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 8 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 29 such Regional Offices. Sub-regional offices have been set up in important areas of concentrated mining activities away from Regional office. There are 3 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 31.12.2010. A statement showing posting of Group 'A' & 'B' officers in DGMS during the year 2010 are given at **Appendix-III**.

TABLE:1	**STRENGTH OF INSPECTING OFFICERS AND SANCTIONED POSTS AS ON 31.12.2010**							
DESIGNATION	DISCIPLINE							
	MINING		ELECTRICAL		MECHANICAL		O. H	
	S	P	S	P	S	P	S	P
Director General	1	1	-	-	-	-	-	-
Dy. Director General	9	6	1	1	1	-	-	-
Director	50	23	16	9	16	6	-	-
Dy. Director	99	61	34	6	33	1	5	1
Assistant Director	-	-	-	-	-	-	Gr.I-4	2
Total	**159**	**91**	**51**	**16**	**50**	**7**	**9**	**3**

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 -
     - i) safety education and awareness programme
     - ii) 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 2010:

TABLE:2	Notification No. & date	Brief subject
1.	S.O.431(E) dated 22.2.2010	Appointment of officers in the Directorate General of Mines Safety Ministry of Labour & Employment as Special Public Prosecutors.
2.	S.O.1088(E) dated 13.5.2010	Appointment of Sri Satish Puri, Dy.Director-General of Mines Safety to be the Chief Inspector of Mines from 11.5.2010 to till the assumption of duties by Sri SJ Sibal.
3.	S.O.1989(E) dated 12.8.2010	Central Government hereby re-constitutes the Board of Mining Examinations (Coal).
4.	S.O.2453(E) dated 7.10.2010	Appointment of Sri Satish Puri as Director-General of Mines Safety.
5.	S.O.2990 dated 19.11.2010	Notification of offices under the administrative control of the Ministry of Labour & Employment.
6.	S.O.3168 dated 13.12.2010	Inclusion of Singrauli District of the State of Madhya Pradesh in the area of jurisdiction of Varanasi Region.

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 2010					
Discipline of Inspection Service	Coal Mines		Metal Mines		Oil Mines	
	Inspections	Enquiries	Inspections	Enquiries	Inspections	Enquiries
Mining	2798	884	3178	407	256	-
Electrical	635	48	140	5	74	-
Mechanical	275	71	54	18	2	50
Occupational Health	24	1	3	-	-	-
TOTAL	**3732**	**1004**	**3375**	**430**	**332**	**50**

1.7 Improvement Notices & Prohibitory Orders

1.7.1 Coal Mines

111 (one hundred eleven) improvement notices under various provisions of the statutes were issued as a result of inspections of the mines during the year 2010. 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 2010	
SL.NO.	NATURE OF DEFECT	NO. OF CASES
1.	High benches in opencast workings	12
2.	Inadequate support	2
3.	Poor ventilation	6
4.	Inadequate coal dust suppression	7
5.	Isolation stopping	24
6.	Improper/ non-provision of travelling road	0
7.	Danger of Inundation	5
8.	Unstable workings	1
9.	Lag in stowing	0
10.	Accumulation of gases	0
11.	Defective Electrical installation	2
12.	Inadequate earth leakage protection	0
13.	Defective winding rope	1
14.	Other defects in winding installation	1
15.	Defective shot-firing practices	0
16.	Others	50
	TOTAL	**111**

TABLE: 21	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES				
Cause	**2006**	**2007**	**2008**	**2009***	**2010***
Ground movement	56 (70)	70 (78)	69 (73)	57 (68)	53 (62)
Winding in shafts	5 (7)	2 (11)	0 (0)	3 (4)	-
Transportation machinery (other than winding)	267 (280)	198 (202)	126 (128)	103 (108)	72 (84)
Machinery other than transportation machinery	54 (54)	79 (81)	40 (42)	36 (37)	24 (24)
Explosive	1 (1)	4 (4)	1 (1)	3 (5)	5 (11)
Electricity	5 (5)	3 (6)	0 (0)	2 (2)	3 (3)
Gas, Dust etc.	1 (1)	1 (1)	0 (14)	1 (2)	-
Falls other than fall of ground	375 (376)	456 (458)	351 (352)	309 (312)	220 (222)
Other causes	97 (97)	110 (110)	99 (99)	122 (122)	101 (103)
TOTAL	**861 (891)**	**923 (951)**	**686 (709)**	**636 (660)**	**478 (509)**

* Figures are provisional
Note: Figures in parentheses denote the number of persons seriously injured and it includes seriously injureds from fatal accidents also.

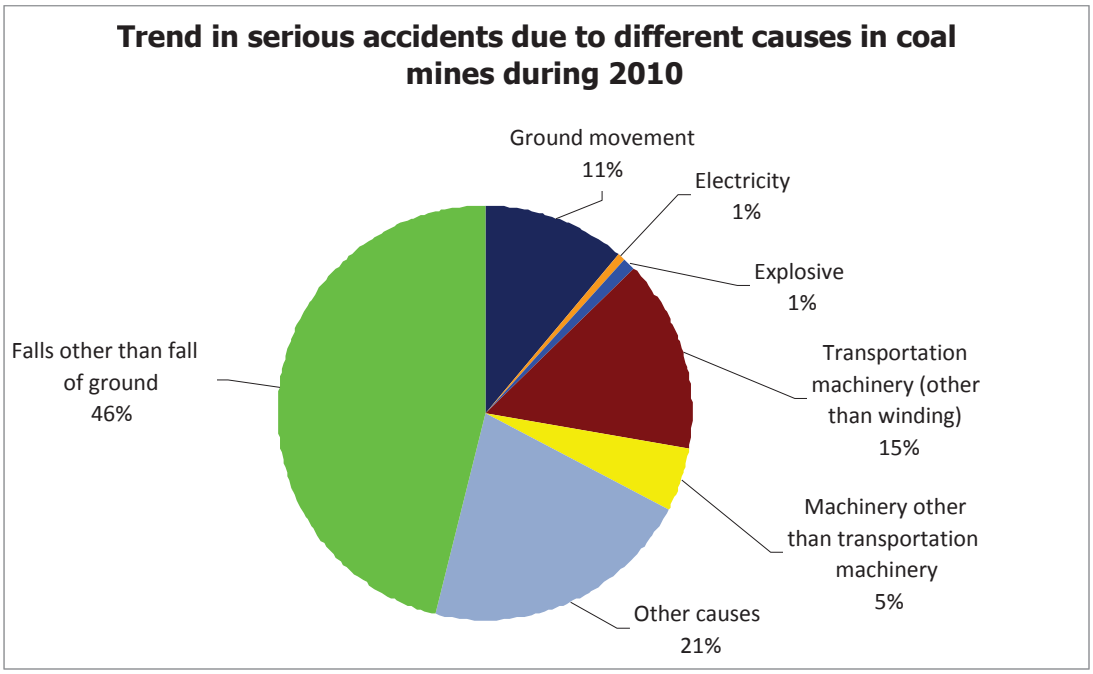


TABLE: 21A	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT PLACES IN COAL MINES				
Place	**2006**	**2007**	**2008**	**2009***	**2010***
Belowground	646 (665)	717 (735)	516 (536)	490 (506)	347 (369)
Opencast	88 (99)	83 (88)	74 (76)	50 (54)	61 (68)
Aboveground	127 (127)	123 (128)	96 (97)	96 (100)	70 (72)
Total	**861 (891)**	**923 (951)**	**686 (709)**	**636 (660)**	**478 (509)**

* Figures are provisional
Note: Figures in parentheses denote the number of persons seriously injured and it includes seriously injured from fatal accidents also.

2.2.3B.1 Ground movement

During the year 2010, ground movement accounted for 22(23%) fatal accidents and 53(11%) 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 2010		
Cause	No. of accidents	Persons killed	Persons seriously inj.
1.Fall of roof	14	17	6
2.Fall of side			
(a) belowground	7	8	-
(b) opencast	-	-	-
Sub-Total	**7**	**8**	**-**
3.Others			
(a) bumps	-	-	-
(b) air blast	-	-	-
(c) land slide	1	1	1
(d) collapse of pillar	-	-	-
(e) over hang	-	-	-
Sub-Total	**1**	**1**	**1**
GRAND TOTAL	**22**	**26**	**7**

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 coal mines and that trend continues even today. There were 22 accidents due to ground movement involving 26 fatalities and 07 serious injuries during the year 2010, out of which 14 accidents were due to fall of roof, 7 accidents were due to fall of side and 01 due to landslide. Roof fall accidents accounted for 14% of all fatal accidents in coal mines and it contributed 34% of all fatal accidents in belowground operations. Further critical analysis of roof fall accidents for the last five years 2006 to 2010 revealed the following:

I. Physical and Working Condition factors -

1. **Method of work:** Accident mainly occurred in Depillaring districts. 47% (38% in caving district and 9% in stowing district) of the fatal accidents occurred in Depillaring district, 44% in Board & Pillar development and 9% in other places.
2. **Height of working:** 76% of the fatal accidents occurred in gallery height upto 3m, 20% in 3m to 5m.
3. **Width of gallery:** 1% of the fatal accidents occurred in width of galleries between 0 - 3.0m and 4% in width between 3.01 -3.5m, 13% between 3.51-4.00m, 47% between 4.01 -4.50m and 34% occurred in width of galleries above 4.50 m.
4. **Distance from face:** 37% of the accidents occurred within 5m of the working face and 19% each between 5.01 to 10m and 20.01m & above, 6% in 10.01m to 20.00m. Thus 56% of the accident occurred within 10m of the freshly exposed roof from the face of working.

5. **Type of support:** 19% of the fatal accidents occurred in areas supported by timber support only, 3% in timber & steel supports, 11% in roof bolts & others and 67% in other supports. However, areas supported by roof bolts were seems to be 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 58% of cases supports provided was inadequate, which means sufficient number of supports were not provided before engaging persons at work and majority of the accidents could have been averted had proper supports been provided before engaging the persons at work and front line supervisors been attentive for providing adequate supports. It also reveals that in 40% cases accident occurred although adequate support was provided.
7. **Operation at the time of accident:** 13% each of the fatal accidents occurred during loading and withdrawal of supports operation, 12% during loading (manual), 11% during dressing, 7% each during drilling and supporting operation, thus 30% 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. 37% of the fatal accidents occurred due to other activities.
8. **Time elapsed after blasting:** 32% 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 was not allowed for the roof to settle before engaging persons. 7% of the fatal accidents occurred between ½ - 1 hour, 12% between 1 to 2 hours and 27% of the fatal accidents occurred beyond 2 hours of blasting operation and in 22% of cases no blasting operation was carried out.

II. Geological factors -

9. **Thickness of seam:** 46% of the fatal accidents occurred in coal seam having thickness upto 3.0 m., 23% in 3 to 6 m. and 12% 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:** 32% each of the fatal accidents accounted in depth of cover 0 to 100m and 101 to 200m and 25% between 201 to 300m, 7% between 301 to 400m and 4% occurred above 400m.
11. **Thickness of fall:** 13% of the fatal accidents occurred having thickness of fallen strata varying between 0 to 0.15m, 34% between 0.16 to 0.3m. Thus 47% of accidents had thickness of fall between 0 to 0.3m. 33% of fatal accident occurred having thickness of fallen strata between 0.31 to 1.0 m thick and 19% occurred beyond 1.00m thick. Fall of 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:** 52% of the fatal accidents occurred due to fall of sand stone roof, 21% due to coal and 14% due to shale and rest of the fatal accidents occurred due to combination of any two. It indicates that practically all types of roof are likely to fall in absence of adequate supports.

III. Personal factors -

13. **Designation:** 34% of the persons involved in roof fall accidents were loader, 21% timbermen, 10% each of subordinate supervisory staff and dresser and 5% driller. 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 31% of the total accidents persons involved were in the age group of 46-50 years, 19% between 56-60 years, 14% between 51-55 years, 13% between 41-45, 10% between 31-35, 9% between 36-40 years and 2% each between 21-25 and 26-30 years.
15. **Shift of working:** 59% of the fatal accidents took place in 1st shift, 21% in 2nd shift and 20% 3rd shift. Thus it is observed that roof fall occurred mainly in first shift due to more number of persons employed during day time.
16. **Hours at work:** 30% of the roof fall accidents occurred during 2.01 -3.00, 19% in 3.01 – 4.00, 18% between 5.01 – 6.00 hours, 15% between 4.01-5.00 hours and 11% between 6.01-7.00 hours. Thus 34% of the roof fall accidents occurred between third and fifth hours of the shift.

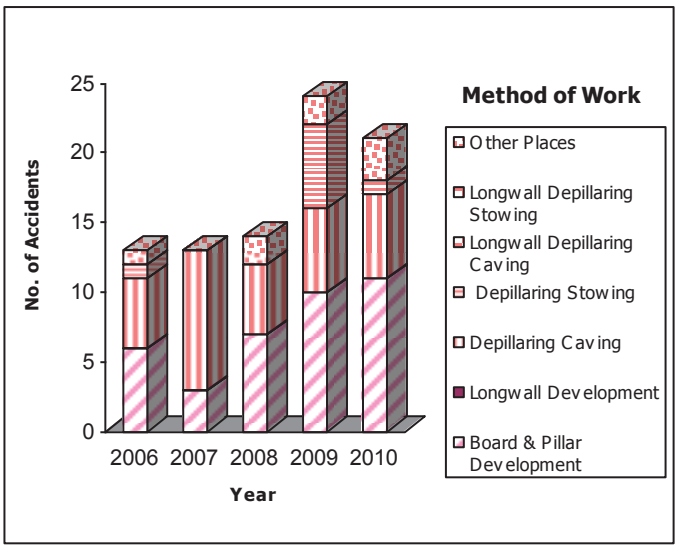
IV. Management factors -

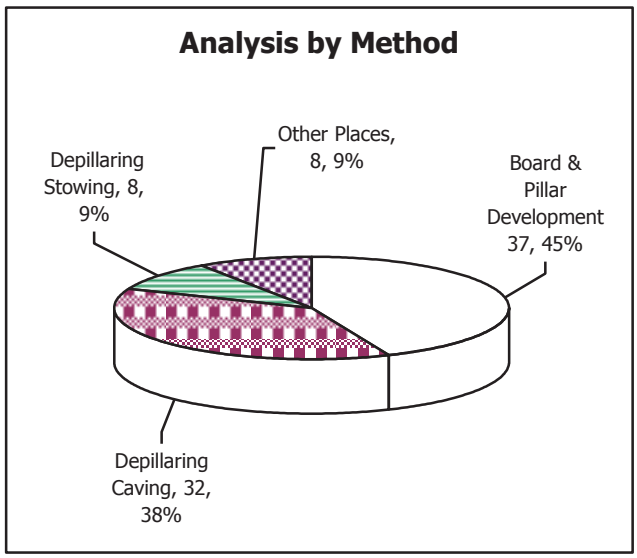
17. **Responsibility:** 40% of the fatal accidents were caused due to fault of management and Subordinate Supervisory Staff; 16% of the fatal accidents due to fault of Subordinate Supervisory Staff alone, 9% due to fault of management,SSS & deceased and 8% of the cases management & others. In 6% of cases deceased was responsible.
18. **Company:** Company-wise analysis indicates that 76% of roof fall accident occurred in CIL whereas 18% occurred in SCCL. CIL subsidiary-wise 27% of fatal accidents occurred in SECL, 18% in WCL, 16% in BCCL, 12% in ECL, 2% in MCL and 1% in CCL.

Detailed statistical analysis of roof fall accidents that occurred during last 5 years are given in tabular as well as graphically in the following tables:

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

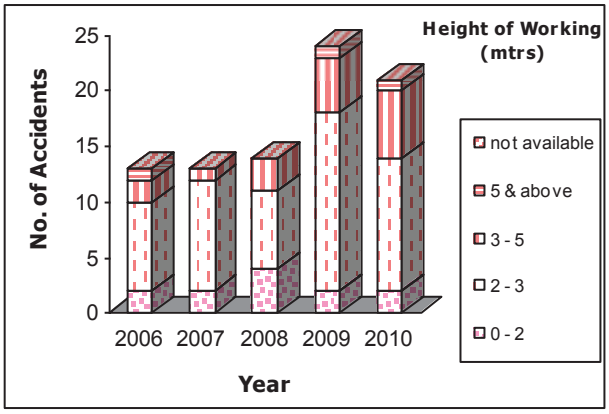
Method of work	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010		Total	%
Board & Pillar Development	6	46	3	23	7	50	10	42	11	52	**37**	44
Longwall Development	0	0	0	0	0	0	0	0	0	0	**0**	0
Depillaring												
Caving	5	38	10	77	5	36	6	25	6	29	**32**	38
Stowing	1	8	0	0	0	0	6	25	1	5	**8**	9
Total Depillaring	6	46	10	77	5	36	12	50	7	33	**40**	47
Longwall Depillaring												
Caving	0	0	0	0	0	0	0	0	0	0	**0**	0
Stowing	0	0	0	0	0	0	0	0	0	0	**0**	0
Total Longwall	0	0	0	0	0	0	0	0	0	0	**0**	0
Other Places	1	8	0	0	2	14	2	8	3	14	**8**	9
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	100	**21**	100	**85**	100

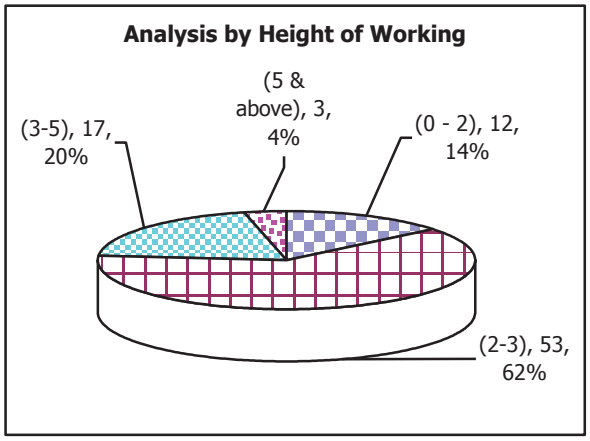




2. Distribution of fatal roof fall accidents by height of working

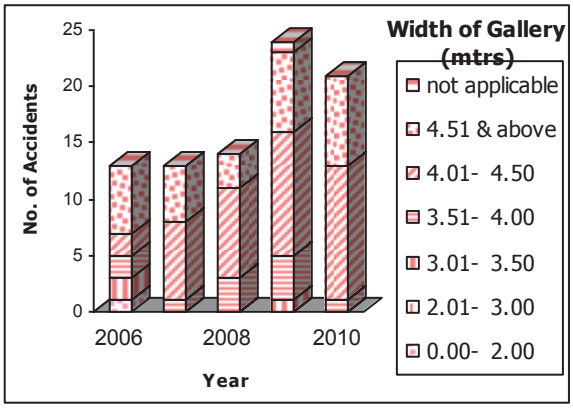
Height of working (metres)	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0 - 2	2	15	2	15	4	29	2	8	2	9	12	14
2 - 3	8	62	10	77	7	50	16	67	12	57	53	62
3 - 5	2	15	1	8	3	21	5	21	6	29	17	20
5 & above	1	8	0	0	0	0	1	4	1	5	3	4
not available	0	0	0	0	0	0	0	0	0	0	0	0
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

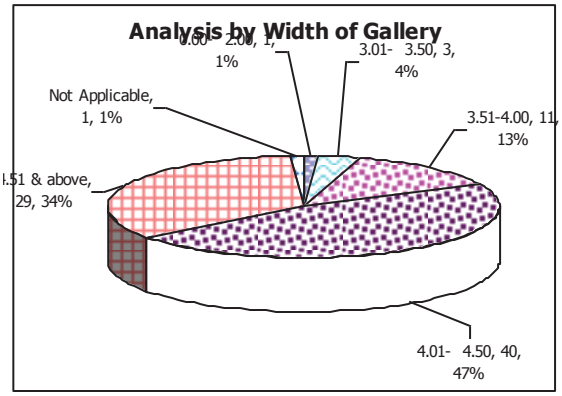




3. Distribution of fatal roof fall accidents by width of gallery

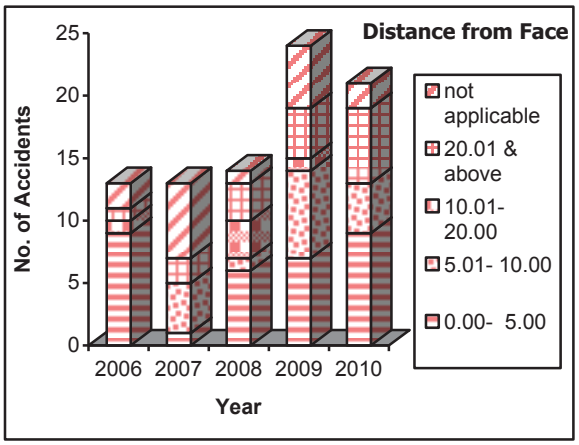
width of gallery	Number of accidents											
(metres)	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0.00- 2.00	1	8	0	0	0	0	0	0	0	0	**1**	1
2.01- 3.00	0	0	0	0	0	0	0	0	0	0	**0**	0
3.01- 3.50	2	15	0	0	0	0	1	4	0	0	**3**	4
3.51- 4.00	2	15	1	8	3	21	4	17	1	5	**11**	13
4.01- 4.50	2	15	7	54	8	58	11	46	12	57	**40**	47
4.51 & above	6	47	5	38	3	21	7	29	8	38	**29**	34
not applicable	0	0	0	0	0	0	1	4	0	0	**1**	1
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

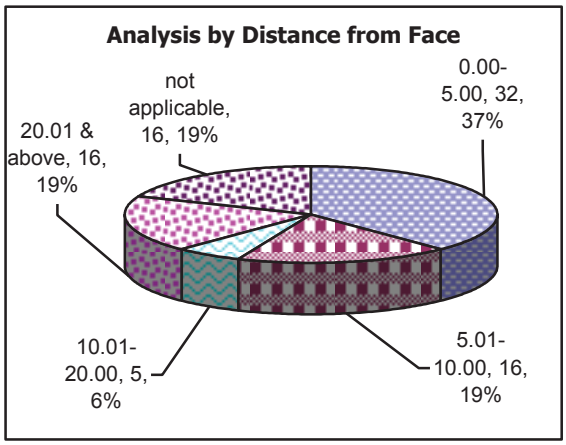




4. Distribution of fatal roof fall accidents by distance from face

Distance from face	Number of accidents											
(metres)	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0.00- 5.00	9	69	1	8	6	44	7	29	9	43	**32**	37
5.01- 10.00	0	0	4	31	1	7	7	29	4	19	**16**	19
10.01- 20.00	1	8	0	0	3	21	1	4	0	0	**5**	6
20.01 & above	1	8	2	15	3	21	4	17	6	29	**16**	19
not applicable/ available	2	15	6	46	1	7	5	21	2	9	**16**	19
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

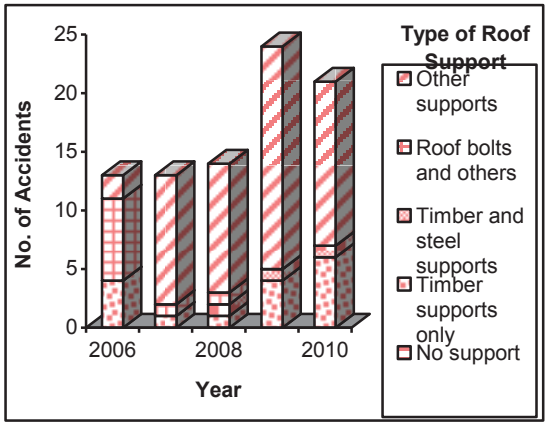


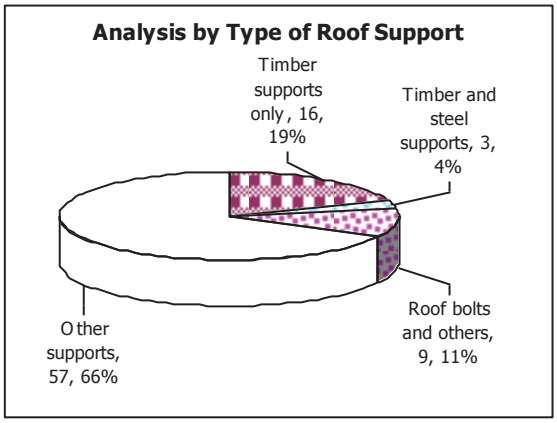


5. Distribution of fatal roof fall accidents by type of roof support

Type of support	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
No support	0	0	0	0	0	0	0	0	0	0	**0**	0
Timber supports only	4	31	1	8	1	7	4	17	6	29	**16**	19
Timber and steel supports	0	0	0	0	1	7	1	4	1	5	**3**	3
Roof bolts and others	7	54	1	8	1	7	0	0	0	0	**9**	11
Other supports	2	15	11	84	11	79	19	79	14	66	**57**	67

Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

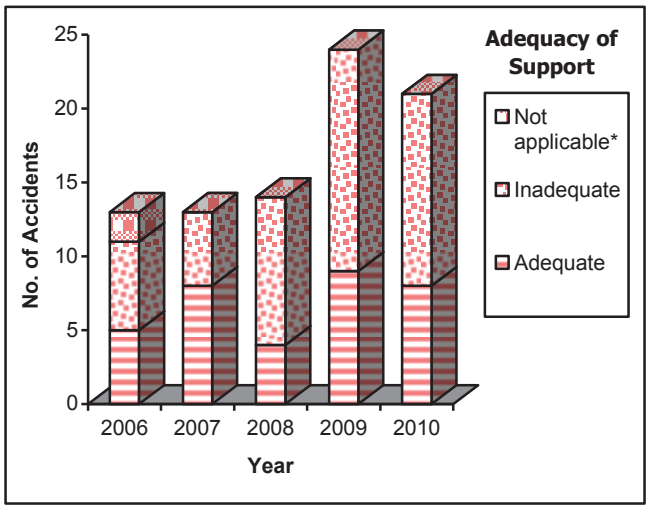


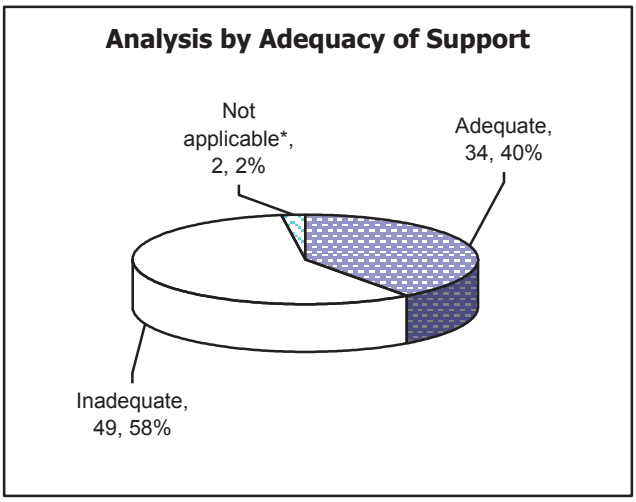


6. Distribution of fatal roof fall accidents by adequacy of support

Adequacy of support	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
Adequate	5	38	8	62	4	29	9	37	8	38	34	40
Inadequate	6	46	5	38	10	71	15	63	13	62	49	58
Not applicable*	2	16	0	0	0	0	0	0	0	0	2	2
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

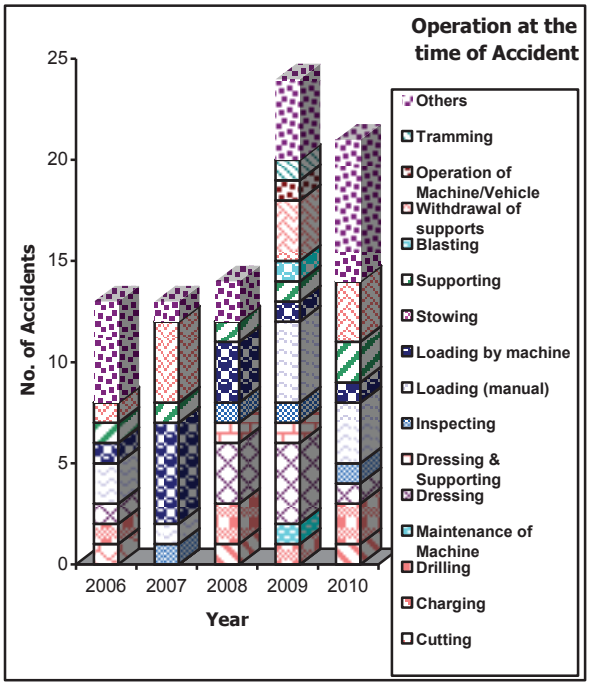
* Provisional

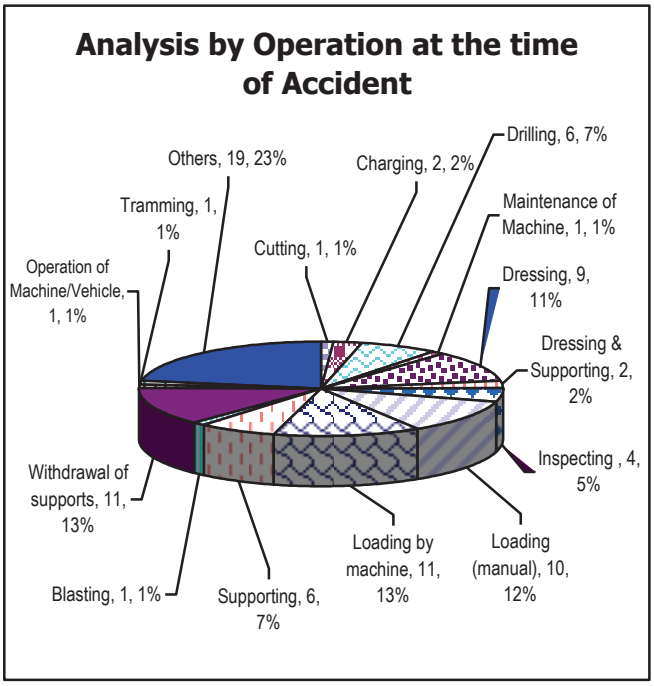




7. Distribution of fatal roof fall accidents by operation at the time of accident

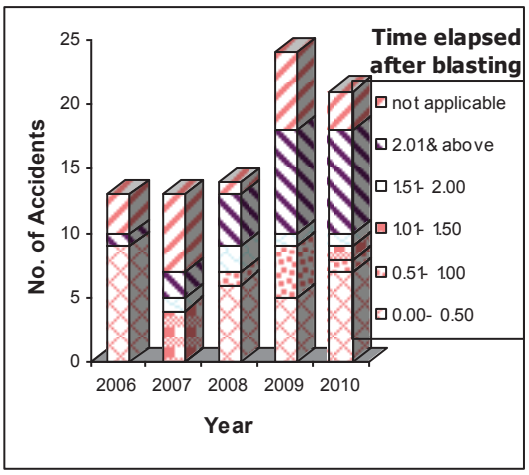
operation at the time of accident	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
Cutting	1	8	0	0	0	0	0	0	0	0	1	1
Charging	0	0	0	0	1	7	0	0	1	5	2	2
Drilling	1	8	0	0	2	14	1	4	2	10	6	7
Maintenance of Machine	0	0	0	0	0	0	1	4	0	0	1	1
Dressing	1	8	0	0	3	22	4	17	1	5	9	11
Dressing & Supporting	0	0	0	0	1	7	1	4	0	0	2	2
Inspecting	0	0	1	8	1	7	1	4	1	5	4	5
Loading (manual)	2	15	1	8	0	0	4	17	3	14	10	12
Loading by machine	1	8	5	38	3	22	1	4	1	5	11	13
Stowing	0	0	0	0	0	0	0	0	0	0	0	0
Supporting	1	8	1	8	1	7	1	4	2	10	6	7
Blasting	0	0	0	0	0	0	1	4	0	0	1	1
Withdrawal of supports	1	8	4	30	0	0	3	13	3	14	11	13
Operation of Machine/Vehicle	0	0	0	0	0	0	1	4	0	0	1	1
Tramming	0	0	0	0	0	0	1	4	0	0	1	1
Others	5	37	1	8	2	14	4	17	7	32	19	23
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

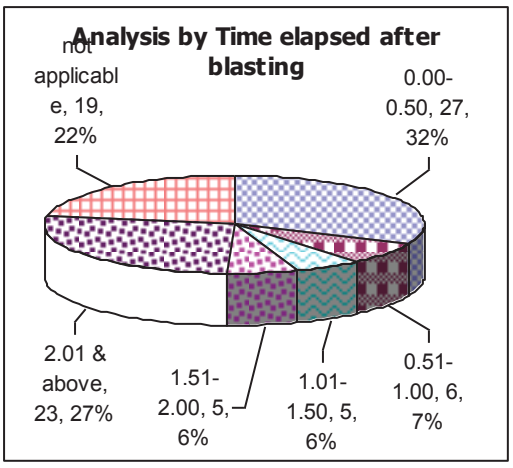




8. Distribution of fatal roof fall accidents by time elapsed after blasting

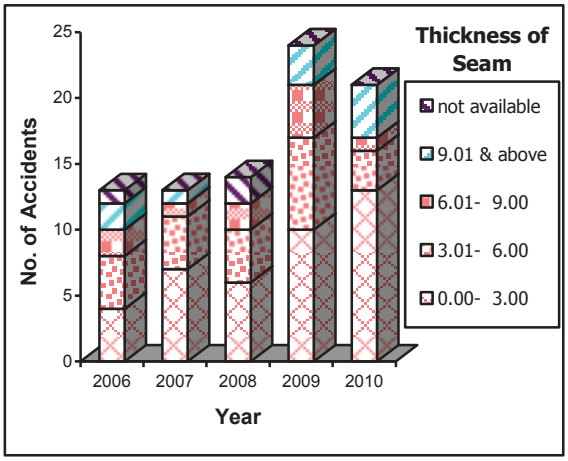
time elapsed after blasting (hours)	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0.00- 0.50	9	69	0	0	6	43	5	21	7	33	**27**	32
0.51- 1.00	0	0	0	0	1	7	4	17	1	5	**6**	7
1.01- 1.50	0	0	4	31	0	0	0	0	1	5	**5**	6
1.51- 2.00	0	0	1	8	2	14	1	4	1	5	**5**	6
2.01 & above	1	8	2	15	4	29	8	33	8	38	**23**	27
not applicable	3	23	6	46	1	7	6	25	3	14	**19**	22
Total	**13**	100	**13**	100	**14**	100	**24**	100	**21**	100	**85**	**100**

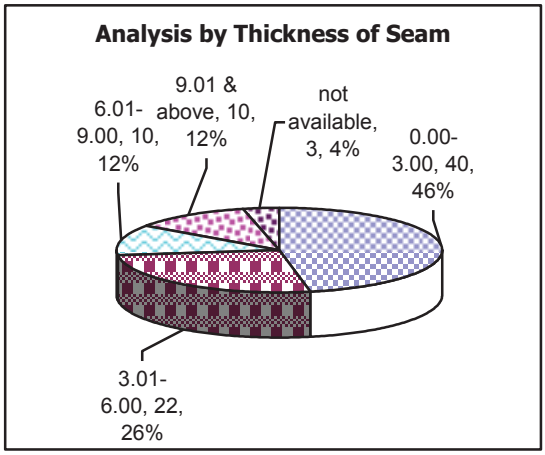




9. Distribution of fatal roof fall accidents by thickness of seam

Seam thickness (metres)	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0.00- 3.00	4	31	7	54	6	43	10	42	13	62	**40**	46
3.01- 6.00	4	31	4	30	4	29	7	29	3	14	**22**	26
6.01- 9.00	2	15	1	8	2	14	4	17	1	5	**10**	12
9.01 & above	2	15	1	8	0	0	3	12	4	19	**10**	12
not available	1	8	0	0	2	14	0	0	0	0	**3**	4
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

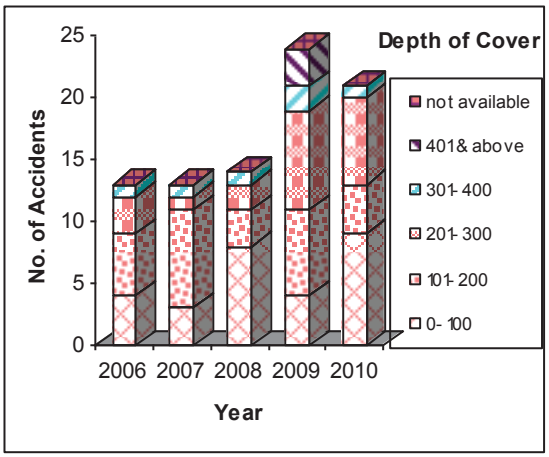


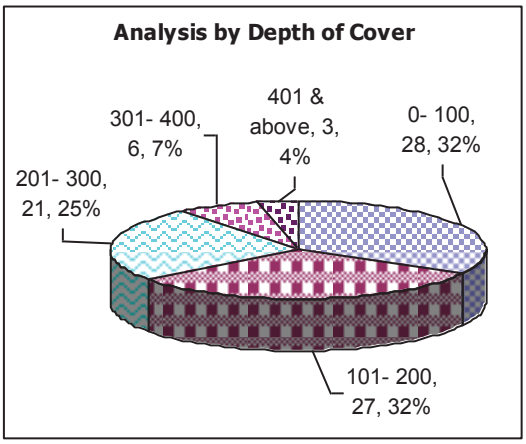


10. Distribution of fatal roof fall accidents by depth of cover

Depth of cover (metres)	Number of accidents											
	2006	%	2007	%	2008	%	2009	%	2010	%	Total	%
0- 100	4	31	3	23	8	57	4	17	9	43	**28**	32
101- 200	5	38	8	61	3	22	7	29	4	19	**27**	32
201- 300	3	23	1	8	2	14	8	33	7	33	**21**	25
301- 400	1	8	1	8	1	7	2	8	1	5	**6**	7
401 & above	0	0	0	0	0	0	3	13	0	0	**3**	4

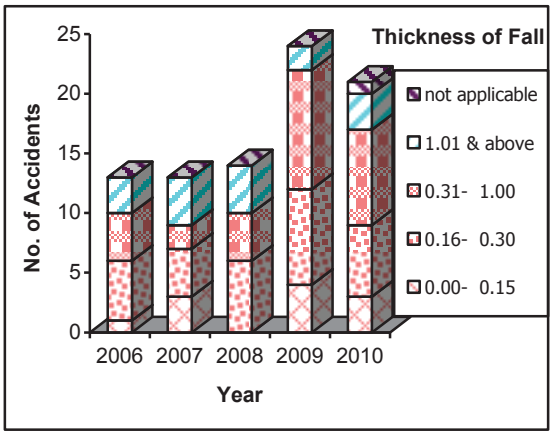
not available	0	0	0	0	0	0	0	0	0	0	**0**	0
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

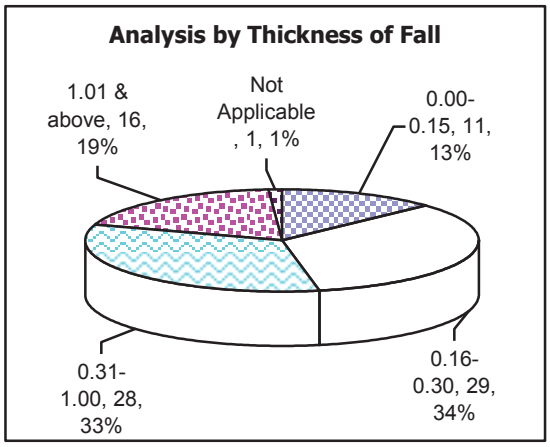




11. Distribution of fatal roof fall accidents by thickness of fall

Thickness of fall (metres)	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
0.00- 0.15	1	8	3	23	0	0	4	17	3	14	**11**	13
0.16- 0.30	5	38	4	31	6	42	8	33	6	29	**29**	34
0.31- 1.00	4	31	2	15	4	29	10	42	8	38	**28**	33
1.01 & above	3	23	4	31	4	29	2	8	3	14	**16**	19
not applicable	0	0	0	0	0	0	0	0	1	5	**1**	1
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

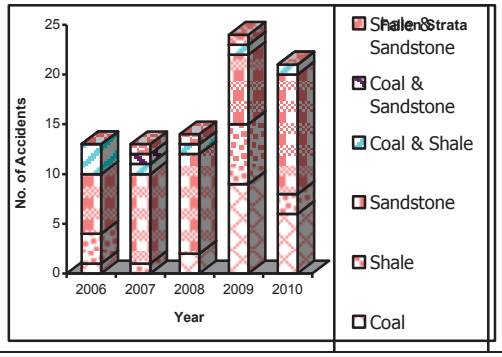


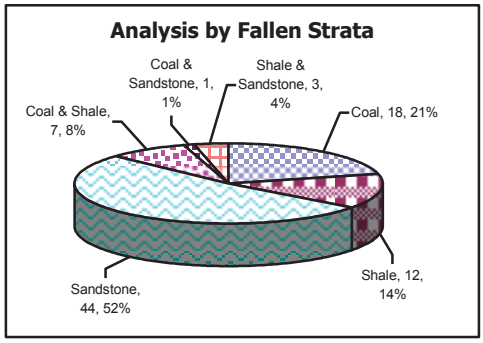


12. Distribution of fatal roof fall accidents by nature of fallen strata

Nature of fallen strata	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
Coal	1	8	0	0	2	14	9	38	6	29	**18**	21
Shale	3	23	1	8	0	0	6	25	2	9	**12**	14
Sandstone	6	46	9	68	10	72	7	29	12	57	**44**	52
Coal & Shale	3	23	1	8	1	7	1	4	1	5	**7**	8
Coal & Sandstone	0	0	1	8	0	0	0	0	0	0	**1**	1

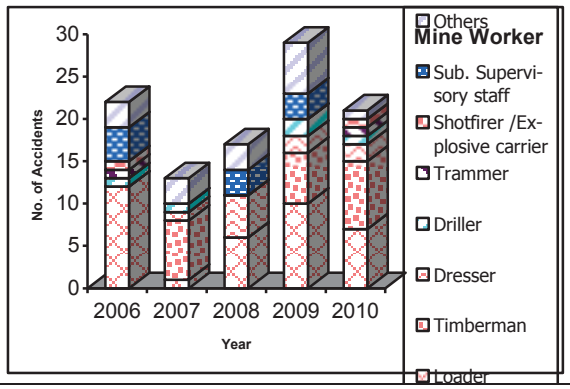
Shale & Sandstone	0	0	1	8	1	7	1	4	0	0	**3**	4
Total	**13**	100	**13**	100	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

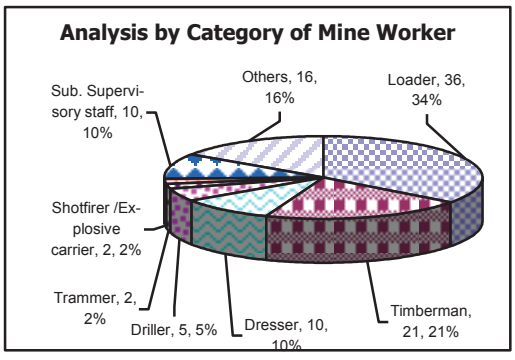




13. Distribution of persons killed in roof fall accidents by designation

Category of mine worker	Number of persons killed											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
Loader	12	54	1	8	6	35	10	34	7	33	**36**	34
Timberman	0	0	7	53	0	0	6	21	8	38	**21**	21
Dresser	0	0	1	8	5	29	2	7	2	9	**10**	10
Driller	1	5	1	8	0	0	2	7	1	5	**5**	5
Trammer	1	5	0	0	0	0	0	0	1	5	**2**	2
Shotfirer /Ex-plosive carrier	1	5	0	0	0	0	0	0	1	5	**2**	2
Sub. Supervi-sory staff	4	18	0	0	3	18	3	10	0	0	**10**	10
Others	3	13	3	23	3	18	6	21	1	5	**16**	16
Total	**22**	**100**	**13**	**100**	**17**	**100**	**29**	**100**	**21**	**100**	**102**	**100**

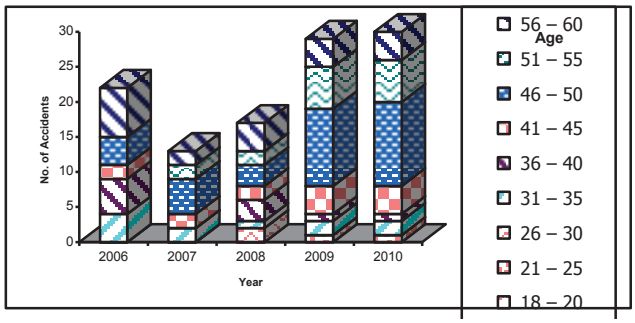


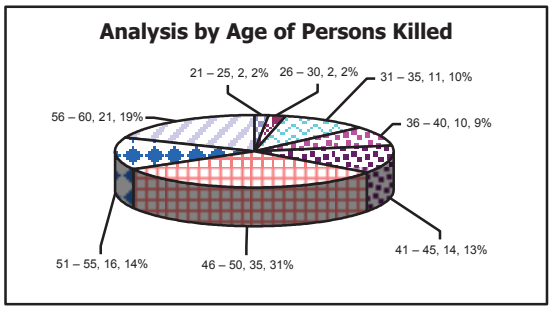


14. Distribution of persons killed in roof fall accidents by age

age	Number of persons killed											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
18 – 20	0	0	0	0	0	0	0	0	0	0	**0**	0
21 – 25	0	0	0	0	0	0	1	3	1	3	**2**	2
26 – 30	0	0	0	0	2	12	0	0	0	0	**2**	2
31 – 35	4	18	2	15	1	6	2	7	2	7	**11**	10

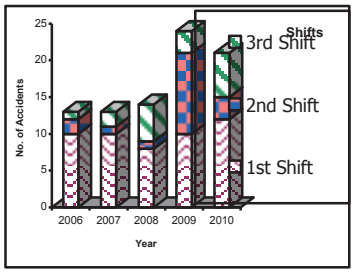
36 – 40	5	23	0	0	3	18	1	3	1	3	**10**	9
41 – 45	2	9	2	15	2	12	4	14	4	14	**14**	13
46 – 50	4	18	5	40	3	18	12	38	12	40	**35**	31
51 – 55	0	0	2	15	2	12	6	21	6	20	**16**	14
56 – 60	7	32	2	15	4	22	4	14	4	13	**21**	19
Total	**22**	**100**	**13**	**100**	**17**	**100**	**29**	**100**	**30**	**100**	**111**	**100**

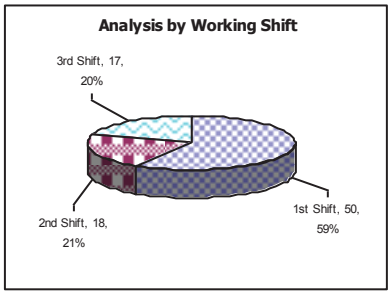




15. Distribution of fatal roof fall accidents by shift during which accident occurred

Shift	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
1st (7/8 AM to 3/4 PM)	10	77	10	77	8	57	10	42	12	57	**50**	59
2nd 3/4 PM to 11/12 M	2	15	1	8	1	7	11	46	3	14	**18**	21
3rd 11/12M to 7/8 AM	1	8	2	15	5	36	3	12	6	29	**17**	20
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

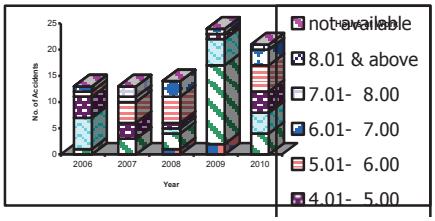


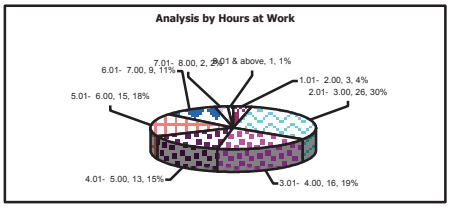


16. Distribution of fatal roof fall accidents by hours spent at work prior to the accident

Hours at Work	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
0.00- 1.00	0	0	0	0	0	0	0	0	0	0	**0**	0
1.01- 2.00	0	0	0	0	1	7	2	8	0	0	**3**	4
2.01- 3.00	1	8	3	23	3	21	15	63	4	19	**26**	30
3.01- 4.00	6	46	0	0	1	7	5	21	4	19	**16**	19
4.01- 5.00	4	30	3	23	1	7	1	4	4	19	**13**	15
5.01- 6.00	1	8	4	31	5	37	0	0	5	24	**15**	18

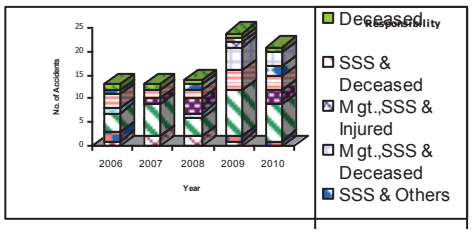
6.01- 7.00	1	8	1	8	3	21	1	4	3	14	**9**	11
7.01- 8.00	0	0	2	15	0	0	0	0	0	0	**2**	2
8.01 & above	0	0	0	0	0	0	0	0	1	5	**1**	1
not available	0	0	0	0	0	0	0	0	0	0	**0**	0
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

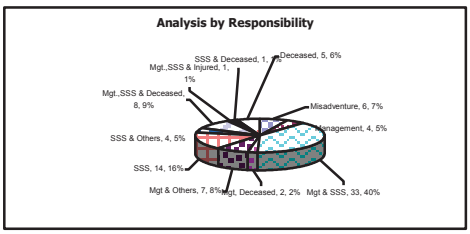




17. Distribution of fatal roof fall accidents by responsibility

Responsibility	Number of persons											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
Misadventure	1	8	2	15	2	14	1	4	0	0	**6**	7
Management	2	15	0	0	0	0	1	4	1	5	**4**	5
Management & Sub-ordinate Supervisory Staff(SSS)	4	30	7	54	4	29	10	42	8	38	**33**	40
Management & Deceased	1	8	0	0	1	7	0	0	0	0	**2**	2
Management & Others	0	0	1	8	3	22	0	0	3	14	**7**	8
Sub-ordinate Supervisory Staff(SSS)	3	23	2	15	2	14	4	17	3	14	**14**	16
SSS & Others	1	8	0	0	1	7	0	0	2	10	**4**	5
Management, SSS & Deceased	0	0	0	0	0	0	5	21	3	14	**8**	9
Management,SSS & Injured	0	0	0	0	0	0	1	4	0	0	**1**	1
SSS & Deceased	0	0	0	0	0	0	1	4	0	0	**1**	1
Deceased	1	8	1	8	1	7	1	4	1	5	**5**	6
Total	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**

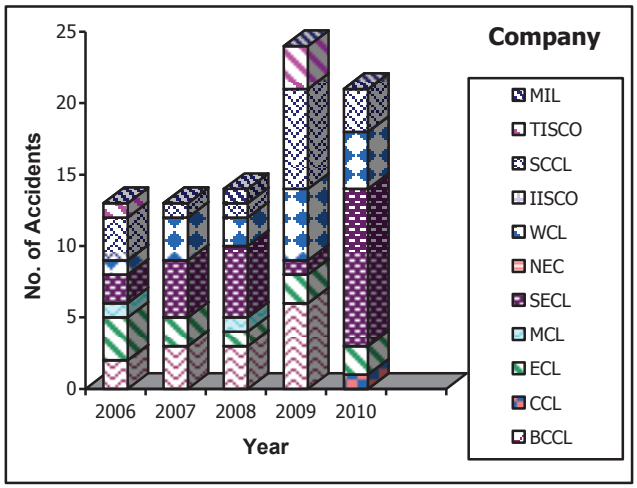


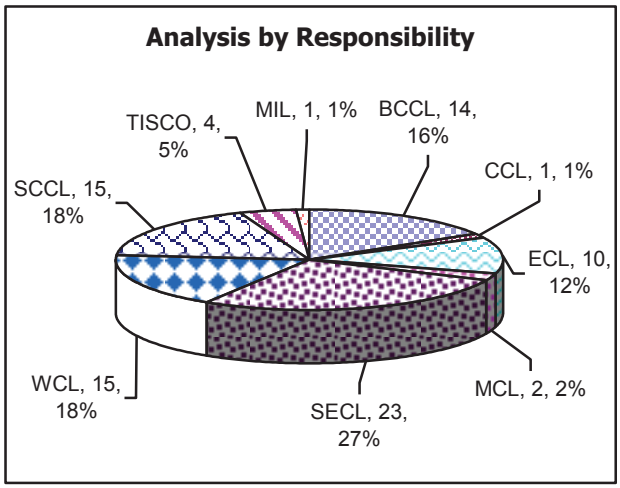


18. Distribution of fatal roof fall accidents by company

Company	Number of accidents											
	2006	**%**	**2007**	**%**	**2008**	**%**	**2009**	**%**	**2010**	**%**	**Total**	**%**
BCCL	2	15	3	23	3	22	6	25	0	0	**14**	16
CCL	0	0	0	0	0	0	0	0	1	5	**1**	1
ECL	3	23	2	15	1	7	2	8	2	10	**10**	12
MCL	1	8	0	0	1	7	0	0	0	0	**2**	2
SECL	2	15	4	31	5	36	1	4	11	52	**23**	27

NEC	0	0	0	0	0	0	0	0	0	0	**0**	0
WCL	1	8	3	23	2	14	5	21	4	19	**15**	18
CIL: total	**9**	**69**	**12**	**92**	**12**	**86**	**14**	**58**	**18**	**86**	**65**	**76**
IISCO	0	0	0	0	0	0	0	0	0	0	**0**	0
SCCL	3	23	1	8	1	7	7	29	3	14	**15**	18
TISCO	1	8	0	0	0	0	3	13	0	0	**4**	5
MIL	0	**0**	0	**0**	1	7	0	0	0	0	**1**	1
All-India	**13**	**100**	**13**	**100**	**14**	**100**	**24**	**100**	**21**	**100**	**85**	**100**





2.2.3B.3 Side fall and over hangs

There were 7 (7.21%) fatal accidents involving 8 fatalities due to fall of sides. All the accident took place in belowground workings.

2.2.3B.4 Air blast

There was no accident due to this cause during the year 2010.

2.2.3C Transportation machinery (Winding)

There was no fatal accident reported due to transportation machinery (Winding) during the year 2010.

2.2.3D Transportation machinery (Other than winding)

There were 39 fatal accidents due to transportation machinery other than winding reported during the year 2010. 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 2010**	
Cause	**No. of fatal accidents**	**Persons killed**
1. Rope Haulage	3	4
2. Mechanical Conveyors	3	3
3. Dumpers	23	23
4. Wheeled Trackless(Truck, Tanker etc.)	10	12
5. Wagon Movement	-	-
6. Others	-	-
Total	**39**	**42**

It was seen that the dumpers & wheeled trackless (truck & Tankers etc) were major contributing causes under fatalities due to transportation machinery other than winding.

2.2.3D.1 Rope Haulages

There were 3 accidents (7.69 of all accidents) involving 4 fatalities caused due to rope haulages during the year 2010. Analysis of causes revealed that:-

* One accident was occurred due to hit by moving tubs.
* One accident occurred as while traveling on moving tub collide with side wall..
* One accident occurred due to derailed of man riding car.

2.2.3D.2 Mechanical / Belt Conveyors:

Three accidents (7.69% of all accidents) resulting in three fatalities were caused by belt conveyors during 2010.

- One accident causing death of one person due to fall in RCC bunker.
- One person died due to his hand got dragged over running belt.
- One person died due to lost balance and fell down. His head got stuck in a moving bottom roller.

2.2.3D.3 Dumpers and tippers:

There were 23 accidents resulting (58.97% of all fatalities) caused due to dumpers and tippers during the year 2010.

The analysis of above accident revealed that:-

* 3 accidents occurred killing three persons due to collision of dumpers.
* 11 accidents occurred as speeded dumper run-over persons separately
* 5 accidents occurred while a dumper lost control
* One accident occurred tipper become unbalance and fell down along slop of embankment .

- One accident occurred killing one person due to operator got buried under the heap of coal.
- One accident occurred killing one person due to operator hit by rolling stone lumps.
- One accident occurred killing one person due to fire in cabin

2.2.3D4 Truck & Tankers:

10 accidents occurred causing 12 fatality due to truck and tankers contributing (25.64%) of total accidents.

- One accident due to brake failure.
- Three accidents due to truck/tanker hit the road side berm .
- Two accidents due to ran over of truck/tanker.
- Two accidents due to roll back of truck/tanker.
- Two accidents due to lost control of vehicle.

2.2.3E Machinery other than transportation machinery:

There were 6 accidents reported during the year 2010, 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 2010**	
Sl.No.	**No. of fatal accidents**	**Persons killed**
1. Drilling Machines	1	1
2. Cutting Machines	1	1
3. Loading Machines (SDL etc.)	2	2
4. Winding Engine	-	-
5. Shovels/Draglines etc.	1	1
6. Crushing & Screening Plant	-	-
7. Other HEMM	1	1
8. Other Non-Transportation Machinery	-	-
Total :	**6**	**6**

Further analysis of the causes revealed that –

Drilling Machine: One accident occurred as drill operator ran over by marching drill.

Loading Machine: Two accidents occurred causing two fatalities due to load haul dumper/ SDL .ran over operators while they were sleeping in a developed gallery.

Haulage Engine: No accident by haulage engine.

Shovel & Dragline: One accident occurred causing one fatality due to flying metal cheap ejected from machine and hit a maintenance man.

Crushing & Screening Plant : One accident causing one fatality due to hose pipe of the drill machine coiled on the cutting drum along with one helper.

Other Heavy Earth Moving Machineries : One accident occurred causing one fatality due to HEMM .

Non Transportation machinery: No accident

2.2.3F Explosives

There was 1 fatal accident occurred involving 1 fatality and there were five serious accidents due to explosives during the year 2010.

2.2.3G Electricity

There were 7 (7.21% of the total) fatal accidents involving 7 persons and three serious accidents due to electricity during the year 2010.

2.2.3H Accidents due to Dust, Gas & Fire

During the year 2010, there were two fatal accidents involving 15 fatalities and five serious accident due to this cause.

2.2.3I Falls other than falls of ground

Falls other than fall of ground caused 11 (11.34% of the total) fatal accidents involving same number of lives during the year 2010.

2.2.3J Other causes

Nine fatal accidents involving nine persons were reported due to other cases during the year 2010.

2.2.4 Responsibility

Analysis of accidents as per the persons held responsible for the various causes of accidents during the year 2010 has been indicated in table:25.

TABLE:25	RESPONSIBILITY FOR FATAL ACCIDENTS IN COAL MINES DURING THE YEAR 2010	
SL. NO.	Responsibility	No. of accidents
1.	Misadventure	5
2.	Management	10
3.	Management & Subordinate Supervisory Staff (SSS)	21
4.	Management, SSS & Co-worker	5
5.	Management, SSS, Co-worker & Deceased	4
6.	Management, SSS, Co-worker, Deceased & injured	-
7.	Management, SSS & Deceased	3
8.	Management, SSS & Injured	-
9.	Management & Shotfirer	1
10.	Management & Co-worker	6
11.	Management, Coworker & Deceased	2
12.	Management & Deceased	1
13.	Subordinate Supervisory Staff(SSS)	9
14.	SSS, Shotfirer, Coworker & Deceased	1
15.	SSS & Co-worker	2
16.	SSS, Co-worker & Deceased	1
17.	Coworker	5
18.	Co-worker & Deceased	3
19.	Deceased	12
20.	Others	6
	TOTAL	**97**

It can be seen that in 10 (10%) cases management alone and 21 (21.6%) cases management along with other subordinate staff were responsible. In 9 (9%) of the cases subordinate supervisory staff alone were found responsible. In 12 (12%) cases deceased alone and in 5 (5%) cases the co-worker 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

28 (Twenty-eight) dangerous occurrences were reported under the Coal Mines Regulations, 1957 during the year 2010.Details of cause of dangerous occurrences are given below in Table: 26

TABLE:26	DANGEROUS OCCURRENCES IN COAL MINES DURING 2010	
Sl. No.	**Cause**	**No. of cases**
1.	Spontaneous heating belowground	9
2.	Spontaneous heating in opencast working	-
3.	Spontaneous heating at surface	-
4.	Outbreak of fire underground from spontaneous heating	-
5.	Outbreak of fire underground from causes other than spontaneous heating	7
6.	Outbreak of fire in quarries from causes other than spontaneous heating	-
7.	Outbreak of fire in surface from causes other than spontaneous heating	1
8.	Premature collapse of workings or failure of pillars/ benches/major roof fall	3
9.	Influx of noxious gases	-
10.	Ignition or occurrence of inflammable gas	-
11.	Over winding of cages etc.	1
12.	Breakage of winding rope	-
13.	Breakdown of winding engine, crank shaft, bearing etc.	-
14.	Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered	-
15.	Irruption of water	2
16.	Subsidence/potholing	3
17.	Explosives	-
18.	Others	2
	TOTAL	**28**

A. Spontaneous Heating:

In total 9(nine) cases of spontaneous heating were reported and all 9 were in belowground workings.6 of them occurred in depillaring districts and heating was controlled and confined by sealing the panel and flushing Nitrogen & Carbon dioxide gases inside the sealed off panel. Two cases of spontaneous heating were reported in galleries and one case was reported in a gallery having fallen coal. Heating was controlled and confined by isolating the area by constructing isolation stoppings.

There were 6(six) cases of open fire in underground workings. One case was reported due to fire in dry vegetation on surface which passed through weep holes of the side of surface Fan drift. Fire was extinguished by water spaying. One open fire was reported due to rubbing of spillage coal against belt conveyor and fire was extinguished by water spaying. There were three cases of open fire in underground workings which was controlled by blanketing surface cracks and fissures to stop breathing of air to fire area. There was also a case of open fire in a depillaring dist due to stowing lag and the fire was extinguished by water spaying and finally panel was sealed off by isolation stoppings.

Contributory factors for spontaneous heating:

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

- Non-sectionlization / improper sectionlization of 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.
- 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 and old workings.
- Not making and maintaining the isolation stoppings as prescribed.
- Non provision of latest carbon monoxide gas detecting devices.
- Stowing Lag in depillaring panel.
- Presence and accumulation of dry vegetation on surface and near by the surface fan drift.

Corrective measures:

- Rate of extraction has to be made faster by deploying well maintained loading machines and loss of coal in the goaf has to be minimized.
- Isolation and sectionlization stoppings have to be regularly inspected as per statute to detect early stage of spontaneous heating.
- Strengthening of old stoppings.
- Fallen loose coal has to be cleaned off regularly.
- Surface area above the goved out panels shall be filled up to avoid breathing of air.
- All the galleries exposed on the side of entries to the belowground workings in the seam shall be covered effectively to avoid breathing of air through those galleries.
- Rib of coal left as barrier between opencast working and belowground working need to be covered to prevent formation of return circuit through the cracks/fissures developed at the surface.
- There should not be stowing lag in the goaf of depillaring panel.
- Dry vegetation shall not allowed to accumulate and present on surface and near by fan drift.

B. Other Fires:

There was a case of electrical flash over from isolator of a circuit breaker due to faulty FLP features. There was also case of open fire in open cast workings when one drill machine was caught fire and fire was extinguished by water jet.

Corrective measures:

- Proper and timely maintenance of electrical equipments in underground workings shall be done to ensure the effectiveness of FLP features of the equipments.
- Proper code of practice for prevention of fires in HEMM including Drill Machines should be framed and implemented.
- Availability of Fire Tender in the mine must be ensured.

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

There was a case of pillars crushing due to non vertical coincident of pillars.
There was also a case when 3rd and 4th benches in overburden of an open cast workings suddenly failed and slided down causing about 8000cum to 9000cum of debris slided which ultimately rested on 7th bench.This was expected to be the effect of overburden dump on the top of the open cast workings on that side.
There was one case of dump slide and one case of dump subsided by 1m which caused heaving of the entry road by 1m and also developed cracks on the road.

Corrective measures:

- Height and Width of the benches shall be fixed and maintained as per scientific study and size of the HEMM would be moving on the benches.
- Over burden dump shall not be made close to the edge of the Top Bench.
- Vertical coincident of pillars in contiguous seams shall strictly be maintained.
- Dump shall not be made on back filled area and no road shall also be made at the foot of the dump. Height of the dump shall be fixed and maintained as per the scientific study.

D. Influx of Noxious Gases:

There was no case reported.

E. Ignition or occurrence of inflammable gas:

There was no case reported.

F. Irruption of water / Landslide:

There was one case of heavy seepage and inrush of water in a open cast working which caused to submerge one electric shovel, one dozer and two pumps.This was happened due to being reduced barrier/parting left against old & abandoned water logged underground working. There was also a case of sudden irruption of water from fault plan at one gallery of underground working which resulted a big pot hole on surface.

G. Subsidence / Potholing:

There were three cases of subsidence and pot holing due to shallow depth of cover and presence of old working. Pot holes were filled up and stabilization of the area was recommended.

H. **Other:**

There was a reported case that three pipes of 6 inch dia of old & abandoned pipe range in a shaft suddenly got detached and fell down in the shaft which resulted damage to a cage and buttons fitted in the shaft.There was also a case that winding rope of a ascending cage suddenly entangled on the drum and in between reduction gear and pinion stopping the winding engine for eight hours.There was one case of uncontrolled speed of a ascending cage caused over winding which resulted fall of the cage after detaching from rope cappel,from a height of about 86m to pit bottom.

2.4 Technical Developments

- During the year 2010, 11.43% of the total production came from underground workings and 88.57% of the total production came from opencast mines. As far as average daily employment was concerned 48% were employed belowground, 23% were employed in opencast workings and the remaining 29% were employed for other surface operations.
- During the 2010, 1400 Excavators, 5400 dumpers capacity varying from 35T to 170T, 1000 drills of 50 mm to 250 mm, 40 draglines were used in opencast 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	1088	28	861	4391	2006	3,798,259
2007	1188	33	1023	4634	2569	4,249,869
2008	1247	48	1018	4994	2779	4,479,969
2009	1320	40	920	5324	2750	4,588,696
2010*	1400	40	1000	5400	2800	4,726,350

*Figures for 2010 are estimated and 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 2010					
Name of Company	**Road header/ Dint header**	**SDL**	**LHD**	**Continuous Miners**	**Coal haulers**	**Other**
BCCL	4	149	6	0	0	1
ECL	1	147	28	2	0	3
CCL	0	24	6	0	0	0
SECL	0	224	147	2	0	1
WCL	0	82	117	2	2	1
MCL	0	23	30	0	0	0
NECL	0	0	0	0	0	0
TATA	0	35	0	0	0	0
SCCL	5	109	34	2	4	200
TOTAL	**10**	**793**	**368**	**8**	**6**	**206**

(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 2010														
Name of co.	Bucket wheel Excavator	Dragline	Surface Miners	Others	Dumpers					Excavators				Drills		
					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	64	2	481	0	8	76	75	20	70	34
ECL	0	1	0	0	1	30	19	20	144	5	11	15	34	14	21	6
CCL	0	0	5	1	0	24	94	107	367	1	10	51	52	28	76	13
SECL	0	9	6	0	17	71	84	72	167	1	19	41	19	64	67	6
WCL	0	4	0	0	0	0	0	334	280	0	0	59	141	24	90	4
NCL	0	19	0	48	3	153	366	0	0	6	71	1	26	13	94	3
MCL	0	5	29	228	0	34	28	348	12	0	3	44	30	31	34	9
NECL	0	0	0	0	0	0	0	0	93	0	0	0	20	0	0	6
NLC	31	0	0	583	0	0	0	0	42	0	0	0	89	27	18	1
TATA	0	0	0	0	0	0	0	41	43	0	2	3	0	0	7	10
SCCL	0	2	0	0	0	0	202	0	250	0	23	9	54	17	33	0
GIPCL	0	0	0	2	0	0	0	27	174	0	0	2	43	0	0	0
JSMDC	0	0	0	0	0	0	0	0	16	0	0	0	4	0	0	2
TOTAL	**31**	**42**	**40**	**862**	**21**	**312**	**857**	**951**	**2069**	**13**	**147**	**301**	**587**	**238**	**510**	**94**

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 2010 IN COAL MINES			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
BCCL	-	779	23971	20266
MCL	0	977	4399	4322
WCL	1522	1522	17604	17637
CCL	2105	2105	10806	9549
NECL	0	0	551	585
ECL	133	133	17723	15112
SECL	62	62	23417	19451
NCL	691	401	2130	3322
SCCL	1729	1729	19915	17888
TATA	36	36	761	814
GIPCL	10	10	16	16
NLC	29	29	0	106
GMDC	1728	1726	382	229
JSMDC	0	0	20	25

(b) Cases of Notified Diseases in Coal Mines:

TABLE: 31	CASES OF NOTIFIED DISEASES IN COAL MINES DURING THE YEAR 2010	
Mining Companies	Name of Disease	Number of cases
SCCL	Pneumoconiosis	01
	Carcinoma Stomach	05

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 2010 was reported to be as follows.

TABLE: 32	PROGRESS OF VOCATIONAL TRAINING IN COAL MINES DURING THE YEAR 2010					
Name of the Company.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
BCCL	12	-	745	9563	10854	4198
MCL	5	0	3665	2225	2915	880
WCL	12	3317	3317	8633	8843	1868
CCL	14	1505	1505	6334	6334	-
NECL	2	0	18	489	519	130
ECL	21	748	748	12655	9224	6397
SECL	29	0	5248	11427	12443	8601
NCL	10	3454	4284	2228	2280	3562
TATA	2	790	445	709	568	625
GIPCL	1	753	753	18	18	771
NLC	1	2418	2418	2144	1770	572
SCCL	11	4555	4555	10529	11779	4058
JSMDC	1	4	4	25	27	5

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 2010.

TABLE: 33	NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN COAL MINES DURING 2010					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
BCCL	40	40	120	120	40	40
MCL	23	23	92	92	23	23
WCL	77	77	231	231	77	77
CCL	60	60	180	180	60	60
NECL	4	4	12	12	4	4
ECL	88	67	262	281	97	99
SECL	91	91	273	273	91	91
NCL	12	12	38	38	10	10
TATA	7	7	21	21	7	7
GIPCL	1	1	3	3	1	1
NLC	4	4	20	22	11	11
SCCL	50	50	186	186	82	82
JSMDC	0	0	2	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 employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	Total
BCCL	2003	7	8	2	2	3	3	12	13	0.23	0.17	0.14	0.19
	2004	7	8	3	3	1	1	11	12	0.25	0.31	0.05	0.20
	2005	10	15	1	1	3	3	14	19	0.50	0.10	0.17	0.33
	2006	7	56	5	5	0	0	12	61	1.98	0.55	0.00	1.14
	2007	4	4	3	3	2	2	9	9	0.15	0.35	0.13	0.18
	2008	8	8	2	2	1	1	11	11	0.32	0.25	0.07	0.23
	2009	6	8	4	6	4	4	14	18	0.32	0.75	0.29	0.38
	2010	1	1	6	6	1	1	8	8	0.04	0.75	0.07	0.17
CCL	2003	3	3	2	2	1	1	6	6	0.21	0.14	0.06	0.13
	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	0.17	0.08	0.13	0.13
	2007	0	0	4	5	3	3	7	8	0.00	0.39	0.21	0.21
	2008	0	0	2	2	2	2	4	4	0.00	0.17	0.14	0.11
	2009	2	2	4	4	2	2	8	8	0.21	0.35	0.14	0.23
	2010	1	2	5	6	2	2	8	10	0.21	0.52	0.14	0.28
ECL	2003	10	10	3	3	0	0	13	13	0.20	0.74	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	0.28	0.16	0.00	0.18
	2007	5	5	2	3	0	0	7	8	0.12	0.47	0.00	0.11
	2008	5	5	2	2	4	4	11	11	0.12	0.35	0.18	0.16
	2009	6	7	3	3	0	0	9	10	0.17	0.53	0.00	0.14
	2010	4	4	3	3	5	5	12	12	0.09	0.53	0.22	0.17
MCL	2003	0	0	6	6	1	1	7	7	0.00	1.24	0.15	0.43
	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	0.24	0.16	0.00	0.12
	2007	0	0	3	3	1	1	4	4	0.00	0.48	0.17	0.24
	2008	1	1	2	2	1	1	4	4	0.25	0.30	0.18	0.25
	2009	0	0	1	1	2	2	3	3	0.00	0.15	0.37	0.19
	2010	0	0	2	2	0	0	2	2	0.00	0.30	0.00	0.12
NCL	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	0.53	0.16	0.36
	2007	0	0	4	4	2	2	6	6	0.00	0.40	0.33	0.37
	2008	0	0	5	9	0	0	5	9	0.00	0.84	0.00	0.54
	2009	0	0	4	4	0	0	4	4	0.00	0.37	0.00	0.24
	2010	0	0	9	9	3	3	12	12	0.00	0.84	0.49	0.72
NEC	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

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	Total
	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	1	5	1	2	0	0	2	7	4.63	2.80	0.00	2.89
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	1.40	0.00	0.41
SECL	2003	7	7	0	0	4	4	11	11	0.19	0.00	0.25	0.18
	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	0.41	0.06	0.12
	2007	5	5	4	4	5	5	14	14	0.15	0.56	0.36	0.26
	2008	6	7	3	3	2	2	11	12	0.22	0.42	0.15	0.23
	2009	4	4	5	5	0	0	9	9	0.13	0.70	0.00	0.17
	2010	16	29	1	1	3	3	20	33	0.91	0.14	0.22	0.62
WCL	2003	4	4	2	2	3	6	9	12	0.16	0.28	0.37	0.25
	2004	6	6	5	5	2	2	13	13	0.26	0.60	0.13	0.27
	2005	6	6	4	4	1	1	11	11	0.27	0.56	0.07	0.25
	2006	7	7	1	1	5	5	13	13	0.34	0.13	0.34	0.30
	2007	5	5	6	6	1	1	12	12	0.25	0.83	0.07	0.29
	2008	6	8	2	2	3	3	11	13	0.39	0.30	0.22	0.32
	2009	8	9	1	2	2	2	11	13	0.44	0.30	0.14	0.32
	2010	5	8	5	5	2	2	12	15	0.39	0.75	0.14	0.37
CIL	**2003**	**31**	**32**	**16**	**16**	**13**	**16**	**60**	**64**	**0.19**	**0.29**	**0.14**	**0.19**
	2004	**36**	**39**	**25**	**26**	**5**	**5**	**66**	**70**	**0.25**	**0.48**	**0.05**	**0.22**
	2005	**39**	**59**	**22**	**23**	**15**	**15**	**76**	**97**	**0.39**	**0.42**	**0.14**	**0.31**
	2006	**27**	**81**	**15**	**16**	**9**	**9**	**51**	**106**	**0.57**	**0.28**	**0.09**	**0.35**
	2007	**19**	**19**	**26**	**28**	**14**	**14**	**59**	**61**	**0.14**	**0.47**	**0.15**	**0.21**
	2008	**27**	**34**	**19**	**24**	**13**	**13**	**59**	**71**	**0.25**	**0.42**	**0.14**	**0.25**
	2009	**26**	**30**	**22**	**25**	**10**	**10**	**58**	**65**	**0.22**	**0.44**	**0.11**	**0.23**
	2010	**27**	**44**	**32**	**33**	**16**	**16**	**75**	**93**	**0.33**	**0.58**	**0.18**	**0.33**
JSMDC	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	7.94	0.00	4.98
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
DVC	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
DVC	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	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 employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	Total
GMDC	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
	2006	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	1	1	2	2	0.00	1.27	1.47	1.37
	2009	0	0	1	1	0	0	1	1	0.00	1.27	0.00	0.68
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
IISCO	2003	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	2	2	1	1	0	0	3	3	1.39	1.78	0.00	1.06
NLC	2003	0	0	1	2	0	0	1	2	0.00	0.51	0.00	0.27
	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	0.63	0.00	0.47
	2007	0	0	2	2	0	0	2	2	0.00	0.25	0.00	0.19
	2008	0	0	2	2	0	0	2	2	0.00	0.31	0.00	0.19
	2009	0	0	2	2	1	1	3	3	0.00	0.31	0.24	0.28
	2010	0	0	2	2	1	1	3	3	0.00	0.31	0.24	0.28
SCCL	2003	12	37	6	6	1	1	19	44	0.75	1.01	0.14	0.71
	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	0.36	0.50	0.00	0.33
	2007	4	4	5	5	2	2	11	11	0.10	0.72	0.28	0.20
	2008	4	4	5	6	4	4	13	14	0.09	0.74	0.55	0.24
	2009	11	14	6	6	0	0	17	20	0.33	0.74	0.00	0.35
	2010	8	9	2	3	1	1	11	13	0.21	0.37	0.14	0.22
TISCO	2003	3	3	0	0	0	0	3	3	0.57	0.00	0.00	0.37
	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
	2006	2	3	0	0	1	1	3	4	0.57	0.00	0.60	0.49
	2007	1	1	0	0	0	0	1	1	0.20	0.00	0.00	0.10
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	3	3	0	0	0	0	3	3	0.58	0.00	0.00	0.42
	2010	4	4	0	0	0	0	4	4	0.78	0.00	0.00	0.56
PIL	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
PIL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	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 employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	Total
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GIPCL	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
	2007	0	0	1	1	0	0	1	1	0.00	3.95	0.00	2.99
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GHCL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	0	0	1	1	0.00	27.03	0.00	25.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
BLAI	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ICML	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	1.53	0.00	1.09
MIL	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
	2007	1	1	0	0	0	0	1	1	1.02	0.00	0.00	0.97
	2008	1	1	0	0	0	0	1	1	0.70	0.00	0.00	0.61
	2009	0	0	0	0	1	1	1	1	0.00	0.00	4.52	0.61
MIL	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JNL	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

Owner	Year	Fatal Accidents								Death Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	Total
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	1	1	1	1	0.00	0.00	43.48	5.81
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
KECML	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	0	0	1	1	0.00	3.42	0.00	3.18
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JPL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	1	1	1	1	0.00	0.00	2.48	0.54
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ALL INDIA	**2003**	**46**	**72**	**23**	**24**	**14**	**17**	**83**	**113**	**0.32**	**0.35**	**0.13**	**0.27**
	2004	**49**	**57**	**32**	**33**	**6**	**6**	**87**	**96**	**0.27**	**0.47**	**0.05**	**0.24**
	2005	**50**	**70**	**28**	**29**	**18**	**18**	**96**	**117**	**0.34**	**0.42**	**0.15**	**0.29**
	2006	**44**	**102**	**24**	**25**	**10**	**10**	**78**	**137**	**0.52**	**0.33**	**0.09**	**0.36**
	2007	**25**	**25**	**35**	**37**	**16**	**16**	**76**	**78**	**0.13**	**0.46**	**0.14**	**0.21**
	2008	**32**	**39**	**29**	**35**	**19**	**19**	**80**	**93**	**0.21**	**0.45**	**0.18**	**0.25**
	2009	**40**	**47**	**31**	**34**	**15**	**15**	**86**	**96**	**0.25**	**0.44**	**0.14**	**0.26**
	2010	**41**	**59**	**38**	**40**	**18**	**18**	**97**	**117**	**0.32**	**0.52**	**0.17**	**0.32**

BG- Belowground OC-Opencast AG-Aboveground
Note : Figures for the year 2009 & 2010 are provisional.

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

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
BCCL	2003	39	42	9	9	12	12	60	63	1.20	0.76	0.56	0.92
	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	11	13	4	4	34	37	0.71	1.44	0.25	0.69
	2007	36	37	14	14	9	9	59	60	1.38	1.64	0.57	1.17
	2008	28	28	7	7	13	13	48	48	1.11	0.88	0.93	1.02
	2009	20	21	12	14	9	9	41	44	0.84	1.75	0.64	0.93
	2010	21	21	1	4	3	4	25	29	0.84	0.50	0.29	0.62
CCL	2003	11	11	7	9	9	9	27	29	0.75	0.64	0.53	0.63
	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	8	8	8	8	3	3	19	19	0.70	0.65	0.20	0.49
	2007	10	10	7	7	4	5	21	22	0.85	0.55	0.35	0.57
	2008	8	8	5	5	5	6	18	19	0.83	0.43	0.43	0.54
	2009	1	1	1	1	4	6	6	8	0.10	0.09	0.43	0.23
	2010	1	1	3	4	4	4	8	9	0.10	0.35	0.29	0.26
ECL	2003	141	147	9	11	21	21	171	179	2.96	2.70	0.71	2.15
	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	83	86	5	5	9	9	97	100	2.02	0.81	0.36	1.36
	2007	95	107	8	8	17	17	120	132	2.59	1.24	0.70	1.83
	2008	85	86	8	8	19	19	112	113	2.04	1.40	0.85	1.61
	2009	82	84	9	9	19	19	110	112	1.99	1.58	0.85	1.60
	2010	44	44	4	4	9	9	57	57	1.04	0.70	0.40	0.81
MCL	2003	5	5	4	4	3	3	12	12	1.03	0.83	0.45	0.74
	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	1.44	1.76	0.53	1.24
	2007	4	4	4	4	0	0	8	8	0.94	0.64	0.00	0.49
	2008	1	1	2	2	2	2	5	5	0.25	0.30	0.37	0.31
	2009	4	4	2	2	0	0	6	6	0.99	0.30	0.00	0.37
	2010	2	2	2	2	1	1	5	5	0.49	0.30	0.18	0.31
NCL	2003	0	0	11	11	7	7	18	18	0.00	1.76	1.04	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	7	7	6	6	13	13	0.00	0.93	0.95	0.94
	2007	0	0	10	10	2	3	12	13	0.00	1.00	0.50	0.81
	2008	0	0	7	7	1	1	8	8	0.00	0.66	0.16	0.48
	2009	0	0	2	2	0	0	2	2	0.00	0.19	0.00	0.12
	2010	0	0	9	9	1	1	10	10	0.00	0.84	0.16	0.60
NEC	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	0	1	0	0	0	0	0	1	0.88	0.00	0.00	0.36
NEC	2006	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	14	0	0	0	0	0	14	12.96	0.00	0.00	5.78
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
SECL	2003	64	67	12	13	16	16	92	96	1.80	1.96	1.00	1.60
	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	53	56	10	10	6	6	69	72	1.62	1.37	0.38	1.25
	2007	48	49	8	11	15	15	71	75	1.49	1.55	1.07	1.39
	2008	43	43	6	7	5	5	54	55	1.35	0.98	0.36	1.04
	2009	38	42	1	2	7	7	46	51	1.32	0.28	0.51	0.97
	2010	34	42	6	8	2	2	42	52	1.32	1.12	0.15	0.98
WCL	2003	41	43	13	13	13	14	67	70	1.77	1.83	0.87	1.47
	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	1.54	1.06	0.68	1.16
	2007	37	37	10	11	6	6	53	54	1.84	1.53	0.43	1.31
	2008	17	17	8	8	4	4	29	29	0.84	1.20	0.29	0.71
	2009	29	30	3	3	6	6	38	39	1.48	0.45	0.43	0.95
	2010	22	25	12	13	6	6	40	44	1.23	1.94	0.43	1.08
CIL	**2003**	**301**	**315**	**65**	**70**	**81**	**82**	**447**	**467**	**1.88**	**1.26**	**0.71**	**1.38**
	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	**198**	**208**	**51**	**62**	**41**	**41**	**290**	**311**	**1.46**	**1.09**	**0.41**	**1.04**
	2007	**230**	**244**	**61**	**65**	**53**	**55**	**344**	**364**	**1.77**	**1.10**	**0.58**	**1.25**
	2008	**182**	**197**	**43**	**44**	**49**	**50**	**274**	**291**	**1.47**	**0.77**	**0.56**	**1.03**
	2009	**174**	**182**	**30**	**33**	**45**	**47**	**249**	**262**	**1.36**	**0.58**	**0.52**	**0.93**
	2010	124	135	37	44	26	27	187	206	1.01	0.77	0.30	0.73
JSMDC	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
DVC	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GMDC	2003	0	0	3	3	0	0	3	3	0.00	4.02	0.00	2.22
	2004	0	0	0	0	2	2	2	2	0.00	0.00	3.34	1.60

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
	2005	0	0	1	1	0	0	1	1	0.00	1.36	0.00	0.69
	2006	0	0	1	1	0	0	1	1	0.00	1.50	0.00	0.74
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
IISCO	2003	9	9	0	0	3	3	12	12	4.47	0.00	3.19	3.62
	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	4	5	0	0	3	3	7	8	2.95	0.00	3.13	2.57
	2007	7	7	1	1	1	1	9	9	4.33	1.78	1.09	300.00
	2008	4	4	0	0	0	0	4	4	2.78	0.00	0.00	1.41
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	4	4	0	0	0	0	4	4	2.78	0.00	0.00	1.41
J&K	2003	1	1	0	0	0	0	1	1	1.25	0.00	0.00	0.97
	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
NLC	2003	0	0	7	10	1	1	8	11	0.00	2.57	0.29	1.51
	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	3	3	1	1	4	4	0.00	0.38	0.38	0.38
	2007	0	0	1	1	0	0	1	1	0.00	0.13	0.00	0.09
	2008	0	0	2	3	0	0	2	3	0.00	0.46	0.00	0.28
	2009	0	0	5	5	3	4	8	9	0.00	0.77	0.98	0.85
	2010	0	0	3	3	2	3	5	6	0.00	0.46	0.73	0.57
SCCL	2003	68	72	7	7	13	13	88	92	1.46	1.17	1.84	1.48
	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	444	452	32	32	81	81	557	565	10.18	5.31	10.96	9.77
	2007	478	482	20	21	68	71	566	574	11.56	3.02	9.79	10.27
	2008	328	332	26	26	47	47	401	405	7.81	3.20	6.42	6.99
	2009	313	321	15	16	47	47	375	384	7.55	1.97	6.42	6.63
	2010	219	230	20	20	42	42	281	292	5.41	2.46	5.74	5.04
TISCO	2003	1	1	0	0	3	3	4	4	0.19	0.00	1.78	0.49
	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	0.75	0.00	0.12
	2007	2	2	0	0	1	1	3	3	0.40	0.00	0.34	0.31
TISCO	2008	2	3	2	2	0	0	4	5	0.58	1.49	0.00	0.70
	2009	1	1	0	0	1	1	2	2	0.19	0.00	1.64	0.28
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
PIL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	9.35	0.00	6.99
GIPCL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	0	0	1	1	0.00	6.54	0.00	4.78
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GHCL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
BLAI	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ICML	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
MIL	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
MIL	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	21.74	0.97
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Owner	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
	2009	1	1	0	0	0	0	1	1	0.70	0.00	0.00	0.61
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JNL	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	1	1	0	0	0	0	1	1	166.67	0.00	0.00	5.81
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ALL INDIA	**2003**	**380**	**398**	**82**	**90**	**101**	**102**	**563**	**590**	**1.77**	**1.31**	**0.79**	**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	**646**	**665**	**88**	**99**	**127**	**127**	**861**	**891**	**3.40**	**1.30**	**1.11**	**2.31**
	2007	**717**	**735**	**83**	**88**	**123**	**128**	**923**	**951**	**3.91**	**1.10**	**1.15**	**2.51**
	2008	**516**	**536**	**74**	**76**	**96**	**97**	**686**	**709**	**2.87**	**0.98**	**0.92**	**1.92**
	2009	**490**	**506**	**50**	**54**	**96**	**100**	**636**	**660**	**2.71**	**0.70**	**0.95**	**1.79**
	2010	**347**	**369**	**61**	**68**	**70**	**72**	**478**	**509**	**1.98**	**0.88**	**0.68**	**1.38**

BG- Belowground OC-Opencast AG-Aboveground

Note : Figures for the year 2010 are provisional.
Serious injury includes seriously injured from fatal accidents also.

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 numbers of notified working non-coal mines are over about 8000 out of which 2002 non-coal mines including 75 oil mines submitted returns at the end of the year 2009.

Average daily employment in non-coal mines during the year 2010 was 194,000 as compared to 185022 in 2009. Average daily employment in workings belowground, opencast and aboveground during the year 2010 was 8,000, 105,450 & 80,550 as compared to 8,251, 100,056 & 76,715 respectively during the year 2009. Results for 2010 are estimated and subject to change after final compilation of data. The average daily employment in various minerals is depicted in the table below for the year 2009:

TABLE: 34 Average daily employment and output in non-coal mines during 2009

Mineral	No. of Mine Submitted return	Average daily employment				Output ('000 tonnes)
		U / G	O/C	Surface	Total	
Bauxite	89	0	5733	840	6573	12452
Copper	5	1892	255	915	3062	3091
Gold	4	499	--	1529	2028	623
Granites	200	0	6560	2091	8651	1366
Lime Stone	452	0	21858	6715	28573	280082
Iron-ore	309	0	27729	19471	47200	231021
Manganese	125	2249	7461	3686	13396	3662
Marble	17	0	1440	432	1872	2934b
Stone	180	0	4997	2240	7237	36670
Galena & sphalarite	11	1273	484	1606	3363	11742
Others	535	2338	23539	12295	38172	--
Oil & Natural Gas	74	-	-	24883	24883	17533(OILI) 15454(Gas)
Total Non-Coal	**2002**	**8251**	**100056**	**76715**	**185022**	**--**

$ Production of Natural Gas (Expressed in Million Cu Meter)
*Figures for 2010 are under compilation.

3.2 Accidents

3.2.1 Accidents

There had been one major accident occurred in Hamsa Mineral Granite Mine of M/s.Hamsa Minerals Private Limited on 25.2.2010. Number of persons killed – 14. Prosecution has been launched.

There had been increase in fatal accidents in the year 2010 wherein 62 fatal accidents involving 105 fatalities and 62 serious accidents as compared to 42 fatal accidents involving 52 fatalities and 94 serious accidents during 2009. 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
2001	71	81	8	0.52	0.72	0.38	0.55
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	0.27	0.41
2005	48	52	4	0.38	0.43	0.17	0.32
2006	58	71	9	0.38	0.62	0.21	0.45
2007	56	64	13	0.35	0.48	0.22	0.37
2008	54	73	35	0.44	0.43	0.37	0.41
2009*	42	52	8	0.55	0.40	0.11	0.29
2010*	62	105	5	0.44	0.87	0.22	0.58

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
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	1.59	1.25
2005	108	109	3.41	0.30	0.93	0.71
2006	78	79	3.20	0.25	0.67	0.56
2007	79	92	3.51	0.29	0.70	0.61
2008	83	85	1.87	0.32	1.10	0.70
2009*	94	109	3.63	0.28	0.67	0.61
2010*	62	69	1.10	0.35	0.34	0.38

* Provisional

includes seriously injured from serious accidents only

Note: Seriously injured from fatal accidents are also considered for computation of serious injury rate.

Table: 37 depicts trend in accidents due to different cause group for the years 2006-2010.

TABLE:37	TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES				
Cause	**2006**	**2007**	**2008**	**2009***	**2010***
Ground movement	9 (17)	9 (16)	13 (20)	16 (24)	16 (55)
Winding in shafts	-	-	-	-	1 (1)
Transportation machinery (other than winding)	19 (20)	25 (25)	15 (15)	10 (10)	13 (14)
Machinery other than transportation machinery	5 (5)	7 (7)	4 (6)	4 (4)	6 (6)
Explosive	3 (3)	2 (2)	2 (10)	2 (4)	3 (3)
Electricity	-	-	2 (3)	-	1 (1)
Gas, Dust etc.	-	-	2 (3)	1 (1)	-
Falls other than fall of ground	22 (26)	11 (12)	11 (11)	8 (8)	18 (21)
Other causes	-	2 (2)	5 (5)	1 (1)	4 (4)
TOTAL	**58 (71)**	**56 (64)**	**54 (73)**	**42 (52)**	**62 (105)**

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

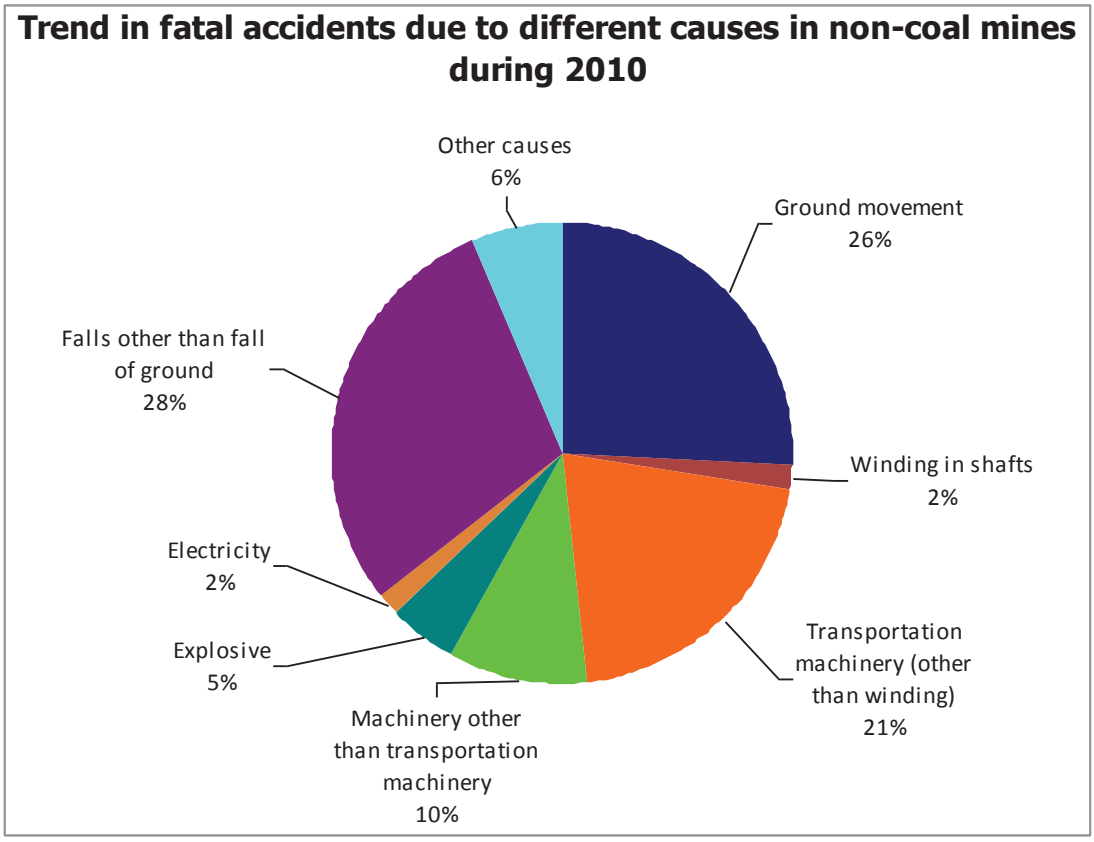


TABLE:37A	TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2006**	**2007**	**2008**	**2009***	**2010***
Belowground	3 (3)	3 (3)	3 (4)	4 (5)	4 (4)
Opencast	42 (55)	38 (46)	36 (45)	30 (39)	42 (85)
Aboveground	13 (13)	15 (15)	16 (27)	8 (8)	16 (16)
Total	**58 (71)**	**56 (64)**	**54 (73)**	**42 (52)**	**62 (105)**

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

TABLE: 38	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES				
Cause	**2006**	**2007**	**2008**	**2009***	**2010***
Ground movement	2 (5)	4 (6)	1 (8)	1 (6)	1 (4)
Winding in shafts	1 (2)	2 (13)	2 (3)	3 (6)	2 (2)
Transportation machinery (other than winding)	12 (16)	10 (17)	9 (12)	11 (14)	5 (5)
Machinery other than transportation machinery	9 (9)	17 (21)	10 (12)	13 (14)	10 (10)
Explosive	-	1 (2)	1 (21)	1 (2)	1 (3)
Electricity	1 (1)	1 (1)	1 (3)	3 (3)	2 (2)
Gas, Dust etc.	-	1 (1)	1 (1)	-	3 (3)
Falls other than fall of ground	38 (40)	23 (24)	39 (39)	39 (39)	31 (33)
Other causes	15 (15)	20 (20)	19 (21)	23 (25)	7 (7)
TOTAL	**78 (88)**	**79 (105)**	**83 (120)**	**94 (109)**	**62 (69)**

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

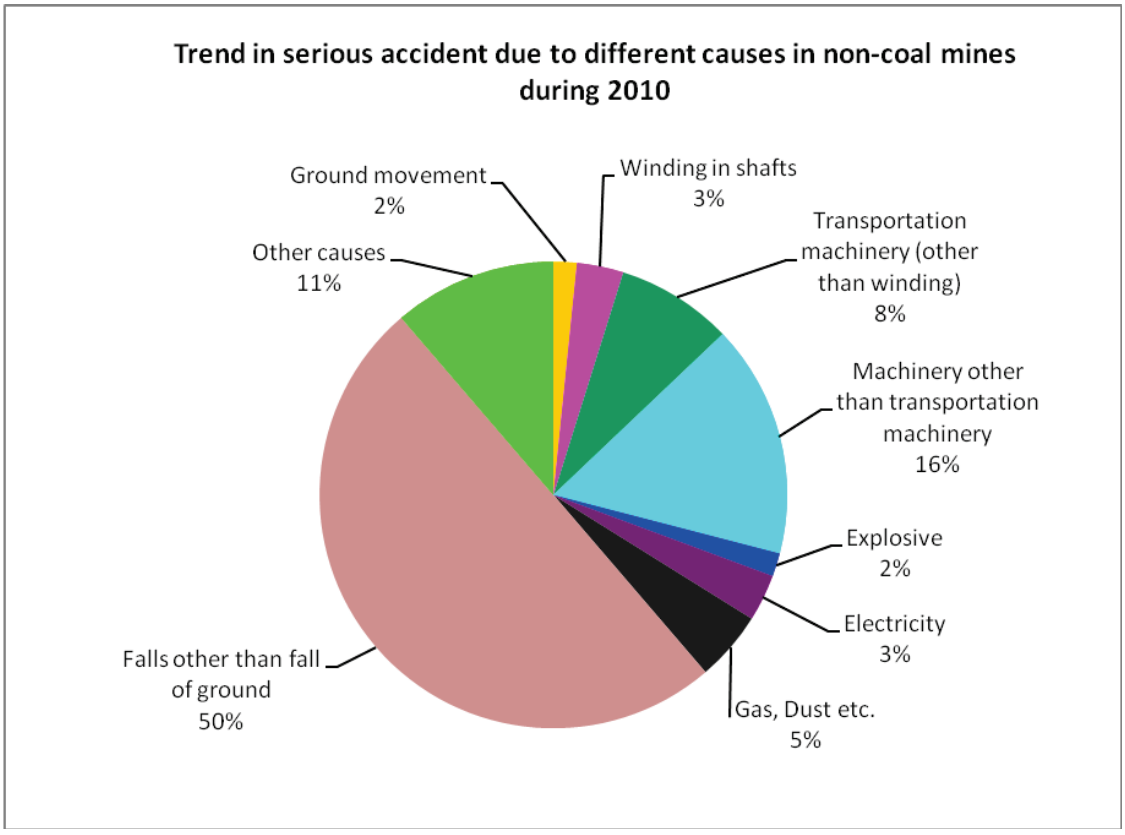


TABLE: 38A	TREND IN SERIOUS ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2006**	**2007**	**2008***	**2009***	**2010***
Belowground	24 (26)	19 (30)	15 (16)	30 (33)	9 (10)
Opencast	13 (21)	14 (28)	20 (30)	18 (27)	29 (34)
Aboveground	41 (41)	46 (47)	48 (74)	46 (49)	24 (25)
Total	**78 (88)**	**79 (105)**	**83 (120)**	**94 (109)**	**62 (69)**

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

Table: 39 shows fatal and serious accidents mineral-wise for the year 2006-2010

TABLE: 39	FATAL AND SERIOUS ACCIDENTS MINERAL-WISE IN NON-COAL MINES DURING 2006-2010									
Mineral	**Fatal accidents**					**Serious accidents**				
	2006	**2007**	**2008**	**2009***	**2010***	**2006**	**2007**	**2008***	**2009***	**2010***
Copper	-	-	1	1	-	-	1	3	5	3
Galena & sphalerite	1	1	2	-	1	12	14	21	24	7
Gold	1	1	-	1	-	9	6	9	15	11
Granite	6	4	6	3	9	-	-	1	-	4
Iron-ore	15	14	11	8	10	21	22	19	20	10
Lime stone	12	9	9	3	6	6	7	3	4	3
Manganese ore	2	1	3	-	2	7	5	2	2	-
Marble	4	11	5	5	12	-	-	-	-	-
Oil	4	3	5	4	4	15	16	20	18	16
Stone	4	7	5	8	4	-	-	-	-	-
Others	9	5	7	9	14	8	8	5	6	8
TOTAL	**58**	**56**	**54**	**42**	**62**	**78**	**79**	**83**	**94**	**62**

* 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 matter of concern of the trend in the last five years 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 16 (38% of the total) fatal accidents due to ground movement in the year 2010 as compared to 16 (26% of the total) fatal accidents due to ground movement in the year 2009.

3.2.2.1A Roof fall Accidents

There was no fatal accident occurred due to roof fall during the year 2010 in non-coal mines.

3.2.2.1B Side fall Accidents

There were no fatal accidents occurred due to side fall during the year 2010 in non-coal mines.

3.2.2.2 Transportation machinery (Winding)

There was one accident reported due to transportation machinery (winding) during the year, 2010.

3.2.2.3 Transportation machinery (other than winding)

There were altogether 13 accident involving 13 fatalities due to transportation machinery (other than winding) during the year, 2010.

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

TABLE-40	FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY IN NON COAL MINES IN YEAR 2010		
Sl. No.	Cause	No. of fatal accidents	Persons killed
1.	1. Rope Haulage	00	00
2.	2. Conveyors	03	03
3	3. Dumpers /Tipper	08	08
4	4. Truck & Tanker	02	02
5.	5. Other (Wagon)	00	00
	Total	13	13

The analysis of causes revealed the following:

Transportation machinery (other than winding)

Conveyor: Three persons died due to trap in tail of end of belt conveyor.

Dumpers/Tipper : Eight accidents occurred causing eight fatalities due to truck & tanker contributing (61.52%) of total accidents.

- One accident due to roll back of Dumper.
- Two accidents due to ran over of Dumper and Tipper.
- Two accident due to hit by Dumper and tipper.
- One accident due to lost control
- One accident due to helper trapped between bucket and face.
- One accident due to operator jumped out in panic from cabin and injured.

Truck & Tanker :Two accidents occurred causing two fatalities due to truck & tanker contributing (15.38%) of total accident.

- One accident occurred killing a person by lost control and roll back of tipper.
- One person died due to collide with another truck. .

Other (Wagon): There is no accident due to this cause during the year 2010.

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 2010			
Sl. No.	Causes	FATAL		SERIOUS	
		Surface	Underground	Surface	Underground
1.	Cutting Machines	2	-	1	-
2.	Shovels etc.	-	-	-	-
3.	Crane	-	-	-	-
4.	Crushing & Screening Plant	-	-	1	-
5.	Other HEMM	2	1	1	-
6.	Others Non-Transportation Machinery	1	-	5	2
Total		**5**	**1**	**8**	**2**

It is seen that most accident due to transportation machinery and other machinery were caused due to operator's negligence, indiscipline and lack of supervisions. Improved standards of training and education of workers are necessary to control such accidents. Some cases the equipment failure was observed due to poor maintenance and called for higher standard of maintenance of machinery in the opencast sector.

Table: 42 - Detail break-up of serious accidents due to this cause during 2010.

TABLE : 42	BREAK-UP OF SERIOUS ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON-COAL MINES DURING 2010			
Cause	Number of serious accidents			
	Belowground	Opencast	Aboveground	Total
Cutting Machines	-	-	1	1
Shovels, draglines, excavators etc.	-	-	-	-
Crushing & screening plants	-	1	-	1
Other HEMM	-	1	-	1
Others	2	3	2	7
TOTAL	**2**	**5**	**3**	**10**

3.2.2.5 Explosives

There were 3 (5% of the total) fatal accidents involving 3 persons and one serious accident in 2010 as compared to 2 fatal accidents and 1 serious accident in 2009.

3.2.2.6 Electricity

There was one fatal accident involving one persons and two serious accidents due to electricity during the year 2010.

3.2.2.7 Dust, Gas & other combustible material

There was no fatal accident but three serious accidents occurred due to this cause during the year 2010.

3.2.2.8 Falls other than falls of ground

There were 18 (29% of the total)) fatal accidents involving 21 persons and 31 serious accidents occurred due to this cause during the year 2010, while 8 fatal accidents and 39 serious accidents during the year 2009..

3.2.2.9 Other causes

There was 4 (6% of the total) fatal accidents involving 4 persons and 7 serious accidents occurred due to miscellaneous causes during the year 2010.

3.3 Responsibility

The responsibilities fixed as a result of fatal accident enquiry conducted by officers of DGMS in the year 2010 is indicated in the table below:

TABLE:43	RESPONSIBILITY FOR FATAL ACCIDENTS IN NON-COAL MINES DURING THE YEAR 2010	
SL. NO.	Responsibility	No. of accidents
1.	Misadventure	1
2.	Management	16
3.	Management, Subordinate Supervisory Staff (SSS)	14
4.	Management, SSS & Co-worker	1
5.	Management, SSS & Shotfirer	1
6.	Management, SSS & Deceased	1
7.	Management & Co-worker	5
8.	Management & Deceased	4
9.	Subordinate Supervisory Staff (SSS)	1
10.	Subordinate Supervisory Staff (SSS) & Co-worker	1
11.	Co-Worker	2
12.	Co-Worker & Deceased	2
13.	Deceased	4
14.	Others	9
	TOTAL	**62**

3.4 Dangerous Occurrence

The table indicated below gives dangerous occurrences reported during the year 2010 under various causes:

TABLE:44	DANGEROUS OCCURRENCES IN NON-COAL MINES DURING 2010	
Sl.No.	Cause	No. of cases
1.	Overwinding of cages etc.	-
2.	Outbreak of fire belowground	-
3.	Outbreak of fire at surface	2
4.	Premature collapse of workings or failure of pillars	-
5.	Breakage of winding rope	-
6.	Breakdown of winding engine, crank shaft, bearing etc.	-
7.	Ignition or occurrence of inflammable gas	-
8.	Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered	-
9.	Irruption of water	-
10.	Rock burst	-
11.	Bursting of equipment under high pressure	-
12.	Oil well blowout without fire	-
13.	Fire in pipeline/well heads	-
14.	Others	2
	TOTAL	**4**

3.5 Technical Developments

Total numbers of mines working by deploying HEMM is 773. 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. Figures for the year 2010 are under compilation.

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	591	58	1577	1635	5543	2248	9426	1789531
2007	614	92	1626	1718	4926	2057	8701	1834838
2008	705	67	1885	1952	6514	2460	10926	2109638
2009	773	93	2164	2257	7549	2580	12166	2554576

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	2759	17964	39	15182	7256	42	113	43356
1998	1713	18719	154	17199	9126	52	111	47074
1999	1828	22151	153	18353	7159	30	86	49760
2000	1233	17887	148	25561	10333	94	113	55369
2001	1021	21476	140	24303	7877	81	92	55809
2002	1092	21111	368	26186	6640	128	88	55613
2003	1005	20471	238	36473	5279	176	88	63729
2004	1323	24547	168	36883	7300	253	111	70584
2005	1382	28085	168	40538	9892	501	130	80700
2006	608	33757	-	53240	6766	622	116	95146
2007	566	31179	457	57122	9940	437	73	97769
2008	655	38438	457	63282	7096	691	111	120866
2009	471	36843	282	56607	7103	338	92	101736

3.6 Occupational Health & Environments

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

TABLE: 47	PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2010 IN NON-COAL MINES			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
OIL	382	382	1960	1856
MOIL	0	797	0	1075
TATA	425	425	710	706
SAIL	188	188	1448	1305
IREL	291	291	971	796
UCIL	411	411	459	402
HGMCL	-	346	538	520
NMDC	578	578	1131	947
NALCO	114	114	122	126
BALCO	150	150	267	330
HCL	321	390	480	406
HZL	0	2120	520	922
ACC	208	208	276	491
MML	845	773	1067	867
OMC	777	734	2659	1105
RSMM	9	9	249	544

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

TABLE: 48	NUMBER OF NOTIFIED DISEASES DURING 2010 IN NON-COAL MINES	
Mining Companies	Name of disease	Number of cases
-	-	-

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 2010					
Cos.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
OIL	1	-	130	-	228	1414
MOIL	6	-	-	658	658	-
TATA	5	2700	4015	516	513	3368
SAIL	9	186	186	1506	1469	529
IREL	3	364	371	593	630	159
UCIL	6	517	517	435	361	210
HGMCL	1	-	111	478	413	63
NMDC	4	1409	1409	617	524	1197
NALCO	1	161	165	61	61	-
BALCO	2	87	76	379	424	173
HCL	4	991	991	681	723	296
HZL	4	17	2146	313	701	352
ACC	8	163	165	258	295	159
MML	3	959	768	804	571	97
OMC	10	563	188	433	286	11
RSMM	1	557	557	185	185	40

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 2010					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
OIL	6	6	12	18	6	20
MOIL	9	10	27	27	9	9
TATA	4	4	14	18	5	5
SAIL	10	10	30	36	10	10
IREL	3	3	9	9	3	3
UCIL	3	3	15	17	6	6
HGMCL	3	3	5	6	5	5
NMDC	4	4	16	18	4	4
NALCO	1	1	3	6	1	1
BALCO	3	3	4	4	2	2
HCL	4	4	13	17	8	8
HZL	4	4	18	17	12	12
ACC	1	1	7	7	9	12
MML	25	25	75	75	25	25
OMC	13	15	29	19	21	29
RSMM	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	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	TOTAL
Oil	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	0.29	0.29
	2007	0	0	0	0	3	3	3	3	0.00	0.00	0.16	0.16
	2008	0	0	0	0	5	6	5	6	0.00	0.00	0.25	0.25
	2009	0	0	0	0	4	4	4	4	0.00	0.00	0.17	0.17
	2010	0	0	0	0	4	4	4	4	0.00	0.00	0.17	0.17
Apatite & Rock Phosphate	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	1.12	0.00	0.54
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	1	1	0	0	1	1	0.00	0.96	0.00	0.51
	2010	0	0	0	0	1	1	1	1	0.00	0.00	1.23	0.51
Asbestos	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	0.00	0.00	166.67
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Barytes	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Bauxite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
China Clay,Clay ,White-clay	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
	2007	0	0	1	1	0	0	1	1	0.00	0.57	0.00	0.32
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
China Clay,Clay ,White-clay	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	0.59	0.00	0.33
Chromite	2003	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	TOTAL
	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	1.50	0.00	0.00	0.14
	2007	1	1	2	2	1	1	4	4	1.41	0.57	0.31	0.54
	2008	0	0	1	1	0	0	1	1	0.00	0.29	0.00	0.12
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	1	1	2	2	0.00	0.29	0.30	0.25
Copper	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	1	1	1	1	0.00	0.00	1.36	0.38
	2009	1	1	0	0	0	0	1	1	0.61	0.00	0.00	0.38
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Dolomite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	0.55	0.00	0.37
Felspar	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	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	2	8	0	0	2	8	0.00	38.83	0.00	34.19
Galena & Sphalarite	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	0.85	0.00	0.00	0.31
	2007	1	1	0	0	0	0	1	1	0.87	0.00	0.00	0.30
	2008	1	1	0	0	1	3	2	4	0.83	0.00	1.86	1.22
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	1	1	1	1	0.00	0.00	0.62	0.31
Garnet	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	5	0	0	1	5	0.00	4.38	0.00	4.17
Gold	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	0.63	0.00	0.00	0.32

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	TOTAL
	2007	1	1	0	0	0	0	1	1	0.66	0.00	0.00	0.33
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	1	1	1	1	0.00	0.00	0.62	0.33
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Granite	2003	1	1	4	5	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	1.64	0.00	1.21
	2007	0	0	4	4	0	0	4	4	0.00	0.64	0.00	0.49
	2008	0	0	6	8	0	0	6	8	0.00	1.29	0.00	0.98
	2009	0	0	3	3	0	0	3	3	0.00	0.48	0.00	0.37
	2010	0	0	8	21	1	1	9	22	0.00	3.38	0.51	2.69
Graphite	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	2.92	0.00	2.70
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gypsum	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	4.72	0.00	3.62
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Iron	2003	0	0	5	5	8	9	13	14	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	10	16	5	5	15	21	0.00	0.68	0.28	0.51
	2007	0	0	7	7	7	7	14	14	0.00	0.29	0.39	0.34
	2008	0	0	7	7	4	4	11	11	0.00	0.27	0.21	0.25
	2009	0	0	6	6	2	2	8	8	0.00	0.23	0.11	0.18
	2010	0	0	8	10	2	2	10	12	0.00	0.39	0.11	0.27
Limestone	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	0.27
	2006	0	0	10	13	2	2	12	15	0.00	0.65	0.35	0.59
	2007	0	0	7	11	2	2	9	13	0.00	0.51	0.32	0.47
	2008	0	0	7	7	2	2	9	9	0.00	0.32	0.31	0.32
	2009	0	0	3	3	0	0	3	3	0.00	0.14	0.00	0.11
	2010	0	0	6	7	0	0	6	7	0.00	0.32	0.00	0.25
Magnesite	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
Magnesite	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	12.74	1.20
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	TOTAL
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Manganese	2003	1	1	0	0	0	0	1	1	0.41	0.00	0.00	0.08
	2004	1	1	1	1	1	1	3	3	0.33	0.13	0.26	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	0.29	0.00	0.15
	2007	0	0	0	0	1	1	1	1	0.00	0.00	0.25	0.07
	2008	1	2	1	1	1	1	3	4	0.77	0.14	0.26	0.30
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	2	2	0	0	0	0	2	2	0.77	0.00	0.00	0.15
Marble	2003	1	2	5	5	0	0	6	7	0.00	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	2.53	0.00	2.01
	2007	0	0	11	14	0	0	11	14	0.00	9.05	0.00	7.16
	2008	0	0	5	7	0	0	5	7	0.00	4.12	0.00	3.25
	2009	0	0	5	6	0	0	5	6	0.00	3.53	0.00	2.79
	2010	0	0	11	21	1	1	12	22	0.00	12.37	2.20	10.22
Mica	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Quartz	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	2	2	0	0	2	2	0.00	2.44	0.00	2.02
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sandstone	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	1	1	0	0	1	1	0.00	3.66	0.00	3.13
	2009	0	0	0	0	1	1	1	1	0.00	0.00	21.28	3.13
	2010	0	0	0	0	2	2	2	2	0.00	0.00	42.55	6.25
Silica	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
Silica	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sillimanite	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

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Accident	Killed	Accident	Killed	Accident	Killed	Accident	Killed	BG	OC	AG	TOTAL
	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	1	1	1	1	0.00	0.00	0.55	0.27
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	1	1	1	1	0.00	0.00	0.55	0.27
Steatite	2003	0	0	3	3	2	3	5	6	0.00	0.99	4.46	1.54
	2004	0	0	1	1	0	0	1	1	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	1	1	0	0	1	1	0.00	0.31	0.00	0.24
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	1	1	3	4	0	0	4	5	4.20	1.08	0.00	1.03
	2009	1	2	1	1	0	0	2	3	8.40	0.27	0.00	0.62
	2010	0	0	1	8	0	0	1	8	0.00	2.16	0.00	1.65
Stone	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	0.86	0.00	0.61
	2007	0	0	6	7	1	1	7	8	0.00	1.05	0.46	0.91
	2008	0	0	4	6	1	9	5	15	0.00	1.20	4.48	2.14
	2009	0	0	8	16	0	0	8	16	0.00	3.20	0.00	2.28
	2010	0	0	2	2	2	2	4	4	0.00	0.40	1.00	0.57
Vermiculite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	1	1	0	0	1	1	0.00	28.57	0.00	23.81
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
All India	**2003**	**3**	**4**	**31**	**38**	**18**	**20**	**52**	**62**	**0.52**	**0.45**	**0.31**	**0.40**
	2004	**5**	**5**	**36**	**42**	**16**	**17**	**57**	**64**	**0.62**	**0.47**	**0.26**	**0.39**
	2005	**3**	**3**	**34**	**38**	**11**	**11**	**48**	**52**	**0.38**	**0.43**	**0.17**	**0.32**
	2006	**3**	**3**	**42**	**55**	**13**	**13**	**58**	**71**	**0.38**	**0.62**	**0.21**	**0.45**
	2007	**3**	**3**	**38**	**46**	**15**	**15**	**56**	**64**	**0.35**	**0.48**	**0.22**	**0.37**
	2008	**3**	**4**	**35**	**42**	**16**	**27**	**54**	**73**	**0.44**	**0.43**	**0.37**	**0.41**
	2009	**4**	**5**	**30**	**39**	**8**	**8**	**42**	**52**	**0.55**	**0.40**	**0.11**	**0.29**
	2010	**4**	**4**	**42**	**85**	**16**	**16**	**62**	**105**	**0.44**	**0.87**	**0.22**	**0.58**

BG – Belowground OC- Opencast AG- Aboveground

Note : Figures for the year 2009 & 2010 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 Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
Oil	2003	0	0	0	0	21	22	21	22	0.00	0.00	1.18	1.18
	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	15	15	15	15	0.00	0.00	1.08	1.08
	2007	0	0	0	0	16	16	16	16	0.00	0.00	0.83	0.83
	2008	0	0	0	0	20	22	20	22	0.00	0.00	0.93	0.93
	2009	0	0	0	0	18	20	18	20	0.00	0.00	0.85	0.85
	2010	1	1	8	8	7	8	16	17	0.00	0.00	0.34	0.72
Apatite & Rock Phosphate	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
	2007	0	0	1	2	0	0	1	2	0.00	1.90	0.00	1.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	0.96	0.00	0.51
Asbestos	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	1	0	0	0	1	0.00	43.48	0.00	4.83
	2006	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Barytes	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Bauxite	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	1.71	0.20
	2007	1	1	0	0	0	0	1	1	0.00	0.00	0.00	0.18
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	1	1	0	0	1	1	0.00	0.20	0.00	0.18
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
China Clay,Clay, White-clay	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

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2006	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Chromite	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
	2007	0	0	1	2	1	1	2	3	0.00	0.57	0.31	0.40
	2008	0	0	0	1	0	0	0	1	0.00	0.29	0.00	0.12
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Copper	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
	2007	1	1	0	0	0	0	1	1	0.62	0.00	0.00	0.41
	2008	1	1	0	0	2	4	3	5	0.61	0.00	5.42	1.91
	2009	4	4	1	4	0	0	5	8	2.44	16.88	0.00	3.06
	2010	3	3	0	0	0	0	3	3	1.83	0.00	0.00	1.15
Diamond	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	1	1	0	0	1	1	0.00	33.33	0.00	8.33
Dolomite	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
	2007	0	0	0	0	1	1	1	1	0.00	0.00	1.36	0.37
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	1	1	1	1	0.00	0.00	1.08	0.37
	2010	0	0	1	1	0	0	1	1	0.00	0.55	0.00	0.37
Felspar	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
Felspar	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
Galena &	2003	11	11	1	1	10	10	22	22	8.16	1.66	6.34	6.24
Sphalarite	2004	21	21	2	2	7	7	30	30	18.85	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	5.92	8.77	1.14	3.66
	2007	7	7	0	0	7	7	14	14	6.10	0.00	3.95	4.24
	2008	7	8	0	0	14	15	21	23	6.66	0.00	9.32	7.03
	2009	13	16	3	3	8	9	24	28	13.32	6.52	5.59	8.56
	2010	2	2	3	3	2	2	7	7	1.67	6.52	1.24	2.14
Garnet	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gold	2003	34	34	0	0	11	11	45	45	26.67	0.00	7.79	16.38
	2004	22	22	0	0	13	13	35	35	16.73	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	8	0	0	2	2	9	10	5.02	0.00	1.30	3.19
	2007	4	15	0	0	2	2	6	17	9.91	0.00	1.29	5.55
	2008	5	5	0	0	4	4	9	9	3.43	0.00	2.49	2.94
	2009	10	10	3	3	2	2	15	15	6.87	0.00	1.25	4.90
	2010	2	2	4	4	5	5	11	11	1.37	0.00	3.12	3.59
Granite	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	1	0	0	0	1	0.00	0.18	0.00	0.13
	2007	0	0	0	1	0	0	0	1	0.00	0.16	0.00	0.12
	2008	0	0	1	5	0	0	1	5	0.00	0.80	0.00	0.61
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	4	5	0	0	4	5	0.00	0.80	0.00	0.61
Graphite	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	1	0	0	0	1	0.00	2.92	0.00	2.70
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gypsum	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Iron	2003	0	0	14	17	23	25	37	42	0.00	0.84	1.59	1.17
	2004	0	0	21	23	24	25	45	48	0.00	1.02	1.55	1.24
	2005	0	0	10	12	24	24	34	36	0.00	0.54	1.58	0.96
	2006	0	0	9	10	12	12	21	22	0.00	0.42	0.67	0.53
	2007	1	1	9	13	12	13	22	27	0.00	0.54	0.73	0.65
	2008	0	0	9	10	10	11	19	21	0.00	0.39	0.58	0.47
	2009	0	0	7	7	13	13	20	20	0.00	0.27	0.69	0.45
	2010	0	0	4	4	6	6	10	10	0.00	0.15	0.32	0.22
Limestone	2003	0	0	5	5	8	8	13	13	0.00	0.27	1.38	0.54
	2004	0	0	6	7	8	8	14	15	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	1	2	5	5	6	7	0.00	0.10	0.88	0.27
	2007	0	0	3	5	4	4	7	9	0.00	0.23	0.65	0.32
	2008	0	0	2	2	1	1	3	3	0.00	0.09	0.16	0.11
	2009	0	0	3	3	1	1	4	4	0.00	0.14	0.16	0.14
	2010	0	0	2	3	1	1	3	4	0.00	0.14	0.16	0.14
Magnesite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	1	1	1	1	0.00	0.00	6.85	0.42
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Manganese	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	6	7	0	3	1	1	7	11	2.75	0.44	0.27	0.84
	2007	4	4	0	0	1	1	5	5	1.51	0.00	0.25	0.37
	2008	0	0	0	0	2	2	2	2	0.00	0.00	0.52	0.15
	2009	1	1	0	0	1	1	2	2	0.39	0.00	0.26	0.15
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Marble	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	0.87	0.00	0.65
	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
Marble	2007	0	0	0	4	0	0	0	4	0.00	2.59	0.00	2.05
	2008	0	0	0	1	0	0	0	1	0.00	0.59	0.00	0.46
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	1	0	0	0	1	0.00	0.59	0.00	0.46
Mica	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

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Quartz	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sandstone	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Silica	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	1	1	1	1	0.00	0.00	1.30	0.34
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sillimanite	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	1.13	0.70
	2007	0	0	0	0	2	2	2	2	0.00	0.00	1.12	0.55
	2008	0	0	1	1	1	1	2	2	0.00	0.54	0.55	0.55
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	2	2	2	2	0.00	0.00	1.10	0.55
Steatite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	3	0	0	0	3	0.00	0.81	0.00	0.62
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

Mineral	Year	Serious Accidents								S/Injury Rate per 1000 persons employed			
		Belowground		Opencast		Aboveground		Total					
		Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	Acc	S/Inj	BG	OC	AG	Total
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Stone	2003	0	0	0	5	0	0	0	5	0.00	1.01	0.00	0.63
	2004	0	0	2	10	0	0	2	10	0.00	1.98	0.00	1.26
	2005	0	0	0	1	0	0	0	1	0.00	0.20	0.00	0.14
	2006	0	0	0	1	0	0	0	1	0.00	0.22	0.00	0.15
	2007	0	0	0	1	0	0	0	1	0.00	0.15	0.00	0.11
	2008	0	0	0	0	0	20	0	20	0.00	0.00	9.96	2.85
	2009	0	0	0	6	0	0	0	6	0.00	1.20	0.00	0.86
	2010	0	0	0	2	0	0	0	2	0.00	0.40	0.00	0.29
Vermiculite	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
	2007	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2008	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2009	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Atomic Mineral	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.
	2007	1	1	0	0	0	0	1	1	N.A.	N.A.	N.A.	N.A.
	2008	1	1	0	0	1	1	2	2	N.A.	N.A.	N.A.	N.A.
	2009	2	2	0	0	1	1	3	3	N.A.	N.A.	N.A.	N.A.
	2010	1	2	1	1	1	1	3	4	N.A.	N.A.	N.A.	N.A.
All India	**2003**	**57**	**57**	**25**	**36**	**86**	**92**	**168**	**185**	**7.36**	**0.43**	**1.45**	**1.19**
	2004	**54**	**54**	**34**	**46**	**100**	**103**	**188**	**203**	**6.70**	**0.52**	**1.57**	**1.25**
	2005	**27**	**27**	**22**	**27**	**59**	**59**	**108**	**113**	**3.41**	**0.30**	**0.93**	**0.71**
	2006	**24**	**26**	**13**	**21**	**41**	**41**	**78**	**88**	**3.33**	**0.24**	**0.67**	**0.56**
	2007	**19**	**30**	**14**	**28**	**46**	**47**	**79**	**105**	**3.51**	**0.29**	**0.70**	**0.61**
	2008	**14**	**15**	**13**	**23**	**56**	**82**	**83**	**120**	**1.65**	**0.24**	**1.12**	**0.67**
	2009	**30**	**33**	**18**	**27**	**46**	**49**	**94**	**109**	**3.63**	**0.28**	**0.67**	**0.61**
	2010	**9**	**10**	**29**	**34**	**24**	**25**	**62**	**69**	**1.10**	**0.35**	**0.34**	**0.38**

BG- Belowground OC- Opencast AG- Aboveground

N.A. = Employment Figures not Available.

Note : i) Figures for the year 2009 & 2010 are provisional.

ii) Seriously injured from fatal accidents are also considered for computation of no. of serious injury as well as for serious injury rate.

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 2010.

Equipment, appliances, materials and machinery approved during the year 2010		
Sl. No.	Equipment/appliances/materials/ machinery	No. of approvals granted/renewed/ extended during the year
1.	Methanometer	1
2.	Helmet	9
3.	Cap Lamp	3
4.	Footwear	20
5.	Gas Detector/Monitor	6
6.	Cap Lamp Bulb	1
7.	Ventilation ducting	1
8.	Co detector tubes/aspirator	0
9.	Environmental monitoring system	1
10.	Safety goggles	2
11.	Ear plug	1
12.	Visibility harness	0
13.	Dust Respirator (Mask)	7
14.	Full Body Harness/Safety Belt	2
15.	Flame Safety Lamp	0
16.	Noise Dosi-Meter	0
17.	Brattice Cloth	6
18.	Self-rescuers	2
19.	Breathing Apparatus	4
20.	Resuscitator/Reviving Apparatus	0
21.	Hydraulic props	1
22.	Powered support & its components	5
23.	STDA Legs	0
24.	Explosives	10
25.	Exploders	1
26.	Detonators	19
27.	Flame proof equipment - motor, switches, circuit breakers etc	222
28.	Intrinsically safe apparatus	12
29.	Equipment for use in hazardous area	0
30.	Cables	39
31.	Gas Detector and Monitor	4
32.	Cage suspension gears	12
33.	Fire resistant conveyor belting	2
34.	Automatic contrivance	5
35.	Man riding system	2
36.	Fire resistant hydraulic fluid	7
37.	High pressure hose	2
38.	Accreditation of Test House	3
39.	Chair lift system	1
40.	Top man emergency escape device & escape line	1
41.	Audio Video Alarm	1
42.	Winding Rope	1
43.	Automatic Recording Speed Indicator	2
	TOTAL	**418**

5.0 Coal & Metalliferous Mining Examinations during 2010

(i) Board of Mining Examinations under the CMR, 1957 upto 11.08.2010

Shri S.J. Sibal	Director General of Mines Safety
Shri Ashok Kumar Singh	Chairman & Managing Director, M/s. Central Mine Planning & Design Institute Ltd.
Shri Mukti Pada Dixit	Chairman & Managing Director, M/s. S.E.C.L.
Dr. Ashish Bhattacharjee	Prof. & Head of Department, Department of Mining Engineering, IIT, Kharagpur
Shri Shree Ramji Upadhyay	Chairman & Managing Director M/s. Mahanadi Coalfields Ltd.
Shri J.V. Duttatreyulu	Director (Operations), M/s. Singareni Collieries Co. Ltd.

(ii) Board of Mining Examinations under the CMR, 1957 after 11.08.2010

Shri S.J. Sibal	Director General of Mines Safety upto 30.09.2010
Shri Satish Puri	Director General of Mines Safety from 01.10.2010
Shri J.V. Duttatreyulu	Director (Operations), M/s. Singareni Collieries Co. Ltd.
Shri Vinay Kumar Singh	Chairman-cum-Managing Director, M/s. Northern Coalfields Limited
Prof. Durga Charan Panigrahi	Prof. & Head of Department, Department of Mining Engineering, Indian School of Mines, Dhanbad.
Shri Nagendra Kumar	Director (Technical), M/s. Eastern Coalfields Ltd.
Shri Pradip Kumar Roy Chowdhury	Director (Technical) Operations M/s. South-Eastern Coalfields Limited

Board of Mining Examinations under the MMR, 1961

Shri S.J. Sibal	Director General of Mines Safety upto 30.09.2010
Shri Satish Puri	Director General of Mines Safety from 01.10.2010
Dr. Upendra Kumar	Head & Deptt. Of Mining Engineeing, Indian School of Mines University, Dhanbad
Shri V.K. Agrawal	Sr. Vice President, Indian Metals & Ferro Alloys , IMFA Building, Jajpur Road
Dr. B.K. Shrivastava	Prof. & Coordinator, Centre of Advanced Studies, Deptt. of Mining Engg., Banaras Hindu University, Varanasi.
Shri D. Acharya	Director (Tech), M/s. UCIL, P.O. Narwapahar, East Singhbum
Shri Akhilesh Joshi	Chief Operation Officer, M/s. HZL, Udaipur

Examiners for Certificates of Competency

Coal Mining Examinations

(a) Following were the Examines for Manager's Certificates of Competency Examinations held in 2010.

Subject	First Class manager's Certificat	Second Class Manager's Certificate
Mine Management, Legislation & General Safety	Shri S.I. Hussan	Shri R.B. Chakraborty
Winning & Working	Shri Omprakash	Shri Ch Diwakar
Mine Ventilation	Shri A.K. Singh	Shri A.K. Singh
Mining Machinery & Electricity	Shri N. Das	Shri J.P. Singh
Mine Surveying	Shri Suresh	Shri M. Shishu Kr. Reddy

(b) Following were the Examiners for Surveyor's Certificate of Competency Examinations held in 2010.

Surveying Paper-I	Shri A. K. Sinha
Surveying Paper-II	Shri V. Devanandam

(c) Examiner(s) for Overman's Certificate of Competency Examinations held in 2010.

Overman	Shri P. Ranganatheeswar

Metal Mining Examinations

(a) Following were the Examiners for Manager's Certificates of Competency Examinations held in 2010.

Subject	Ist Class manager's Certificate (Un-Restricted	IInd Class Manager's Certificate (Un-Restricted)
Mine Management, Legislation & General Safety	Shri S. I. Hussain	Shri U. Saha
Winning & Working	Shri Kabir Ghosh	Shri A. Gade
Mine Ventilation, Explosion, Fires & Inundation	Shri R.R. Kumar	Shri A.K. Lal
Mining Machinery	Shri P.K. Jain	Shri M. Kundu
Mine Surveying	Shri S.C. Bhowmik	Shri A.K. Bhowmick
Subject	Ist Class manager's Certificate (Restricted)	IInd Class Manager's Certificate (Restricted)
Mine Management, Legislation & General Safety	Shri R. B. Chakraborty	Shri D. Sengupta
Winning & Working	Shri N.K. Nanda	Shri P. Natesan
Mining Machinery	Shri M. Venkatiah	Shri A.C. Basak
Mine Surveying	Shri N.K. Dhawan	Shri L.N. Mathur

(b) Following were the Examiners for Surveyor's Certificate of Competency Examinations held in 2010

Surveyor's Certificate Restricted to Opencast Mines	Shri P. Kumar
Surveyor's Certificate (Un-restricted) Part – I Part – II	Shri A. Biswas Shri A.K. Sahay

(c) Following were the Examiners for Foreman's Certificate of Competency Examinations held in 2010

Foreman's Certificate Restricted to Opencast Mines	Shri P. Ranganatheewar
Foreman's Certificate (Un-restricted)	Shri R. Kulshesthra

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

6.6 Presentation of awards

National Safety Awards (Mines) for the contest year 2007 was given away on 23rd October 2009 at New Delhi by the Hon'ble Vice President of India.

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, the 9th in 2000 and the 10th Conference was held on 26th & 27th November, 2007 in New Delhi.

8.0 Plan Schemes

In order to provide in-house technical support to field offices, DGMS is implementing following Plan Schemes namely:

Ongoing schemes:

(1) "Mine Accident Analysis and Modernization of Information Database (MAMID)"
(2) "Strengthening of Core Functions of DGMS (SOCFOD)"

8.1 "Mine Accident Analysis and Modernization of Information Database (MAMID)"

This is the restructured plan scheme after merging of the two Plan Schemes of Tenth Plan (2002-07) namely (i) Study of Mines Accidents and Development of Mines Safety Information System (SOMA) and (ii) Modernization of Information Database in DGMS (MID) as per the Report of Working Group on Occupational Safety & Health for 11th Five Year Plan 2007-12 of Ministry of Labour and Employment, Government of India. - Oct 2006. Keeping the objective of integration in view, these schemes were merged into one scheme "Mine Accident Analysis and Modernization of Information Database (MAMID)"

Objective of the Scheme:

(A) Mine Accident Analysis and Information Database

- ✓ To eliminate risk of disasters and accidents in mines through detailed analysis of accidents and dangerous occurrences using risk assessment and risk management techniques;

- ✓ Development of standard Safe Operating Procedures (SOPs) and Code of Safe Practices (COPs);

- ✓ Identification of mines having potential of accidents/disasters through detailed investigation into the operating systems and environment in the mine;

- ✓ Development of mine data acquisition system and analysis through computerized databases and processing system;

- ✓ Dissemination of mine information system through various reports, technical instructions/guidelines, circulars on electronic as well as other conventional media;

- ✓ Identification of mines having high accident potential and formulation of risk elimination/management plan;

(B) Computerized Mine Safety Information System

- ✓ Computerization of process and procedures on Mine Safety Information in DGMS;
- ✓ Establishment of Communication Network using LAN and WAN in DGMS;

The major activities taken up during the year included –

- Publication of Annual Report, 2009
- Publication of Standard Note on DGMS as on 1.1.2010
- Analysis of data for Identification of accident-prone mines in respect of coal & lignite mines.
- Compilation of statistics and preparation of manuscript for –
  - Statistics of Mines in India, Vol.I (Coal), 2008
  - Statistics of Mines in India, Vol.II(Non-Coal), 2008
  - Monthly Review of Accidents and
  - Report on Monthly Inspection Analysis
- National Safety Awards (Mines) for the contestant years 2007 was given away.

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 519 coal mines and 10 lignite mines of the country during the periods 2005-2009 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				
	2005	**2006**	**2007**	**2008**	**2009**
ECL	9	8	6	7	7
BCCL	8	6	8	7	12
SECL	8	6	8	5	8
MCL	3	1	1	2	5
WCL	9	8	7	7	8
CCL	7	4	6	2	7
NCL	1	1	1	1	3
NECL	0	0	1	1	1
SCCL	10	5	6	4	7
TISCO	2	1	1	2	1
IISCO	0	1	1	1	1
Total	**57**	**41**	**46**	**39**	**60**
LIGNITE	**-**	**1**	**3**	**3**	**2**

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.

8.2 "Strengthening of Core Functions of DGMS (SOCFOD)"

This is a continuing plan scheme. The scheme had been formulated by merging three on-going plan schemes of DGMS, namely (1) "Augmentation of S&T Capabilities, Mine Rescue Services and Human Resource Development (S&T)(1975)", (2) "Strengthening of Machinery for Conduct of Statutory Examinations (SSEX)(2000-01)" and (3) "Improving Efficiency by Providing Infra Structure Facilities in DGMS (PIF)(" along with components like Occupational Safety and Health Surveillance, promotional initiatives and Emergency Response system.

Objectives of the Scheme:

The objectives of the scheme are:

- To render scientific and technological support to the enforcement wing of DGMS in proper fulfillment and discharge of its statutory duties, responsibilities and advisory role.

- To develop, improve and update need based rescue and emergency response services to the mining industry & to help field offices of DGMS in the form of technical support while taking up rescue and emergencies of specific nature.

- To establish Mine Safety & Health Academy with institutes at different offices of DGMS for imparting structured training to DGMS officers and key personnel of the mining industry.

- Strengthening of Machinery for Conduct of Statutory Examinations

- To develop a structured mechanism for Occupational Health Surveillance & Disease Control in Mining Industry.

- To establish a National Council for Mines Safety with a view to generate safety and health awareness among miners and address their training issues.

- To improve the efficiency of DGMS by providing better infrastructure facilities which include providing own office buildings and residential complexes to the officers and staff members, providing better communication facilities and office equipment and furnishing of offices.

The overall activities are broadly divided into three components:

(1) Science & Technology (S&T) Component:

The Studies and Investigations, Research & Development, Monitoring and Assessment of Hazards that were undertaken and still continuing, are given below:

- Studies and Investigations into the existing methodology and techniques of exploration and exploitation of various types of minerals for improvement in the standards of Safety and Occupational Risks associated therewith

- Studies and Investigations into the new methodology and techniques of exploration and exploitation of various types of minerals for improvement in the standards of Safety and Occupational Risks associated therewith

- Development, Updation and advancement of methods, techniques, processes and materials through interactions, investigations, training etc.

- Standardization of prototype tests and accreditation of testing laboratories /test houses

- Guidelines for accreditation of testing laboratories/test houses

- Guideline for testing steel chocks , Propos, Powered Supports, and other support materials

- Standardization of Ultrasonic Testing Technique and formulation of Acceptance & Rejection Norms for components and vital parts of the machinery & equipment including winding ropes and guides.

- Technical Direction and Guide Lines on various subjects to support the Inspection wings of DGMS as well as to the industry.

- Special Investigations and Studies on :-

    i) Strata Control and Rock Mechanics
    ii) Development of Hidden Slip Detector FOR COAL MINES
    (iii) Explosives and Blasting Techniques for improving efficiency and reducing blasting hazards
    (iv) Mines Gases, Fires & Explosions for control and monitoring to ensure safety against dangers associated therewith.

(v) Classification of Coal Seam/Mine Prone to Spontaneous Combustion and Fire on Scientific Basis.

- Development of Mine Disaster Control Plan & Emergency Response Mechanism
- Modernization and furnishing of DMRS Laboratories with latest testing instruments and equipments including training
- Medical Examinations, Surveillance and control of Silicosis, Pneumoconiosis, Manganese Poisoning and other occupational disease and disorders in mines.
- Development and furnishing of OSH Laboratories in HQ and other field Offices.
- Establishing a fully equipped Central Mines Safety and Health Academy with Institutes at Dhanbad and Nagpur and creating a core team of well-trained faculty members to train DGMS officers and key personnel in mining industry.
- To develop basic training aids and safety manuals/monographs for use at the institutes and also at in-house training centers in mining companies.

During the year 2010, the following activities were undertaken by S&T wing:-

Activity	Achievement
(A) Augmentation of S&T Capabilities:	
1. Mine Environment surveys	20
2. Occupational Health Review, Survey & Medical exam	7
3. Ground Control.	11
4. Mine Mechanization	-
5. Additional job: Gas analysis	-
6. Additional job: FRHF	-
(B) Development of Mines Rescue Services:	
1. Testing of self rescuers	-
2. Testing of Self-contained Self Rescuer	-
3. Rescue competition	5
4. Field Visits	-
5. Organization of conference on Rescue/Recovery Experience	-
6. Monitoring of First Aid Competition	5
7. Creation of Rescue Databases on Rescue facilities	-
8. Creation of Rescue Databases on actual Rescue/Recoveries	-
9. Issue of technical circulars	-
(C) Human Resource Development	
1. Conduct of training programs:-	
(a) DGMS Officers	68
(b) Key personnel from mining industry	182
(c) Workmen's Inspectors	41

(2) SSEX Component of the Scheme

1.	Procurement of computers & peripherals	Continued
2.	Procurement of Office equipment	Continued
3.	Furnishing of offices	Continued
4.	Establishing exam section at Nagpur	Continued
5.	System Study	Under study
6.	System review	Under review
7.	Application software development	In progress
8.	Testing and implementation of software	In progress
9.	Training	In progress
10.	Design & development of the web content of the examination-specific web pages	In progress
11.	Design & development of online application form.	In progress
12.	Development of other internet- enabled services with enterprise-wide WAN connectivity.	In progress

(3) PIF Component:

1.	Modular furnishing of conference hall at Sitarampur	Under progress
2.	Providing and fixing of 100 KVA DG set at Sitarampur	Under progress
3.	Const. of boundary wall around the DGMS plot at Bilaspur	Under progress
4.	Providing and construction of pavement in front of office and main gate Bellary	Under progress
5.	Providing, placing and fixing of PVC tank with separate water pipe line for drinking water and utility at DGMS colony at Ajmer	Completed
6.	Renovation of toilets in office bldg of DGMS at Ajmer	Completed
8.	Construction of office and residential buildings of DGMS at Goa	Under progress
9.	Construction of office and residential buildings of DGMS at Jabalpur	Under progress

<><><><><>