 6.0 National Safety Awards (Mines)

## 6.1 Introduction

During the post-independence era, the mineral industry in India has achieved tremendous growth and also imbibed the latest mining technologies. Along with this growth, there has been corresponding awareness of the need to protect the health and lives of workers. The Constitution of India casts an obligation on all of us to ensure just and humane conditions of work. To give due recognition to outstanding safety performance at the national level, the Ministry of Labour, Government of India, instituted the National Safety Awards (Mines) in 1983 for the contest year 1982.

## 6.2 Scope

The scheme is applicable to all mines, which come under the purview of the Mines Act, 1952. Such mines have been classified into 7 groups as given below:

i. Coal mines - Below ground with difficult mining conditions
ii. Coal mines - Belowground (others)
iii. Coal mines - Opencast
iv. Metal mines - Mechanized opencast
v. Metal mines - Manual opencast
vi. Metal mines - Belowground
vii. Oil mines

## 6.3 Schemes

Among different indices available, the following two have been accepted as indicator of safety performance:

1. Longest accident free period (LAFP) in terms of manshifts worked during three consecutive years ending with the contest year.

2. Lowest injury frequency rate (LIFR) during three consecutive years ending with the contest year.

It is expected that every mine shall endeavour to improve its safety performance. A bad mine has a high injury frequency rate. After obtaining a breakthrough, its next attempt should be to achieve longest accident-free period in terms of manshifts worked.

## 6.4 Awards Committee

The awards committee is constituted by the Ministry of Labour & Employment with Director-General of Mines Safety as its Chairman, eight representatives of mine managements, eight representatives of trade unions and an officer of DGMS as its Member-Secretary.

### 6.5 Mode of operation

An advertisement is released through DAVP in English, Hindi and other regional languages inviting applications in prescribed proforma for National Safety Awards (Mines). An entry fee of Rs.100/- per application is charged through a crossed IPO drawn in favour of the Administrative Officer/DDO, DGMS and payable at Dhanbad Post Office. The prescribed application form is jointly signed by the mine management and a workers' representative.

## 7.0 Conference on Safety in Mines

The Conference on Safety in Mines is a tripartite forum at the national level in which the employers' representatives, the trade unions' representatives, the Government represented by Ministry of Labour & Employment, DGMS, various administrative ministries/departments and State Governments and associated institutions, professional bodies, service associations, etc. take part. They review status of the safety in mining industry and the adequacy of existing measures in a spirit of mutual cooperation. The conference also suggests measures for further improvement in safety, welfare and health of mine workers. The first such Conference was held in the year 1958 followed by the 2nd in July, 1966, the 3rd in 1973, the 4th in 1978, the 5th in 1980, the 6th in 1986, the 7th in 1988, the 8th in 1993 and the 9th Conference was held on 2nd & 3rd February, 2000 in New Delhi.

# 8.0 Plan Schemes

DGMS is implementing four Plan Schemes to provide in-house technical support, namely:

## (i) Study of Mine Accidents and Development of Mines 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)". 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 "Study of Mine Accidents and Development of Mines Safety Information System (SOMA)".

(A) Accident Prone Mines:

A modified approach for identification of accident-prone mines was adopted; data from all the mines of eleven coal companies were collected. In-depth analysis of all fatal and serious accidents that occurred in all 517 coal mines and 9 lignite mines of the country during the periods 2002- 2006 were made and based on the outcome of the study, the accident-prone mines were identified. This was done with a view to identify hazard potential of such mines and draw up action programmes for formulation of mitigating measures through collective efforts of Mine Management, Trade Unions and the Government.

The following table shows the number of accident-prone mines identified in different coal companies in last five years.

| **Name of company** | **Number of mines identified as accident prone** | | | | |
|---|---|---|---|---|---|
| | **2002** | **2003** | **2004** | **2005** | **2006** |
| ECL | 11 | 12 | 11 | 9 | 8 |
| BCCL | 6 | 7 | 10 | 8 | 6 |
| SECL | 7 | 8 | 10 | 8 | 6 |
| MCL | 2 | 2 | 4 | 3 | 1 |
| WCL | 7 | 9 | 9 | 9 | 8 |
| CCL | 6 | 5 | 6 | 7 | 4 |
| NCL | 1 | 2 | 2 | 1 | 1 |
| NECL | 0 | 0 | 1 | 0 | 0 |
| SCCL | 5 | 8 | 9 | 10 | 5 |
| TISCO | 1 | 1 | 2 | 2 | 1 |
| IISCO | 0 | 0 | 0 | 0 | 1 |
| **Total** | **46** | **54** | **64** | **57** | **41** |
| **LIGNITE** | **3** | **3** | **3** | **-** | **1** |

The respective companies were advised to take suitable steps from technical and management point of view to identify the potential risk of the respective mines and to device suitable corrective measures and implement the same in a time bound period so that the accidents are reduced.

Reports of enquiry into all fatal accidents were scrutinized. Finalized causes and circumstances leading to these accidents were compiled for inclusion in DGMS Annual Report.

(B) In the year 2006, work of collection, compilation and analysis on a PC platform in respect of accident due to roof fall, side fall, wheeled trackless transportation machinery and haulage in coal mine was conducted in order to identify critical causation factors of such types of accidents and to find out probable corrective measures for their prevention.

**Progress:**

- Scrutiny of enquiry reports and extraction of data for entry into EDP – 196
- Visit to mines in connection with safety campaigns.
- Compilation and publication of Annual Report, 2005.
- Compilation and publication of Standard Note on DGMS as on 1.1.2006
- Identification of accident-prone mines in respect of coal mines.
- Information bulletin and technical circular issued.
- Compilation of statistics and preparation of manuscript for –
    - Statistics of Mines in India, Vol.I (Coal), 2005
    - Statistics of Mines in India, Vol.II(Non-Coal), 2005
    - Monthly Review of Accidents
- Processing of applications and preparing a list of winner for National Safety Awards (Mines)

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

**Origin:** 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)"

**Scientific and Technological Support (S&T)**

This scheme aims at providing in-house scientific support to the officers of DGMS in discharge of their enforcemental, regulatory and promotional role. It also provides scientific support to mine operators, workers organization 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, fires 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:

(i) Planned support: This plan support is provided to field offices on:

- A current issue which has emerged into an enforcemental problem;
- An enforcemental strategy calling for development of monitoring equipments or techniques; and
- Monitoring of quality assurance of external organization in sampling, pre-approval testing and other similar activities.

These activities are selected on merit, including improvement of efficiency and safety and future needs.

(ii) Reactive Support: Reactive Support is provided in response to demands from field offices in areas where:

- In-house assessment and analysis of a problem leads to better understanding of enforcemental problem and helps in determining enforcemental strategy;
- Support is required on a technical problem without referring to external agency.

(iii) Testing Services: This service is provided to the field offices as a sample check on quality control standards and in emergency response situation.

Major Programmes: The major programmes of the S&T plan scheme includes

(1) Occupational Safety:

(a) Monitoring of implementation of the Technical Standards on Support system in Bord 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 & Rejection Norms.

(iii) Testing of fire resistant 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 of standards for medical examinations.

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

**(B) Development of Mines Rescue Services:**

This 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 underground mines and to deal with applications for grant of permissions/approval/relaxation under the Mines Rescue Rules, 1985.

Major Programme:

→ Installation of testing facility for SCSR & Resuscitator
→ Creation of Rescue Data bases
  (i) CMR/OMR/MMR/ dBase
  (ii) RRAE databases
→ Design of rescue systems
  (i) Inundation RRS
  (ii) Fire RRS
  (iii) Explosion RRS
→ Development of disaster control systems
→ Testing of SCSR
→ Conduct of Rescue Competition
→ Standard setting, review of emergency plans
→ Issue of Technical circular's to the mining industry

**(C) Human Resource Development:**

This scheme, which started on a modest scale from 1.4.90. The scheme envisages setting-up of a Mines Safety & Health Academy comprising of an Institutes at Dhanbad and at 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, enforcemental, advisory and promotional roles. The facilities so created would also be utilized for disseminating latest information on mine safety principles and practices amongst the key safety personnel of the mining industry and the Workmen Inspectors.

Major Programmes:

(1) Development of training schedules

(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 Inspectors.

**During the year 2006, the following activities were undertaken by S&T wing:**

| Activity | Achievement |
|---|---|
| **(A) Augmentation of S&T Capabilities:** | |
| 1. Mine Environment surveys | 21 mines |
| 2. Occupational Health Review, Survey & Medical exam | 05 mines |
| 3. Ground Control. | 08 mines |
| 4. Testing of machinery parts | Nil |
| 5. Additional job:- | |
| (a) Gas analysis | 163 nos. |
| (b) Mine Dust analysis | Nil |
| **(B) Development of Mines Rescue Services:** | |
| 1. Creation of Rescue databases | Contd. |
| 2. Review/design of Rescue systems | Contd. |
| 3. Testing of self rescuers | Contd. |
| 4. Rescue competition | 14 nos. |
| 5. Standard setting, review of emergency plans | 07 nos. |
| 6. Field RS and RR visits | 14 nos. |
| **(C) Human Resource Development** | |
| 1. Development of training scheduled | -- |
| 2. Conduct of training programs:- | |
| (a) DGMS Officers | 92 |
| (b) Key personnel from mining industry | 105 persons |
| (c) Workmen's Inspectors | 12 |

## (iii) Strengthening of Machinery for Conduct of Statutory Examinations (SSEX)"

This scheme was conceived during the 9th plan period and was principally approved by the Ministry of Labour. However, due to various procedural and other problems, the work could not start till the penultimate year of the current plan period. Feasibility study vis-à-vis computerization of the examination system has been done.

The main `objectives of the scheme are to strengthen and improve the efficiency of the statutory examination system by:

- Developing a quick and transparent system of examination with the aid of computer and associated information technology.
- Review of the examination system in vogue, in order to eliminate redundancy and standardize procedures.
- Developing computerized application-processing system, issue of certificate and maintenance of records connected therewith.

## (iv) Improving efficiency by providing infrastructure facilities in DGMS (PIF)

The purpose of the scheme is to develop infrastructure facility by providing own office and residential complexes to the officers and staff members, providing better communication facilities and office equipment and furnishing of offices. The facility so created would improve the efficiency of officers and staff members of the DGMS. The scheme also envisages improvement of enforcement of safety laws in the mining industry by strengthening the legal set up in DGMS. The scheme proposes creation of adequate no. of posts in the legal set up and also provision of infrastructural facilities to enable the legal officers to play their role in enforcemental activities. The legal set up so created will also be utilized for rendering advise to organisation on legal matters and also providing legal assistance to the Board of Mining Examinations.

This scheme was conceived during the 9th plan period and was principally approved by the Ministry of Labour in March, 1999. However, due to various procedural and other problems, the work could not start till the penultimate year of the current plan period.

Construction work of residential quarters at Udaipur & Bhubaneswar and construction of boundary wall of Dhanbad office were completed.

## (v) Modernization of Information Database Relating to Mine Management (MID) (Merged)

The purpose of the scheme is to reach beyond current efforts to reinvent DGMS by identifying breakthrough strategies that rethink the core value of key services, improve service delivery, reduce cost and redefine administrative processes. The application of e-Governance to the processes of functioning of DGMS will bring about simple, moral, accountable, responsive and transparent governance. It will help the organization in managing its operations at various phases of governance making the entire process user friendly.

The objective of the scheme would be:

(i) Identification of need for mine safety information system and to identify the boundaries of an e-governance system;

(ii) develop a core group within the organization to formulate and use computer based 'MIS' vis-à-vis mines safety;

(iii) develop modules of need-based software with the help of experts;

(iv) create infrastructure to implement computer based systems including establishment of LAN/WAN, establish electronic communication channels;

(v) establish a comprehensive protocol for use of such system;

(vi) establishment and operation of modern survey system and electronic storage of mine plans; and

(vii) establish a comprehensive training system for officers of DGMS in use of such new systems.

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