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, Baluchisthan (presently in Pakistan) in 1898 expedited finalization 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 31.12.2012. A statement showing posting of Group 'A' & 'B' officers in DGMS during the year 2012 are given at **Appendix-III**.

TABLE:1	**STRENGTH OF INSPECTING OFFICERS AND SANCTIONED POSTS AS ON 31.12.2012**							
DESIGNATION	DISCIPLINE							
	MINING		ELECTRICAL		MECHANICAL		O. H	
	S	P	S	P	S	P	S	P
Director General	1	1	-	-	-	-	-	-
Dy. Director General	9	9	1	1	1	1	-	-
Director	50	48	16	7	16	2	-	-
Dy. Director	99	54	34	8	33	5	5	-
Assistant Director	-	-	-	-	-	-	Gr.I-4	2
Total	**159**	**112**	**51**	**16**	**50**	**8**	**9**	**2**

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 2012:

TABLE:2	Notification No. & date	Brief subject
1.	A-31014/01/ 2011-ISH-II dated 2.5..2012	Appointment of Shri Vir Pratap to the post of Dy. Director of Mines Safety (Mining) in DGMS.

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 there under 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 there under 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 2012					
Discipline of Inspection Service	Coal Mines		Metal Mines		Oil Mines	
	Inspections	Enquiries	Inspections	Enquiries	Inspections	Enquiries
Mining	2819	835	3350	470	242	34
Electrical	761	48	161	53	54	0
Mechanical	148	50	175	9	2	3
Occupational Health	109	15	7	0	2	0
TOTAL	**3837**	**948**	**3693**	**532**	**300**	**37**

1.7 Improvement Notices & Prohibitory Orders

1.7.1 Coal Mines

78 (Seventy eight) improvement notices under various provisions of the statutes were issued as a result of inspections of the mines during the year 2012. 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 2012	
SL.NO.	NATURE OF DEFECT	NO. OF CASES
1.	High benches in opencast workings	20
2.	Inadequate support	06
3.	Poor ventilation	09
4.	Inadequate coal dust suppression	06
5.	Isolation stopping	07
6.	Improper/ non-provision of travelling road	00
7.	Danger of Inundation	06
8.	Unstable workings	01
9.	Lag in stowing	00
10.	Accumulation of gases	01
11.	Defective Electrical installation	04
12.	Inadequate earth leakage protection	00
13.	Defective winding rope	00
14.	Other defects in winding installation	00
15.	Defective shot-firing practices	02
16.	Others	16
	TOTAL	**78**

38 (thirty eight) prohibitory orders under Section 22(3), 22A(2) and 22(1A) of the Mines Act, 1952 were issued during the year 2012. These orders were imposed for various dangerous conditions prevailing at the mines, details of which are given in table 5:

TABLE:5	PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3) AND 22A(2) AND 22(1A) OF THE MINES ACT,1952 IN COAL MINES DURING 2012	
SL.NO.	NATURE OF DEFECT	NO. OF CASES
1.	High benches in opencast workings	16
2.	Inadequate support	01
3.	Poor ventilation	02
4.	Inadequate coal dust suppression	01
5.	Isolation stopping	01
6.	Improper/ non-provision of travelling road	02
7.	Danger of Inundation	03
8.	Unstable workings	00
9.	Lag in stowing	00
10.	Accumulation of gases	00
11.	Defective Electrical installation	00
12.	Inadequate earth leakage protection	00
13.	Defective winding rope	01
14.	Other defects in winding installation	01
15.	Defective shot-firing practices	00
16.	Others	10
	TOTAL	**38**

1.7.2 Metalliferous Mines

In metalliferous mines inadequate benching and unstable slope in opencast workings and non-appointment of manager and supervisory officials in the mines were the main reasons for which improvement notices and prohibitory orders were issued. Notices issued under Sections 22(1) & 22A(1) of the Mines Act, 1952 during the year 2012 were 219 (Two hundred nineteen). Prohibitory orders under Sections 22(1A), 22A(2) and 22(3) issued in Metalliferous Mines during the year 2012 were 242 (Two hundred forty two). Details of the improvement notices and prohibitory orders issued during 2012 are given in table: 6 & 7 respectively.

TABLE:6	IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT,1952 IN METALLIFEROUS MINES DURING 2012	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	113
2.	Inadequate benching and sloping in opencast workings	97
3.	Miscellaneous	09
	TOTAL	**219**

TABLE:7	PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3), 22A(2) & 22(1A) OF THE MINES ACT,1952 ISSUED IN METALLIFEROUS MINES DURING 2012	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	144
2.	Inadequate benching and sloping in opencast workings	95
3.	Miscellaneous	03
	TOTAL	**242**

1.7.3 Oil Mines

03 (Three) notices issued under Sections 22(1) & 22A(1) of the Mines Act, 1952 during the year 2012. No prohibitory orders under Sections 22(1A), 22A(2) and 22(3) issued in Oil Mines during the year 2012. Details of the improvement notices and prohibitory orders issued during 2012 are given in table: 6A & 7A respectively.

TABLE:6A	**IMPROVEMENT NOTICES ISSUED UNDER SECTIONS 22(1) AND 22A(1) OF THE MINES ACT,1952 IN OIL MINES DURING 2012**	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	-
2.	Others	03
	TOTAL	**03**

TABLE:7A	**PROHIBITORY ORDERS ISSUED UNDER SECTIONS 22(3), 22A(2) & 22(1A) OF THE MINES ACT,1952 ISSUED IN OIL MINES DURING 2012**	
SL.NO.	NATURE OF DEFECT	No. of cases
1.	Non-appointment of qualified manager and supervisory officials	-
2.	Others	-
	TOTAL	**-**

1.8 Permission, relaxations and exemptions

1.8.1 Coal Mines

849 (eight hundred forty nine) permissions/exemptions and relaxations were granted in coalmines during the year 2012. Details of such cases are given in table:8.

TABLE:8	PERMISSIONS, RELAXATIONS & EXEMPTIONS GRANTED IN COAL MINES DURING 2012	
SL.NO.	Particulars of Permissions, Relaxations & Exemptions	No. of cases
1.	Extraction of coal by methods other than bord & pillar beneath areas free from surface features	43
2.	Extraction of coal by methods other than bord & pillar below surface features	13
3.	Extraction of coal by bord & pillar methods beneath areas free from surface features	133
4.	Extraction of coal by bord & pillar methods beneath surface features	39
5.	Development below surface features including development in contiguous seams/ sections	53
6.	Blasting coal off the solid	07
7.	Development within 60m. of waterlogged workings	10
8.	Workings within 7.5m. / Adjustment of mine boundaries	09
9.	Exemptions from different provisions of regulations	117
10.	Others	425
	TOTAL	**849**

1.8.2 Metalliferous Mines

2330 (Two thousand three hundred thirty) permissions/relaxations/exemptions under different provisions of the statutes were granted during the year 2012. Particulars are given in table:9.

TABLE:9	PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN METALLIFEROUS MINES DURING 2012	
SL.NO.	Particulars of Permissions, Exemptions & Relaxations	No. of cases
1.	Stopping of blocks	59
2.	Use of HEMM with deep hole blasting	407
3.	Use of ANFO and/or more than one explosive in a shot hole	58
4.	Working under railways and roads	00
5.	Appointment of managers of more than one mine/ permit manager etc.	1352
6.	Appointment of surveyor of more than one mine	17
7.	Others	437
	TOTAL	**2330**

1.8.3 Oil Mines

433 (four hundred thirty three) permissions/relaxations/exemptions were granted during the year 2012 under various provisions of the Oil Mines Regulations, 1984. The details of such cases are given in table:10

TABLE:10	PERMISSION, EXEMPTIONS & RELAXATIONS GRANTED IN OIL MINES DURING 2012	
SL.NO.	Particulars of Permissions, Exemptions & Relaxations	No. cases
1.	Well head installations	04
2.	Laying of oil pipe line	338
3.	Notices under Regulation 51 for GGS/EPS etc.	91
	TOTAL	**433**

1.9 Prosecutions

17 (seventeen) prosecutions were instituted in coal mines during the year 2012. In respect of non-coal mines, 92 (Ninety two) prosecutions were launched during 2012. Contraventions of provisions of statute for which these prosecutions were instituted are given in tables: 11 & 12.

Details of prosecution cases as on 31.12.2012.

Coal	Non-coal	Pending	Disposed
No. of prosecution launched during the year 2012.	**No. of prosecution launched during the year 2012.**	**Total cases pending for 2012.**	**Total cases disposed during 2012.**
17	92	1041	536

TABLE:11	**PROSECUTIONS INSTITUTED IN RESPECT OF COAL MINES DURING 2012**	
SL.NO.	CONTRAVENTION	NO. OF CASES
1.	Contraventions leading to accidents	16
2.	Non-submission or submission of incorrect plans, returns, notices etc.	-
3.	Non-appointment of qualified persons as senior supervisory officials	-
4.	Contraventions under Indian Electricity Act or Rules	-
5.	Other violation of serious nature	01
6.	Miscellaneous violations	-
	TOTAL	**17**

TABLE:12	**PROSECUTIONS INSTITUTED IN RESPECT OF NON-COAL MINES DURING 2012**	
SL NO.	CONTRAVENTION	NO. OF CASES
1.	Contravention leading to accidents	17
2.	Contravention of orders under sections 22(1A), 22(3), Reg. 108 etc.	73
3.	Non-appointment of qualified persons as senior supervisory officials	-
4.	Non-appointment of qualified persons as subordinate supervisory officials	-
5.	Non-provisions of protective equipment	-
6.	Other miscellaneous contraventions	02
	TOTAL	**92**

2.0 Coal Mines

2.1 General

Number of operating coalmines during 2012 was 582 as compared to 592 in 2011. Company-wise number of coal mines and production is given in table: 13.

TABLE: 13	Number of Mines during 2012				Production (in million tonnes)
COMPANY	**Underground**	**Opencast**	**Both**	**Total**	
Coal India Limited	270	162	30	462	440
Singareni Collieries Company Limited	40	18	1	59	73
Others	13	45	3	61	105
TOTAL	**323**	**225**	**34**	**582**	**618**

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

TABLE : 14	UNDERGROUND COAL MINES HAVING GASSY SEAMS OF DIFFERENT DEGREES	
Degree of gassiness	**Number of Mines**	
	2011	**2012**
I only	249	237
II only	94	100
III only	14	7
I & II	7	3
I & III	1	2
II & III	4	4
I, II & III	1	0
TOTAL	**370**	**353**

*Figures for 2012 are provisional.

During the year total numbers of working mines have decreased from 592 in 2011 to 582 in 2012. Output of coal increased from 602 million tonnes in 2011 to 618 million tonnes in 2012. Coal mines under M/s.Coal India Limited contributed 440 million tonnes of coal during the year 2012. Average daily employment in mines decreased from 366,037 in 2011 to 358,123 in 2012. The output per manshift was increased from 5.15 in 2011 to 5.35 during 2012.Trend in average daily employment and output per man shift in coal mines is given in table- 15.

TABLE: 15	PLACEWISE DISTRIBUTION OF AVERAGE DAILY EMPLOYMENT AND OUTPUT AND PRODUCTIVITY IN COAL MINES							
Year	Belowground		Opencast		Above Ground	Total		Output per manshift
	Employment (in '000 number	Output (in '000 tonnes)	Employment (in '000 number	Output (in '000 tonnes)	Employment (in '000 number)	Employment (in '000 number)	Output (in '000 tonnes)	
1951	178	30199	36	4784	138	352	34983	0.35
1961	230	44887	60	10822	121	411	55709	0.45
1971	228	58552	43	17090	111	382	75642	0.67
1981	302	76205	55	51120	156	513	127325	0.81
1991	316	70731	67	167206	171	554	237757	1.40
1992	312	71062	67	178879	173	552	249941	1.47
1993	308	73672	68	186935	170	546	260607	1.53
1994	293	70644	67	196878	164	524	267522	1.63
1995	287	68512	68	216074	158	513	284586	1.80
1996	281	70127	68	233970	157	506	304097	1.91
1997	279	69062	68	247619	156	503	316681	2.01
1998	270	68571	69	251324	152	491	319895	2.09
1999	258	68101	71	247088	147	476	315189	2.12
2000	249	66225	69	268092	140	458	334317	2.34
2001	239	64134	69	277379	130	438	341513	2.51
2002	225	65330	69	297982	129	423	363312	2.75
2003	216	63632	69	315556	132	417	379188	2.91
2004	211	61921	70	347347	124	405	407268	3.19
2005	205	64087	70	356758	124	399	420845	3.35
2006	196	61213	76	369120	114	386	430333	3.50
2007	188	62302	80	418821	111	379	481123	3.95
2008	187	66290	77	440004	105	369	506294	4.25
2009	186	66835	80	491982	108	374	558817	4.67
2010	182	69998	83	531880	105	370	601878	5.05
2011	178	69032	86	538240	102	366	607272	5.15
2012	172	63341	88	553628	98	358	617969	5.35

Note : Figures for 2012 are provisional

2.2 Accidents

2.2.1 Major Accidents

There was no major accident in coal mines during the year 2012.

2.2.2 Accident scenario

During the year 2012, number of fatal accidents and fatalities increased in compared to the year 2011. Number of fatal accidents during the year 2012 was 83 and number of fatalities was 87 whereas in the year 2011, number of fatal accidents and fatalities were 65 and 67 respectively.

Table 16 indicates the trend of accidents and rates of fatalities.

TABLE: 16	TREND IN FATAL ACCIDENTS AND FATALITY RATES PER 1000 PERSONS EMPLOYED IN COAL MINES (10 YEARLY AVERAGE)			
YEAR	Av. No. of accidents	Accident rate	Av. No. of fatality	Fatality rate
1901-1910	74	0.77	92	0.94
1911-1920	138	0.94	176	1.29
1921-1930	174	0.99	219	1.24
1931-1940	172	0.98	228	1.33
1941-1950	236	0.87	273	1.01
1951-1960	222	0.61	295	0.82
1961-1970	202	0.48	260	0.62
1971-1980	187	0.46	264	0.55
1981-1990	162	0.30	186	0.35
1991-2000	140	0.27	170	0.33
2001-2010	87	0.22	108	0.27
2011-2012	74	0.20	77	0.21

Table 17 gives year-wise fatal accidents, fatalities, and death rates in coal mines.

TABLE: 17	TREND IN FATAL ACCIDENTS AND DEATH RATES IN COAL MINES (YEAR-WISE)				
Year	No. of fatal accidents	No. of fatalities	Death Rate		
			Per '000 persons employed	Per 100,000 manshifts worked	Per million tonnes output
1951	278	319	0.91	0.32	9.12
1961	222	268	0.65	0.22	4.81
1971	199	231	0.60	0.21	3.05
1981	165	184	0.36	0.12	1.45
1991	138	143	0.26	0.08	0.60
2001	105	141	0.32	0.10	0.41
2002	81	97	0.23	0.07	0.27
2003	83	113	0.27	0.09	0.30
2004	87	96	0.24	0.07	0.23
2005	96	117	0.29	0.09	0.28
2006	78	137	0.36	0.11	0.32
2007	76	78	0.21	0.06	0.16
2008	80	93	0.25	0.08	0.18
2009	83	93	0.25	0.08	0.17
2010	97	118	0.32	0.10	0.20
2011	65	67	0.18	0.06	0.11
2012	83	87	0.24	0.07	0.14

In the year 2012, number of serious accidents decreased compared to that of the year 2011. Number of serious accidents and number of persons injured during 2012 were 515 and 526 as compared to 534 and 557 respectively during the year 2011. As far as the serious accident rate is concerned, it has decreased. The serious injury rate per thousand persons employed in 2012 was 1.44 as compared to 1.52 in 2011. The rate per lakh manshift worked has

decreased to 0.45 in 2012 from 0.47 in 2011. The rate per million tonnes output decreased to 0.87 in 2012 from 0.92 in 2011. Table 18 gives year-wise number of serious accidents, no. of persons injured and serious injury rate.

TABLE: 18	TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN COAL MINES (YEAR-WISE)				
Year	No. of serious accidents	No. of persons seriously injured	Serious injury rates		
			Per '000 persons employed	Per 100,000 manshifts worked	Per million tonnes output
2001	667	720	1.64	0.53	2.10
2002	629	665	1.57	0.50	1.83
2003	563	590	1.42	0.45	1.56
2004	962	991	2.45	0.77	2.42
2005	1106	1138	2.85	0.91	2.70
2006	861	891	2.31	0.73	2.07
2007	923	951	2.51	0.78	1.98
2008	686	709	1.92	0.59	1.40
2009	636	660	1.76	0.55	1.18
2010	480	511	1.38	0.43	0.85
2011*	534	557	1.52	0.47	0.92
2012*	515	526	1.44	0.45	0.87

* Provisional

Note : No. of seriously injured of fatal accidents are also considered for computation of no. of persons seriously injured & serious injury rates.

2.2.3 Analysis of accidents

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

2.2.3A By place

Total 83 fatal accidents involving 87 fatalities occurred during the year 2012 as compared to 65 fatal accidents and 67 fatalities during the year 2011. Overall fatality rate has increased in 2012 as compared to the year 2011. Overall serious injury rate during the year 2012 has decreased to 1.44 from 1.52 in 2011. 25(30%) fatal accidents occurred in belowground workings with fatality rate of 0.16, 39(47%) in opencast workings with fatality rate of 0.47 and 19(23%) in aboveground with fatality rate of 0.19 during the year 2012. Table 19 gives the trend of fatal and serious accidents with fatality rate in different working places.

TABLE: 19	TREND IN FATAL & SERIOUS ACCIDENTS AND DEATH & SERIOUS INJURY RATES; (PLACEWISE) - COAL MINES PER THOUSAND PERSONS EMPLOYED							
YEAR	Fatal accidents & death rates				Serious accidents & ser. injury rates			
	Below ground	Open cast	Above ground	Overall	Below ground	Open cast	Above ground	Overall
2001	67 (0.43)	26 (0.38)	12 (0.10)	105 (0.32)	464 (2.10)	73 (1.12)	130 (1.07)	667 (1.64)
2002	48 (0.27)	22 (0.32)	11 (0.11)	81 (0.23)	434 (2.07)	92 (1.43)	103 (0.80)	629 (1.57)
2003	46 (0.33)	23 (0.35)	14 (0.13)	83 (0.27)	380 (1.85)	82 (1.30)	101 (0.77)	563 (1.42)
2004	49 (0.27)	32 (0.47)	06 (0.05)	87 (0.24)	757 (3.69)	82 (1.24)	123 (1.02)	962 (2.45)
2005	50 (0.34)	28 (0.42)	18 (0.15)	96 (0.29)	843 (4.23)	98 (1.45)	165 (1.37)	1106 (2.85)
2006	44 (0.52)	24 (0.33)	10 (0.09)	78 (0.36)	646 (3.40)	88 (1.30)	127 (1.11)	861 (2.31)
2007	25 (0.13)	35 (0.46)	16 (0.14)	76 (0.21)	717 (3.91)	83 (1.10)	123 (1.15)	923 (2.51)
2008	32 (0.21)	29 (0.45)	19 (0.18)	80 (0.25)	516 (2.87)	74 (0.98)	96 (0.92)	686 (1.92)
2009	39 (0.25)	29 (0.40)	15 (0.14)	83 (0.25)	490 (2.72)	50 (0.67)	96 (0.93)	636 (1.76)
2010	41 (0.33)	40 (0.51)	16 (0.15)	97 (0.32)	348 (2.03)	62 (0.83)	70 (0.68)	480 (1.38)
2011*	23 (0.13)	29 (0.35)	13 (0.13)	65 (0.18)	379 (2.23)	74 (0.92)	81 (0.79)	534 (1.52)
2012*	25 (0.16)	39 (0.47)	19 (0.19)	83 (0.24)	361 (2.07)	58 (0.72)	96 (0.94)	515 (1.44)

* Provisional

Note : i) Figures in bracket indicate death/injury rate.

ii) No. of seriously injured of fatal accidents are also considered for computation of no. of persons seriously injured & serious injury rates.

2.2.3B By cause

Tables 20 & 21 give the trend in fatal and serious accidents in coal mines due to different causes during the year 2012 followed by graphical representation. As can be seen 33(40%) of fatal accidents were caused by transportation machinery (other than winding), 12(14%) due to machinery other than transportation machinery, 11(13%) due to ground movement, 10(12%) due to falls other than fall of ground and and 3(4%) each in explosives, electricity and Gas dust etc., 1(1%) in winding in shaft and other contributed 7(8%). 515 serious accidents occurred during the year out of which 251(49%) were caused by falls other than falls of ground.

TABLE:20	TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES				
Cause	**2008**	**2009**	**2010**	**2011***	**2012***
Ground movement	21 (28)	26 (32)	22 (26)	15 (16)	11 (12)
Winding in shafts	1 (1)	-	-	1 (1)	1 (1)
Transportation machinery (other than winding)	28 (29)	31 (31)	41 (44)	28 (29)	33 (33)
Machinery other than transportation machinery	10 (10)	15 (15)	7 (7)	6 (6)	12 (12)
Explosive	1 (1)	-	2 (16)	1 (1)	3 (3)
Electricity	5 (6)	2 (2)	8 (8)	5 (5)	3 (3)
Gas, Dust etc.	2 (6)	2 (4)	1 (1)	-	3 (5)
Falls other than fall of ground	10 (10)	4 (4)	10 (10)	5 (5)	10 (10)
Other causes	2 (2)	3 (5)	6 (6)	4 (4)	7 (8)
TOTAL	**80 (93)**	**83 (93)**	**97 (118)**	**65 (67)**	**83 (87)**

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

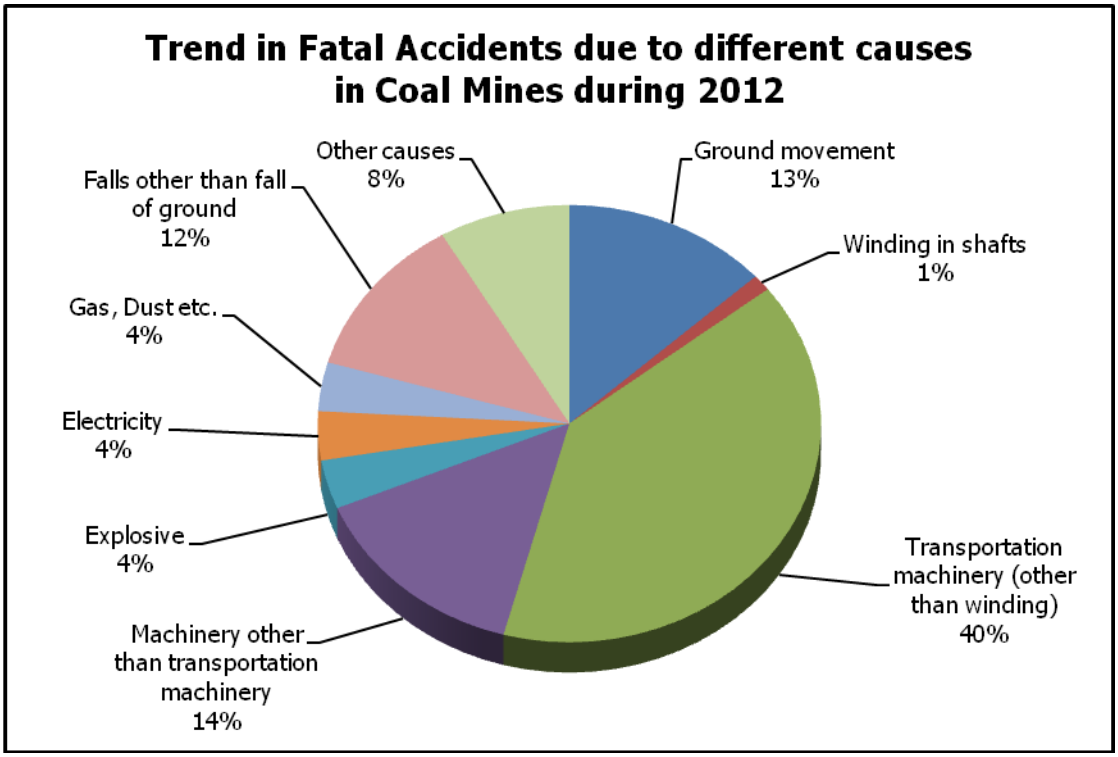


TABLE:20A	TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF COAL MINES				
Place	**2008**	**2009**	**2010**	**2011***	**2012***
Belowground	32 (39)	39 (46)	41 (60)	23 (24)	25 (28)
Opencast	29 (35)	29 (32)	40 (42)	29 (30)	39 (40)
Aboveground	19 (19)	15 (15)	16 (16)	13 (13)	19 (19)
Total	**80 (93)**	**83 (93)**	**97 (118)**	**65 (67)**	**83 (87)**

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

TABLE: 21	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT CAUSES IN COAL MINES				
Cause	**2008**	**2009**	**2010**	**2011***	**2012***
Ground movement	69 (73)	57 (68)	53 (62)	39 (50)	41 (46)
Winding in shafts	0 (0)	3 (4)	-	14 (19)	4 (5)
Transportation machinery (other than winding)	126 (128)	103 (108)	72 (84)	90 (94)	73 (74)
Machinery other than transportation machinery	40 (42)	36 (37)	24 (24)	33 (34)	21 (21)
Explosive	1 (1)	3 (5)	5 (11)	3 (4)	0 (1)
Electricity	0 (0)	2 (2)	3 (3)	1 (1)	3 (3)
Gas, Dust etc.	0 (14)	1 (2)	-	-	1 (3)
Falls other than fall of ground	351 (352)	309 (312)	221 (223)	247 (248)	251 (251)
Other causes	99 (99)	122 (122)	102 (104)	107 (107)	121 (122)
TOTAL	**686 (709)**	**636 (660)**	**480 (511)**	**534 (557)**	**515 (526)**

* Figures are provisional

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

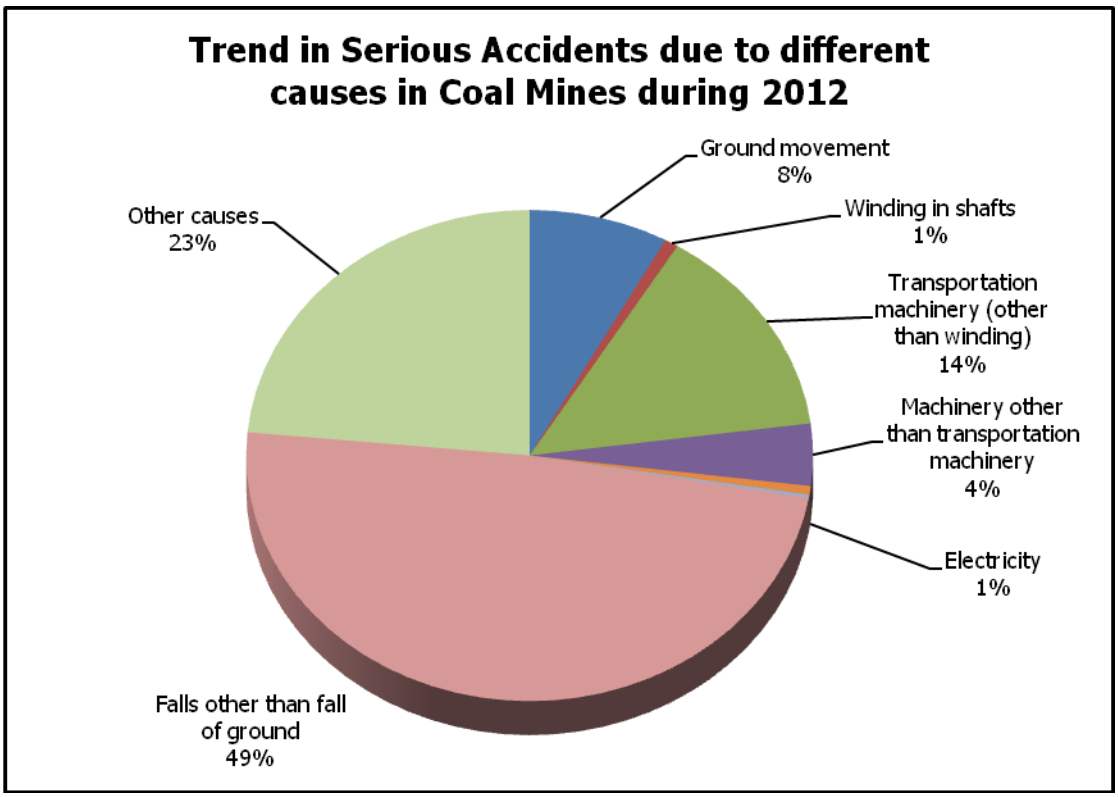


TABLE: 21A	TREND IN SERIOUS ACCIDENTS DUE TO DIFFERENT PLACES IN COAL MINES				
Place	**2008**	**2009**	**2010**	**2011***	**2012***
Belowground	516 (536)	490 (506)	348 (370)	379 (397)	361 (368)
Opencast	74 (76)	50 (54)	62 (69)	74 (79)	58 (62)
Aboveground	96 (97)	96 (100)	70 (72)	81 (81)	96 (96)
Total	**686 (709)**	**636 (660)**	**480 (511)**	**534 (557)**	**515 (526)**

* Figures are provisional

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

2.2.3B.1 Ground movement

During the year 2012, ground movement accounted for 11(13%) fatal accidents and 41(8%) 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 2012		
Cause	No. of accidents	Persons killed	Persons seriously inj.
1.Fall of roof	5	6	1
2.Fall of side			
(a) belowground	3	3	2
(b) opencast	2	2	-
Sub-Total	**5**	**5**	**2**
3.Others			
(a) bumps	-	-	-
(b) air blast	-	-	-
(c) land slide	-	-	-
(d) collapse of pillar	-	-	-
(e) over hang	1	1	-
Sub-Total	**1**	**1**	**-**
GRAND TOTAL	**11**	**12**	**3**

2.2.3 B.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 11 accidents due to ground movement involving 12 fatalities and 03 serious injuries during the year 2012, out of which 5 accidents were due to fall of roof, 5 accidents were due to fall of side and 1 due to over hang. Roof fall accidents accounted for 6% of all fatal accidents in coal mines and it contributed 20% of all fatal accidents in belowground operations. Further critical analysis of roof fall accidents for the last five years 2008 to 2012 revealed the following:

I. Physical and Working Condition factors -

1. **Method of work:** Accident mainly occurred in Depillaring districts. 38% (26% in caving district and 12% in stowing district) of the fatal accidents occurred in Depillaring district, 48% in Board & Pillar development and 14% in other places.
2. **Height of working:** 52% of the fatal accidents occurred in gallery height upto 3m, 28% in 3m to 5m and 5% above 5m.
3. **Width of gallery:** 1% of the fatal accidents occurred in width of galleries between 0 - 3.0m and 1% between 3.01m – 3.50 m. 11% between 3.51-4.00m, 53% between 4.01 - 4.50m and 28% 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% between 5.01 to 10m, 7% between 10.01 to 20.00m and 20% above 20.01m Thus 56% of the accident occurred within 10m of the freshly exposed roof from the working face.
5. **Type of support:** 14% of the fatal accidents occurred in areas supported by timber support only, 5% in timber and steel support, 17% in areas supported by roof bolts &

others and 64% in other supports. However, areas supported by roof bolts 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 64% 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 31% cases accident occurred although adequate support was provided.
7. **Operation at the time of accident:** 15% of the fatal accidents occurred during each of loading (manual) and dressing operation, 7% during each of drilling, loading by machine, supporting and withdrawal of supporting operation and 6% during inspecting, Thus 44% 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. 27% of the fatal accidents occurred due to other activities.
8. **Time elapsed after blasting:** 25% 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. 10% of the fatal accidents occurred between ½ - 1 hour, 9% between 1 to 2 hours and 31% of the fatal accidents occurred beyond 2 hours of blasting operation and in 25% of cases no blasting operation was carried out.

II. Geological factors -

9. **Thickness of seam:** 44% of the fatal accidents occurred in coal seam having thickness upto 3.0 m., 23% in 3 to 6 m. and 9% each in seams with thickness between 6-9m and above 9m. Thus roof fall occurred in all types of coal seams irrespective of their thickness but seams with higher thickness have lesser share in total accidents.
10. **Depth of cover:** 33% of the fatal accidents accounted in depth of cover 0 to 100m , 25% between 101 to 200m, 23% between 201 to 300m, 9% 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, 37% between 0.16 to 0.3m. Thus 50% of accidents had thickness of fall between 0 to 0.3m. 30% of fatal accident occurred having thickness of fallen strata between 0.31 to 1.0 m thick and 15% 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:** 40% of the fatal accidents occurred due to fall of sand stone roof, 30% due to coal and 39% 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:** 33% of the persons involved in roof fall accidents were loader, 22% support personnel, 9% of subordinate supervisory staff, 12% dresser, 5% driller and others 16%. 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 34% of the total accidents persons involved were in the age group of 46-50 years, 17% between 51-55 years, 15% each between 41-45 years and 56-60 years, 7% between 31-35, 6% between 36-40 years and 3% each between 21-25 and 26-30 years.
15. **Shift of working:** 48% of the fatal accidents took place in 1st shift, 27% in 2nd shift and 25% in 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:** 37% of the roof fall accidents occurred during 2.01 -3.00, 15% each between 3.01 – 4.00 and between 5.01 – 6.00 hours, 10% between 4.01 – 5.00 and 9% between 6.01-7.00 hours. Thus 77% of the roof fall accidents occurred between 2.01 hours to sixth hours of the shift.

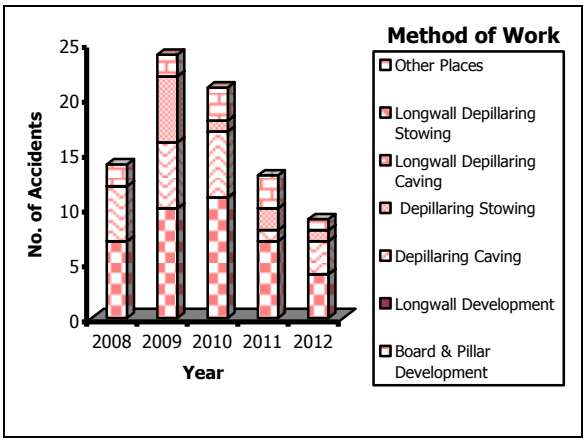
IV. Management factors -

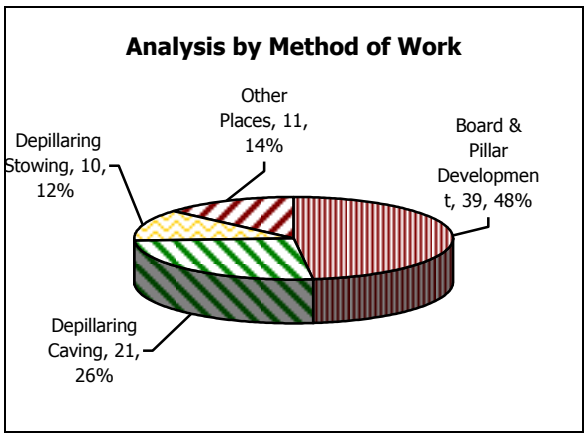
17. **Responsibility:** 43% of the fatal accidents were caused due to fault of management and Subordinate Supervisory Staff; 13% of the fatal accidents due to fault of Subordinate Supervisory Staff alone, 10% due to fault of management, SSS & deceased and 7% of the cases management & others. In 6% of cases deceased was responsible.
18. **Company:** Company-wise analysis indicates that 75% of roof fall accident occurred in CIL whereas 20% occurred in SCCL. CIL subsidiary-wise 28% of fatal accidents occurred in SECL, 17% in WCL, 12% in BCCL, 15% in ECL and 1% in MCL and 2% 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

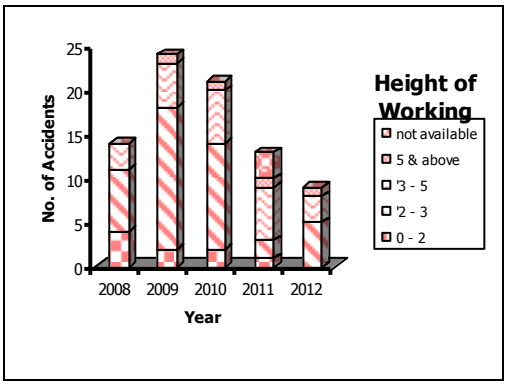
Method of work	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	total	%
Board & Pillar Development	7	50	10	42	11	52	7	54	4	44	**39**	48
Longwall Development	0	0	0	0	0	0	0	0	0	0	**0**	0
Depillaring												
Caving	5	36	6	25	6	29	1	8	3	33	**21**	26
Stowing	0	0	6	25	1	5	2	15	1	11	**10**	12
Total Depillaring	**5**	**36**	**12**	**50**	**7**	**33**	**3**	**23**	**4**	44	**31**	38
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	2	14	2	8	3	14	3	23	1	11	**11**	14
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	100	**81**	100

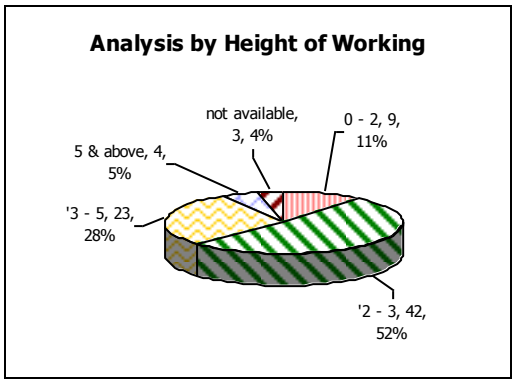




2. Distribution of fatal roof fall accidents by height of working

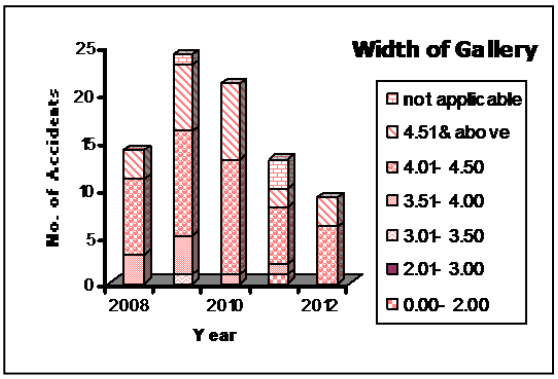
Height of working (metres)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0 - 2	4	29	2	8	2	9	1	**8**	**0**	0	9	11
2 - 3	7	50	16	67	12	57	2	**15**	**5**	56	42	52
3 - 5	3	21	5	21	6	29	6	**46**	**3**	33	23	28
5 & above	0	0	1	4	1	5	1	**8**	**1**	11	4	5
not available	0	0	0	0	0	0	3	**23**	**0**	0	3	4
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

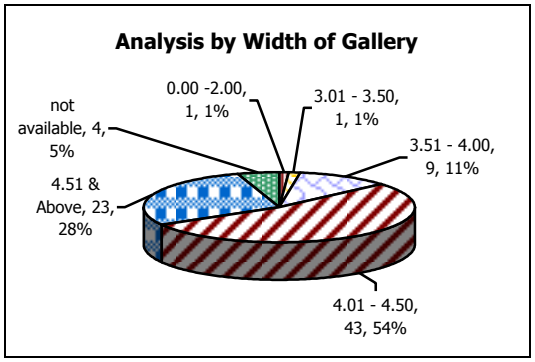




2. Distribution of fatal roof fall accidents by width of gallery

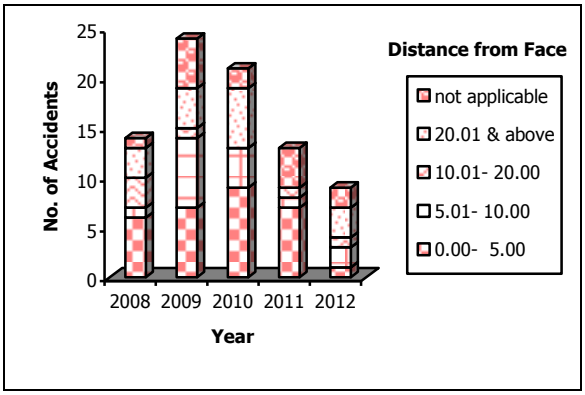
width of Gallery (metres)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 2.00	0	0	0	0	0	0	1	8	0	0	**1**	1
2.01- 3.00	0	0	0	0	0	0	0	0	0	0	**0**	0
3.01- 3.50	0	0	1	4	0	0	0	0	0	0	**1**	1
3.51- 4.00	3	21	4	17	1	5	1	8	0	0	**9**	11
4.01- 4.50	8	58	11	46	12	57	6	46	6	67	**43**	54
4.51 & above	3	21	7	29	8	38	2	15	3	33	**23**	28
not applicable	0	0	1	4	0	0	3	23	0	0	**4**	5
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

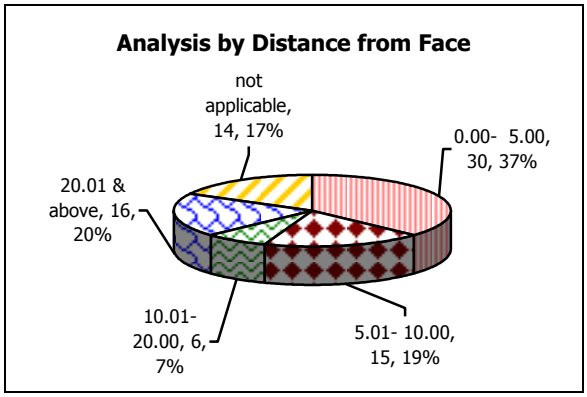




4. Distribution of fatal roof fall accidents by distance from face

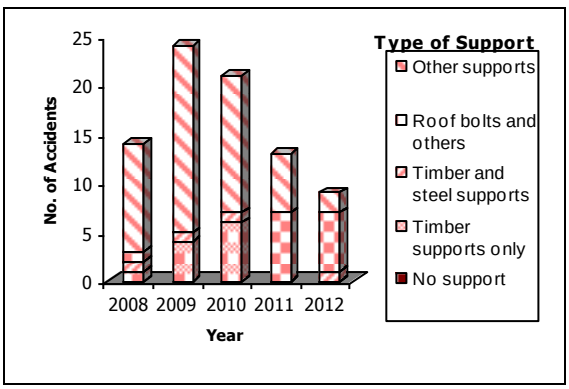
Distance from face	Number of accidents											
(metres)	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 5.00	6	44	7	29	9	43	7	53	1	11	**30**	37
5.01- 10.00	1	7	7	29	4	19	1	8	2	22	**15**	19
10.01- 20.00	3	21	1	4	0	0	1	8	1	11	**6**	7
20.01 & above	3	21	4	17	6	29	0	0	3	34	**16**	20
not applicable/ available	1	7	5	21	2	9	4	31	2	22	**14**	17
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

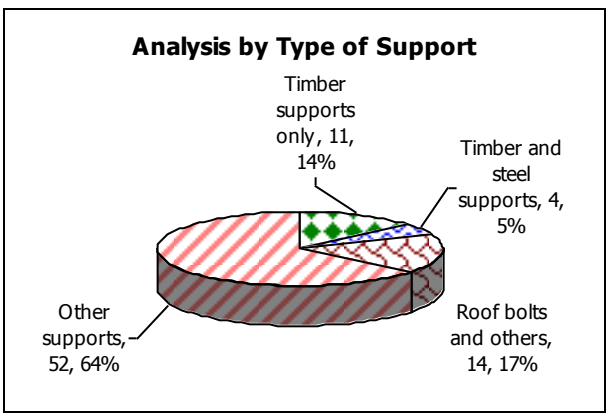




5. Distribution of fatal roof fall accidents by type of roof support

Type of support	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
No support	0	0	0	0	0	0	0	0	0	0	**0**	0
Timber supports only	1	7	4	17	6	29	0	0	0	0	**11**	14
Timber and steel supports	1	7	1	4	1	5	0	0	1	11	**4**	5
Roof bolts and others	1	7	0	0	0	0	7	54	6	67	**14**	17
Other supports	11	79	19	79	14	66	6	46	2	22	**52**	64
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

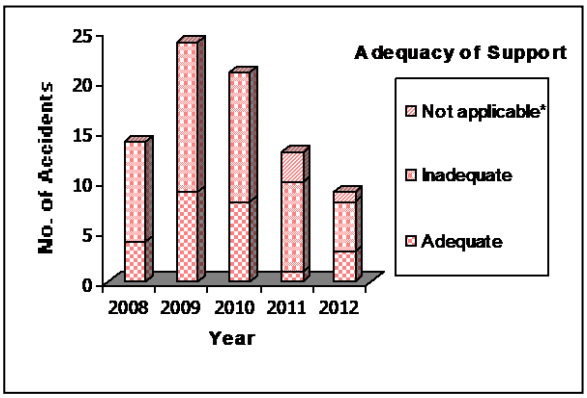


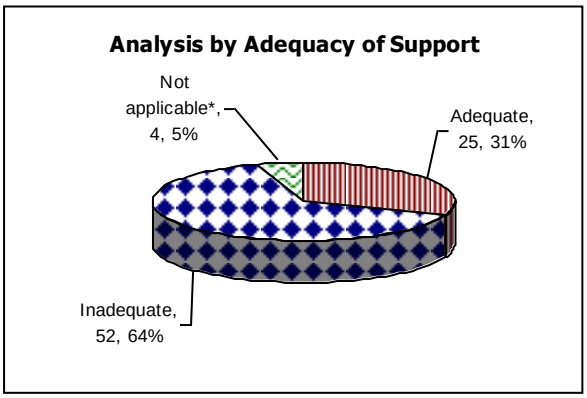


6. Distribution of fatal roof fall accidents by adequacy of support

Adequacy of support	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
Adequate	4	29	9	37	8	38	1	8	3	33	25	31
Inadequate	10	71	15	63	13	62	9	69	5	56	52	64
Not applicable*	0	0	0	0	0	0	3	23	1	11	4	5
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

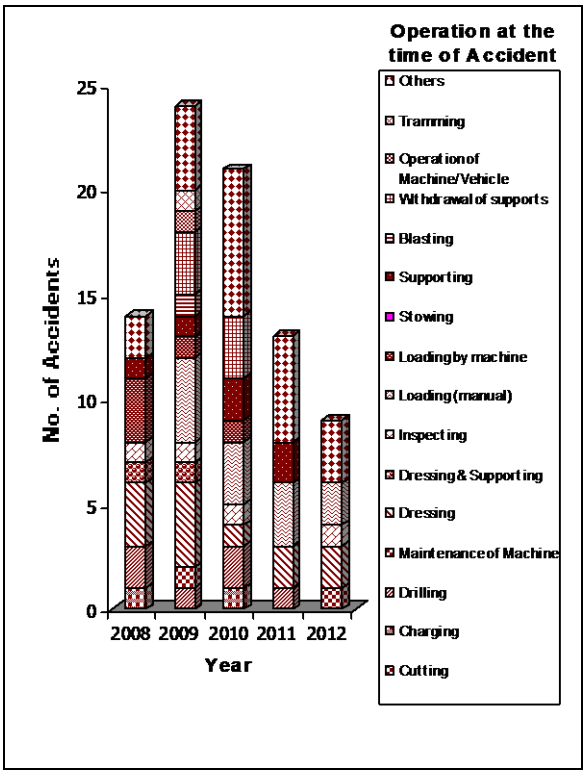
* Provisional

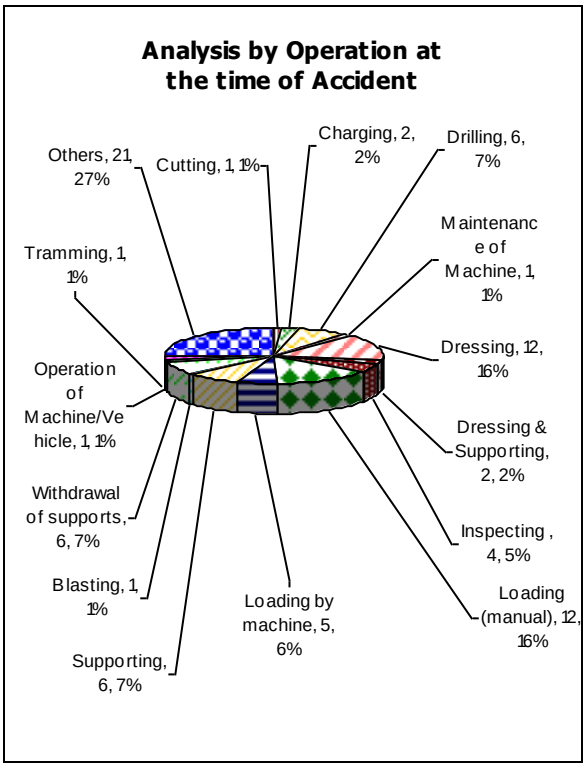




7. Distribution of fatal roof fall accidents by operation at the time of accident

operation at the time of accident	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
Cutting	0	0	0	0	0	0	0	0	1	11	1	1
Charging	1	7	0	0	1	5	0	0	0	0	2	2
Drilling	2	14	1	4	2	10	1	8	0	0	6	7
Maintenance of Machine	0	0	1	4	0	0	0	0	0	0	1	1
Dressing	3	22	4	17	1	5	2	15	2	22	12	16
Dressing & Supporting	1	7	1	4	0	0	0	0	0	0	2	2
Inspecting	1	7	1	4	1	5	0	0	1	11	4	5
Loading (manual)	0	0	4	17	3	14	3	23	2	22	12	16
Loading by machine	3	22	1	4	1	5	0	0	0	0	5	6
Stowing	0	0	0	0	0	0	0	0	0	0	0	0
Supporting	1	7	1	4	2	10	2	15	0	0	6	7
Blasting	0	0	1	4	0	0	0	0	0	0	1	1
Withdrawal of supports	0	0	3	13	3	14	0	0	0	0	6	7
Operation of Machine/Vehicle	0	0	1	4	0	0	0	0	0	0	1	1
Tramming	0	0	1	4	0	0	0	0	0	0	1	1
Others	2	14	4	17	7	32	5	39	3	34	21	27
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

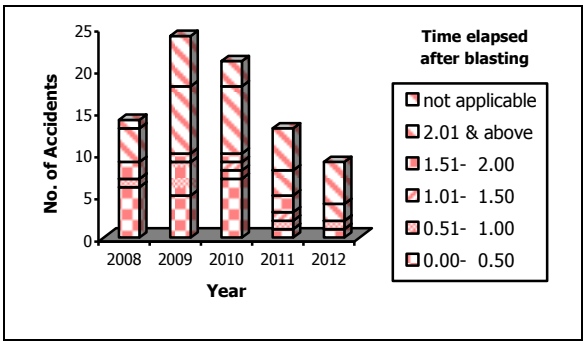


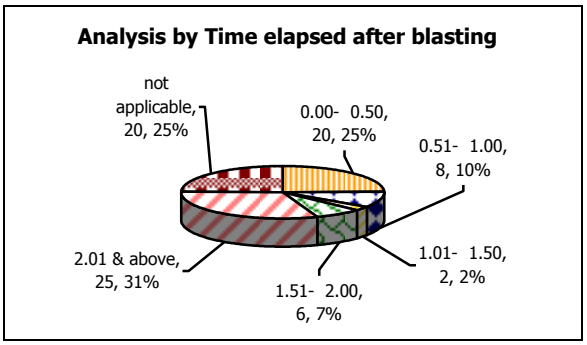


8. Distribution of fatal roof fall accidents by Time elapsed after blasting

Time elapsed after blasting (hours)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 0.50	6	43	5	21	7	33	1	8	1	11	**20**	25
0.51- 1.00	1	7	4	17	1	5	1	8	1	11	**8**	10
1.01- 1.50	0	0	0	0	1	5	1	8	0	0	**2**	2
1.51- 2.00	2	14	1	4	1	5	2	15	0	0	**6**	7
2.01 & above	4	29	8	33	8	38	3	23	2	22	**25**	31
not applicable*	1	7	6	25	3	14	5	38	5	56	**20**	25
Total	**14**	100	**24**	100	**21**	100	**13**	**100**	**9**	**100**	**81**	**100**

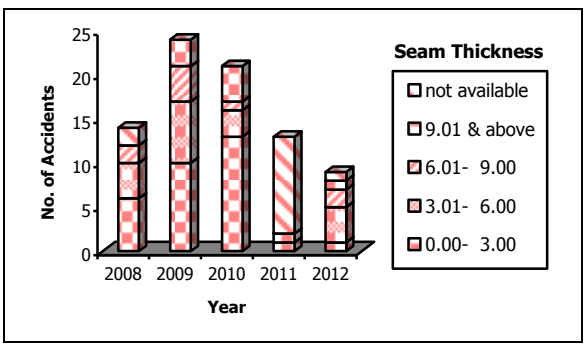
* Provisional.

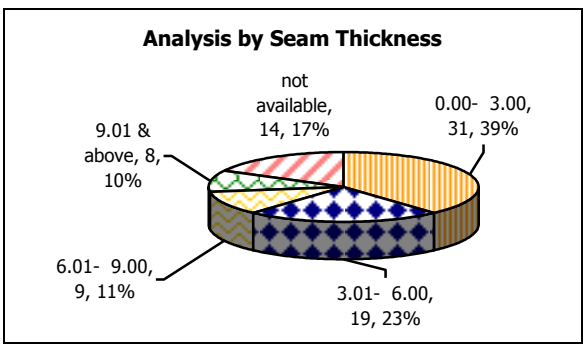




9. Distribution of fatal roof fall accidents by thickness of seam

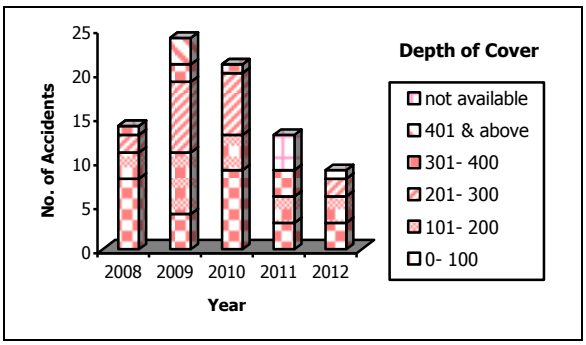
Seam thickness (metres)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 3.00	6	43	10	42	13	62	1	8	1	8	31	39
3.01- 6.00	4	29	7	29	3	14	1	8	4	8	19	23
6.01- 9.00	2	14	4	17	1	5	0	0	2	0	9	11
9.01 & above	0	0	3	12	4	19	0	0	1	0	8	10
not available	2	14	0	0	0	0	11	84	1	84	14	17
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

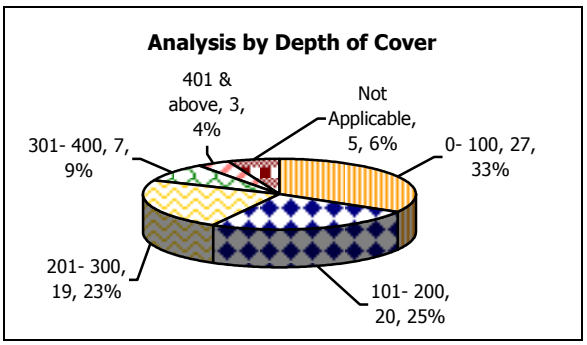




10. Distribution of fatal roof fall accidents by depth of cover

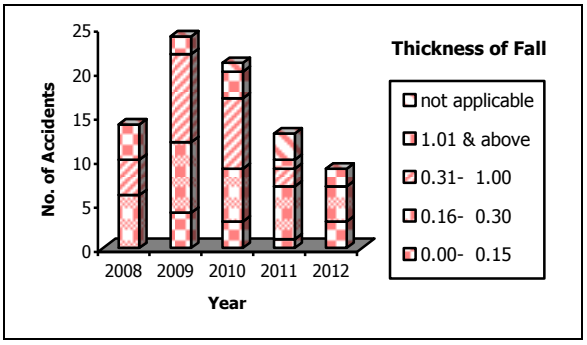
Depth of cover (metres)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0- 100	8	57	4	17	9	43	3	23	3	33	**27**	33
101- 200	3	22	7	29	4	19	3	23	3	33	**20**	25
201- 300	2	14	8	33	7	33	0	0	2	23	**19**	23
301- 400	1	7	2	8	1	5	3	23	0	0	**7**	9
401 & above	0	0	3	13	0	0	0	0	0	0	**3**	4
not available	0	0	0	0	0	0	4	31	1	11	**5**	6
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

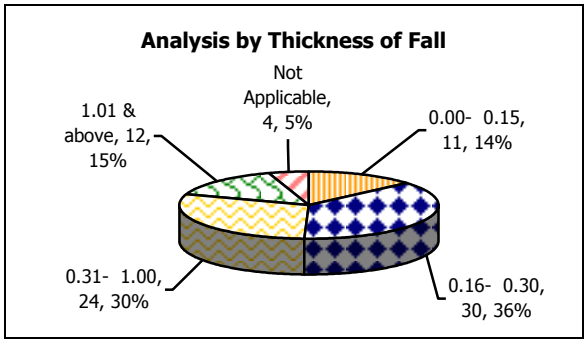




11. Distribution of fatal roof fall accidents by thickness of fall

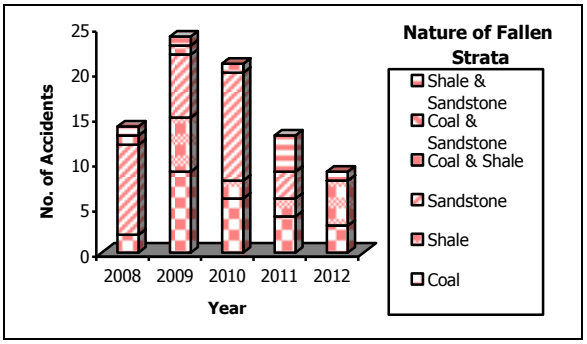
Thickness of fall (metres)	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 0.15	0	0	4	17	3	14	1	8	3	33	**11**	14
0.16- 0.30	6	42	8	33	6	29	6	46	4	45	**30**	36
0.31- 1.00	4	29	10	42	8	38	2	15	0	0	**24**	30
1.01 & above	4	29	2	8	3	14	1	8	2	22	**12**	15
not applicable	0	0	0	0	1	5	3	23	0	0	**4**	5
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

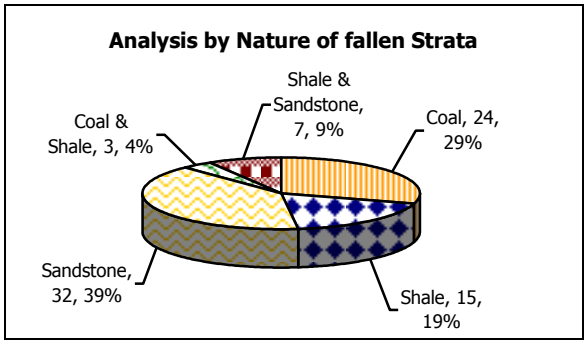




12. Distribution of fatal roof fall accidents by nature of fallen strata

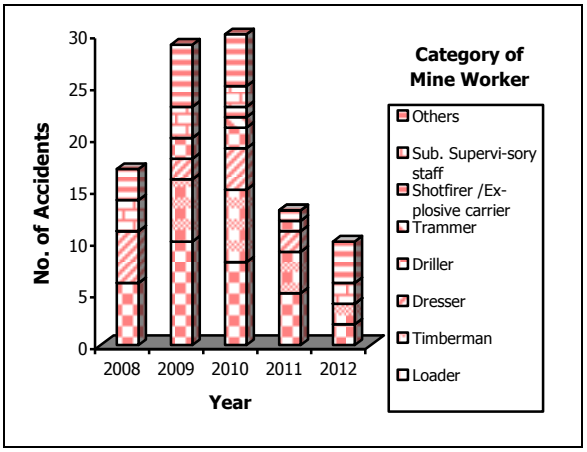
Nature of fallen strata	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
Coal	2	14	9	38	6	29	4	31	3	33	**24**	29
Shale	0	0	6	25	2	9	2	15	5	56	**15**	19
Sandstone	10	72	7	29	12	57	3	23	0	0	**32**	39
Coal & Shale	1	7	1	4	1	5	0	0	0	0	**3**	4
Coal & Sandstone	0	0	0	0	0	0	0	0	0	0	**0**	0
Shale & Sandstone	1	7	1	4	0	0	4	31	1	11	**7**	9
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

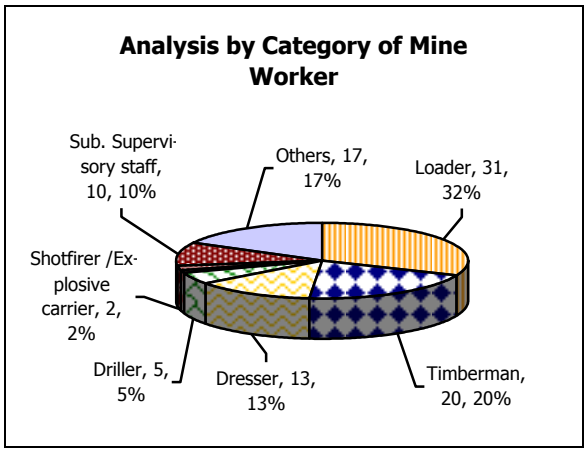




13. Distribution of persons killed in roof fall accidents by designation

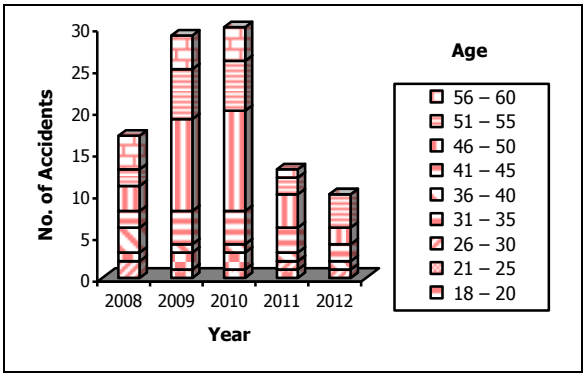
Category of mine worker	Number of persons killed											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
Loader	6	35	10	34	8	27	5	38	2	20	**31**	32
Support Personnel/ Timberman	0	0	6	21	8	27	4	31	2	20	**20**	20
Dresser	5	29	2	7	4	13	2	15	0	0	**13**	13
Driller	0	0	2	7	2	7	1	8	0	0	**5**	5
Trammer	0	0	0	0	1	3	0	0	0	0	**1**	1
Shotfirer /Ex-plosive carrier	0	0	0	0	1	3	1	8	0	0	**2**	2
Sub. Supervi-sory staff	3	18	3	10	2	7	0	0	2	20	**10**	10
Others	3	18	6	21	4	13	0	0	4	40	**17**	17
Total	**17**	**100**	**29**	**100**	**30**	**100**	**13**	**100**	**10**	**100**	**99**	**100**

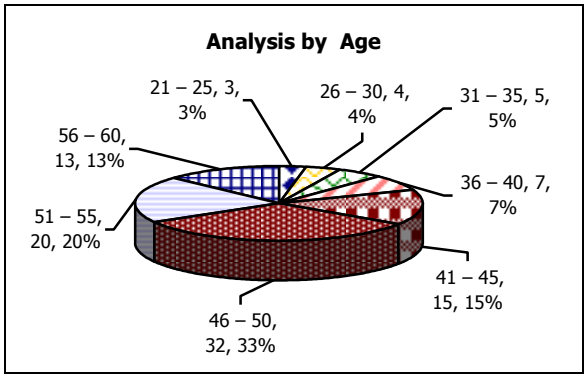




14. Distribution of persons killed in roof fall accidents by age

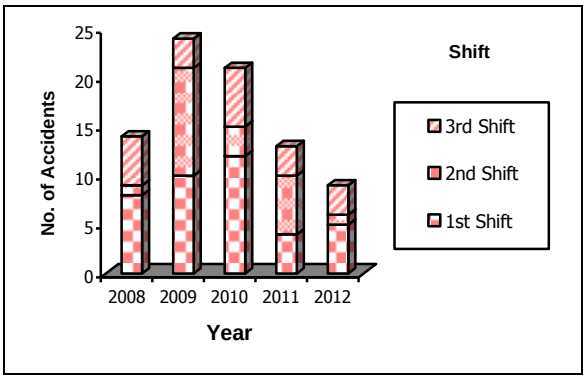
Age	Number of persons killed											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
18 – 20	0	0	0	0	0	0	0	0	0	0	0	0
21 – 25	0	0	1	3	1	3	1	8	0	8	3	3
26 – 30	2	12	0	0	0	0	1	8	1	8	4	4
31 – 35	1	6	2	7	2	7	0	0	0	0	5	5
36 – 40	3	18	1	3	1	3	1	8	1	8	7	7
41 – 45	2	12	4	14	4	14	3	22	2	22	15	15
46 – 50	3	18	11	38	12	40	4	31	2	31	32	33
51 – 55	2	12	6	21	6	20	2	15	4	15	20	20
56 – 60	4	22	4	14	4	13	1	8	0	8	13	13
Total	**17**	**100**	**29**	**100**	**30**	**100**	**13**	**100**	**10**	**100**	**99**	**100**

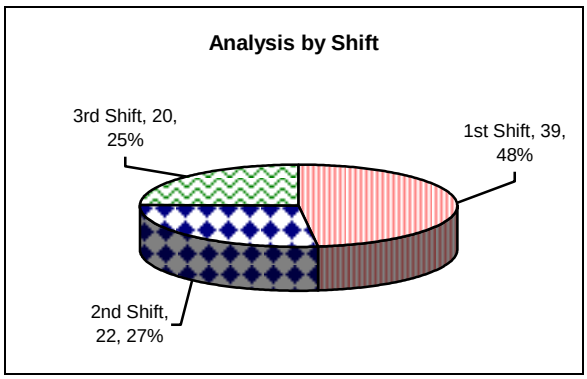




15. Distribution of fatal roof fall accidents by shift during which accident occurred

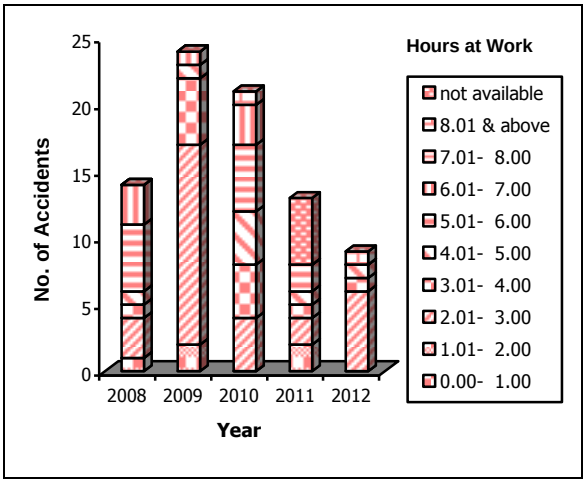
Shift	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
1st (7/8 AM to 3/4 PM)	8	57	10	42	12	57	4	31	5	56	**39**	48
2nd 3/4 PM to 11/12 M	1	7	11	46	3	14	6	46	1	11	**22**	27
3rd 11/12M to 7/8 AM	5	36	3	12	6	29	3	23	3	33	**20**	25
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

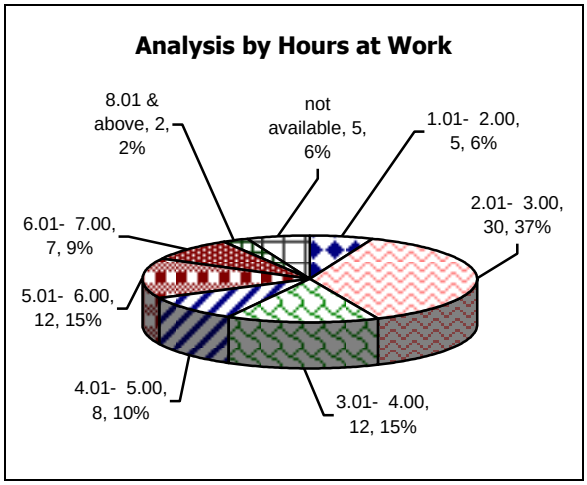




16. Distribution of fatal roof fall accidents by hours spent at work prior to the accident

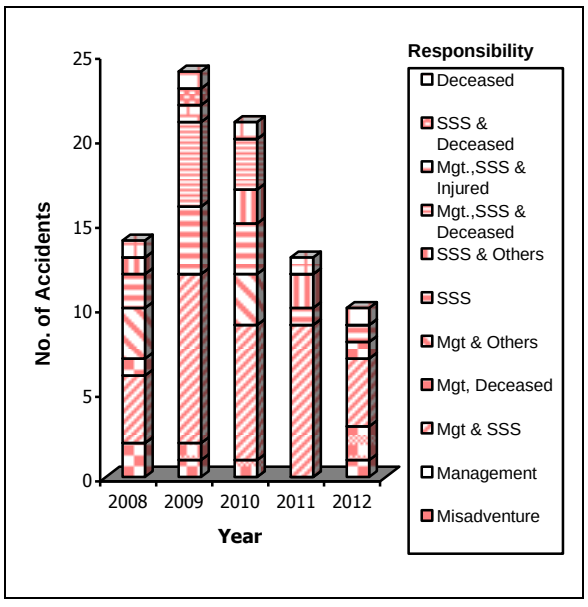
Hours at Work	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
0.00- 1.00	0	0	0	0	0	0	0	0	0	0	**0**	0
1.01- 2.00	1	7	2	8	0	0	2	15	0	0	**5**	6
2.01- 3.00	3	21	15	63	4	19	2	15	6	67	**30**	37
3.01- 4.00	1	7	5	21	4	19	1	8	1	11	**12**	15
4.01- 5.00	1	7	1	4	4	19	1	8	1	11	**8**	10
5.01- 6.00	5	37	0	0	5	24	2	15	0	0	**12**	15
6.01- 7.00	3	21	1	4	3	14	0	0	0	0	**7**	9
7.01- 8.00	0	0	0	0	0	0	0	0	0	0	**0**	0
8.01 & above	0	0	0	0	1	5	0	0	1	11	**2**	2
not available	0	0	0	0	0	0	5	39	0	0	**5**	6
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

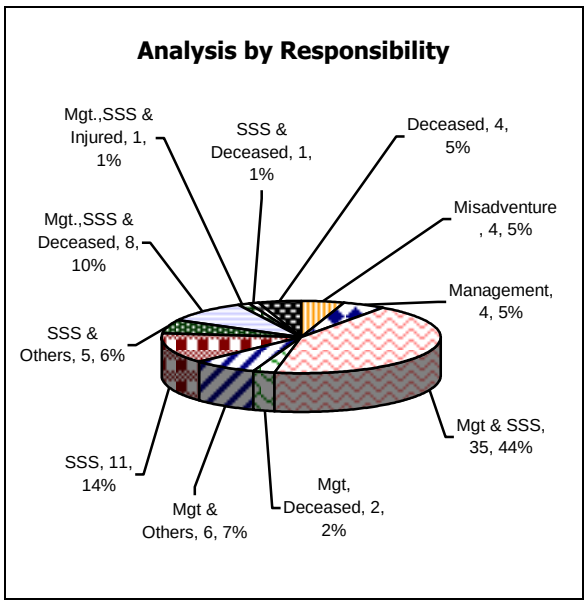




17. Distribution of fatal roof fall accidents by responsibility

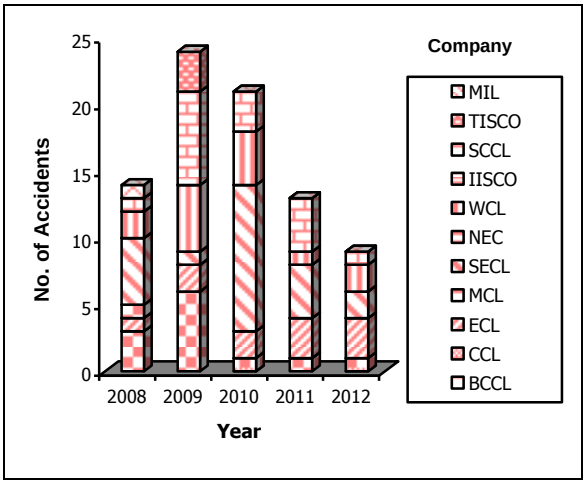
Responsibility	Number of persons											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
Misadventure	2	14	1	4	0	0	0	0	1	11	**4**	5
Management	0	0	1	4	1	5	0	0	2	22	**4**	5
Management & Sub-ordinate Supervisory Staff(SSS)	4	29	10	42	8	38	9	69	4	45	**35**	44
Management & Deceased	1	7	0	0	0	0	0	0	1	11	**2**	2
Management & Others	3	22	0	0	3	14	0	0	0	0	**6**	7
Sub-ordinate Supervisory Staff(SSS)	2	14	4	17	3	14	1	8	1	11	**11**	14
SSS & Others	1	7	0	0	2	10	2	15	0	0	**5**	6
Management, SSS & Deceased	0	0	5	21	3	14	0	0	0	0	**8**	10
Management,SSS & Injured	0	0	1	4	0	0	0	0	0	0	**1**	1
SSS & Deceased	0	0	1	4	0	0	0	0	0	0	**1**	1
Deceased	1	7	1	4	1	5	1	8	0	10	**4**	5
Total	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**

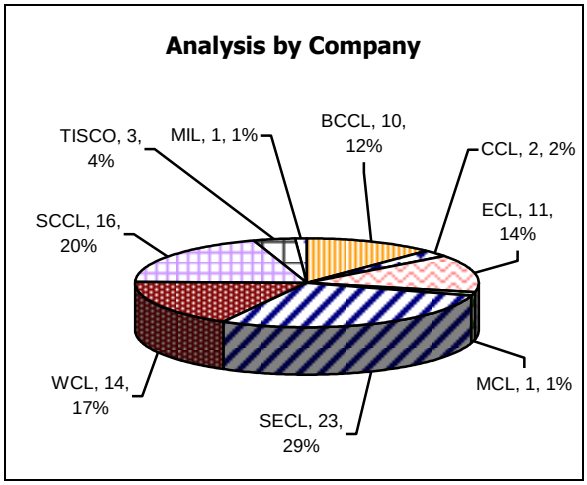




18. Distribution of fatal roof fall accidents by company

Company	Number of accidents											
	2008	%	2009	%	2010	%	2011	%	2012	%	Total	%
BCCL	3	22	6	25	0	0	1	8	0	0	**10**	12
CCL	0	0	0	0	1	5	0	0	1	11	**2**	2
ECL	1	7	2	8	2	10	3	22	3	34	**11**	14
MCL	1	7	0	0	0	0	0	0	0	0	**1**	1
SECL	5	36	1	4	11	52	4	31	2	22	**23**	29
NEC	0	0	0	0	0	0	0	0	0	0	**0**	0
WCL	2	14	5	21	4	19	1	8	2	22	**14**	17
CIL: total	**12**	**86**	**14**	**58**	**18**	**86**	**09**	**69**	**8**	89	**61**	**75**
IISCO	0	0	0	0	0	0	0	0	0	0	**0**	0
SCCL	1	7	7	29	3	14	4	31	1	11	**16**	20
TISCO	0	0	3	13	0	0	0	0	0	0	**3**	4
MIL	1	7	0	0	0	0	0	0	0	0	**1**	1
All-India	**14**	**100**	**24**	**100**	**21**	**100**	**13**	**100**	**9**	**100**	**81**	**100**





2.2.3B.3 Side fall and over hangs

There were 5 (6%) fatal accidents involving 5 fatalities due to fall of sides. 3 accidents took place in belowground and 2 accidents in opencast workings.

2.2.3B.4 Air blast

There was no accident due to this cause during the year 2012.

2.2.3C Transportation machinery (Winding)

One accident reported due to transportation machinery (Winding) during the year 2012.

2.2.3D Transportation machinery (Other than winding)

There were 33 fatal accident occurred due to transportation machinery other than winding engine involving 33 fatality reported during the year 2012. A detail break up of fatalities under this category is given in the table below.

TABLE – 23	FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY OTHER THAN WINDING IN SHAFTS IN COAL MINES DURING 2012	
Cause	**No. of fatal accidents**	**Persons killed**
1. Rope Haulage	2	2
2. Mechanical Conveyors	4	4
3. Dumpers	21	21
4. Wheeled Trackless(Truck,Tanker etc.)	6	6
6. Others	-	-
Total	**33**	**33**

From the above it is seen that dumpers/tippers is the main contributory factor to fatal accidents in opencast coal mines.

2.2.3D.1 Rope Haulages

There were 2 accidents (6% of all accidents) caused due to rope haulages during the year, 2012.

2.2.3D.2 Mechanical Conveyors:

4 accidents (12.12% of all accidents) resulting in four fatalities were caused by belt conveyors during 2012

2.2.3D.3 Dumpers and tippers:

There were 21 accidents due to machineries occurred resulting (63.63% of all fatalities) to dumpers and tippers during the year 2012

2.2.3D.4 Truck & Tankers:

6 accidents occurred causing 6 fatality due to truck & tankers contributing (18.18%) of total accident.

2.2.3E Machinery other than transportation machinery:

There were 12 accidents reported during the year, 2012, which were caused due to machinery other than transportation machinery. The analysis of the caused revealed that –

Table – 24	FATAL ACCIDENTS IN COAL MINES DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY DURING 2012	
Sl. No.	**No. of fatal accidents**	**Persons killed**
1. Drilling Machines	3	3
2. Cutting Machines	-	-
3. Loading Machines (SDL etc.)	4	4
4. Houlage Engine	-	-
5. Shovels/Draglines etc.	-	-
6. Crushing & Screening Plant	-	-
7. Other HEMM	4	4
8. Other Non-Transportation Machinery	1	1
Total :	**12**	**12**

2.2.3F Explosives;

There was 3 fatal accidents involving 3 fatalities and 1 serious accident occurred due to explosives during the year 2012.

2.2.3G Electricity;

There were 3 (3.6% of the total) fatal accidents involving 3 persons and three serious accidents due to electricity during the year 2012.

2.2.3H Accidents due to Dust, Gas & Fire;

3 fatal accident occurred involving 5 fatalities and one serious accident due to dust,gas & fire during the year 2012.

2.2.3I Falls other than falls of ground;

Falls other than fall of ground caused 10 (12% of the total) fatal accidents involving same number of lives during the year 2012.

2.2.3J Other causes;

7 fatal accidents involving 8 fatalities were reported due to other cases during the year 2012.

2.2.4 Responsibility

Analysis of accidents as per the persons held responsible for the various causes of accidents during the year 2012 has been indicated in table:25.

TABLE:25	RESPONSIBILITY FOR FATAL ACCIDENTS IN COAL MINES DURING THE YEAR 2012	
SL. NO.	**Responsibility**	**No. of accidents**
1.	Misadventure	4
2.	Management	12
3.	Management & Subordinate Supervisory Staff (SSS)	13
4.	Management, SSS & Co-worker	4
5.	Management, SSS,Co-worker & Deceased	3
6.	Management, SSS, Co-worker,Deceased & injured	-
7.	Management,SSS & Deceased	2
8.	Management,SSS & Shotfirer	1
9.	Management & Shotfirer	-
10.	Management & Co-worker	3
11.	Management,Coworker & Deceased	1
12.	Management & Deceased	4
13.	Subordinate Supervisory Staff(SSS)	5
14.	SSS, Shotfirer, Coworker & Deceased	-
15.	SSS & Co-worker	2
16.	SSS,Co-worker & Deceased	1
17.	Coworker	6
18.	Co-worker & Deceased	6
17.	Deceased	13
18.	Others	3
	TOTAL	**83**

It can be seen that in 12 (14%) cases management alone and 13 (16%) cases management along with other subordinate staff were responsible. In 5 (6%) of the cases subordinate supervisory staff alone were found responsible. In 13(16%) cases deceased alone and in 6 (7%) cases the co-workers 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

36 (Thirty-six) dangerous occurrences were reported under the Coal Mines Regulations, 1957 during the year 2012.Details of cause of dangerous occurrences are given below in Table: 26

TABLE:26	DANGEROUS OCCURRENCES IN COAL MINES DURING 2012	
Sl. No.	Cause	No. of cases
1.	Spontaneous heating belowground	9
2.	Spontaneous heating in opencast working	1
3.	Spontaneous heating at surface	-
4.	Outbreak of fire underground from spontaneous heating	-
5.	Outbreak of fire underground from causes other than spontaneous heating	-
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	5+2(Dump Failure)
9.	Influx of noxious gases	-
10.	Ignition or occurrence of inflammable gas	-
11.	Over winding of cages etc.	3
12.	Breakage of winding rope	1
13.	Breakdown of winding engine, crank shaft, bearing etc.	1
14.	Breakage, fracture etc of essential parts of machinery or apparatus whereby safety of persons was endangered	2(Hard landing)+ 1(Snapping of direct haulage wire rope)
15.	Irruption of water	1
16.	Subsidence/potholing	7
17.	Explosives	-
18.	Others	2
	TOTAL	36

A. Spontaneous Heating:

In total 09(Nine) cases of spontaneous heating were reported. Out of 09 cases, 08 were in belowground workings and 1 in opencast workings.

Spontaneous heating in belowground was controlled & confined by sealing those panels by isolation stoppings & in extreme cases either the seam as a whole or the mine as whole was sealed off from surface. In one case, incubation period was reduced from six months to three months whereas in another case it was suggested to complete the extraction of Coal in a panel well within incubation period. Two cases of spontaneous heating occurred in fallen coal of old developed gallery; the area was hydraulic sand stowed & sealed. Three cases of spontaneous heating were reported in galleries/panels having fallen coal. Spontaneous heating and fire in opencast working was due to the presence of old & disused underground workings standing on pillars. Fire was controlled by

i) Spreading incombustible material (stone dust) in the galleries & pillars,
ii) Sprinkling water mixed with sodium silicate
iii) By Back filling

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.
- Stowing Lag in depillaring panel.
- Unavailability of CO detecting instruments & negligency in taking CO samples on routine basis.
- Negligency in monitoring the status of gas samples behind the isolation stoppings.

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.
- Boreholes and subsidence areas, if any should be kept plugged and cracked should be filled up completely.
- Provision of Pressure balancing in the concerned areas.
- Telemonitoring devices should be installed for round the clock monitoring of any emission of noxious/inflammable gases.

B. Other Fires:

There was a case of fire in dumper due to short circuiting of electrical wire. Fire was controlled by using the fire extinguisher.

Corrective measures:

- A code of practice shall be drawn up for dealing with fires at different location in opencast mines, including HEMM. Arrangements for fighting fire should be provided on all heavy earth moving machineries. Such arrangements should, if possible, operate automatically on appearance of fire.
- Timely action has to be initiated if active fire is known to be existed behind the stoppings.
- Reinforcement of stoppings and cleaning of return airway to prevent choking shall be done.
- Adequate precautions shall be taken as per statute while using flame or electric welding or repairing apparatus belowground.
- Availability of Fire Tender in the mine must be ensured.

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

There was one case of premature collapse of roof fall due to unsystematic working.

There were cases of massive roof falls in depillaring districts/panel due to roof not supported adequately.

There were other two cases of roof fall on continuous Miner in different caving panels. In these cases, Management was advised to periodically review the Strata management Plan, Emergency Management Plan etc. & carry out scientific study for routine monitoring of strata.

There were cases of overburden dump failure, in one case, a portion of the dump measuring quantities of about 2500 to 3000cum consisting of carbonaceous shale with fire suddenly failed & slided down from a height of 80mtrs.

Corrective measures:

- Strictly follow up with Systematic support plan.
- A study from scientific agency for routine monitoring of strata, warning levels of roof deformation/convergence, load on rib/stook pillars etc. is recommended.
- All the parameters relevant with Strata Management Plan shall be reviewed periodically.
- 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.
- Continuous monitoring is to be done to check for movement of dump.

- A study from scientific institution for dump stability, type of material to be dumped, water drainage system of dumps and hydrostatic & hydro-geological study of places where mining, dumping and pumping is being done is recommended.
- Emergency Organisation Plan shall be put in action in case of emergency and shall be reviewed periodically.

D. Influx of Noxious Gases:

There was no case of Influx of Noxious Gas.

E. Ignition or occurrence of inflammable gas:

There was no case of occurrence of inflammable gas.

F. Breakage, fracture etc. of essential parts of machinery or apparatus whereby safety of persons was endangered

There were two cases of hard landing of descending cage which happened due to sudden picking up the momentum in downward direction.
In both cases, Management was advised to maintain the automatic contrivance, braking system and other safety devices.

In another case there was snapping of direct haulage wire rope which happened during hauling of a set of loaded tubs. Two front tubs got derailed at a curve, inducing heavy load on the wire rope due to which the rope snapped at a distance of 15 meters from the rope cappel end.

Management was advised to maintain safety devices.

G. Irruption of water / Landslide:

There was one case of inrush of water. Inrush of underground water was from old goaved out area of Panel. Management was asked to drill exploratory borehole to prove barrier between old goaved out area & development working.

H. Subsidence / Potholing:

There were seven cases of subsidence and pot holing due to shallow depth of cover, presence of old working, fire in old workings, accumulation of heavy rain water on low lying areas, presence of fault plane. Pot holes were filled up and the affected area was stabilized properly. At some places the areas have been declared unsafe and suitable actions taken.

Corrective Measures:-

i) Affected areas should be effectively fencing off.
ii) Sign board giving warning of unstable working should be displayed in conspicuous places in local languages.
iii) The entire areas should be monitored for development of any surface crack or subsidence etc.
iv) Smoke of fire should be stopped by dumping overburden/debris in the exposed galleries.
v) The low lying area should be filled up to avoid accumulation of water.

vi) Water drainage network of the area should be made effective so that no accumulation of water take place during continuous rain.

vii) Scientific study should be done to know the status of exact underground working in different seam.

viii) The low cover working area should be demarcated on the surface & surface drains should be made around so that the phenomenon of pot holing should be avoided in future.

I. Other:

There was one case of toppling of truck.
Management was advised to follow up "safe code of practice" & not to use surveyed off vehicles in opencast Mines. Training on simulator for HEMM operators should be provided.

2.4 Technical Developments

During the year 2012, 10.2% of the total production came from underground workings and 89.8% of the total production came from opencast mines. As far as average daily employment was concerned 48.04% were employed belowground, 24.6% were employed in opencast workings and the remaining 27.37% were employed for other surface operations.

During the 2012, 1610 Excavators, 5850 dumpers, 952 drills and 43 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	1499	42	980	5455	2876	4,437,860
2011	1576	46	914	6286	3095	5,009,564
2012*	1610	43	952	5850	2937	5,052,398

*Data for the year 2012 are 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 2012					
Name of Company	Road header/ Dint header	SDL	LHD	Continuous Miners	Coal haulers	Other
BCCL	4	163	1	0	0	1
ECL	2	225	37	2	0	26
CCL	0	23	6	0	0	0
MCL	0	21	29	0	0	0
SECL	0	188	175	4	0	2
WCL	0	88	120	1	2	1
NECL	0	0	0	0	0	4
TATA	1	31	5	0	0	1
SCCL	10	155	33	2	6	0
NCL	0	0	0	0	0	0
GIPCL	0	0	0	0	0	0
NLC	0	0	0	0	0	0
JSMDC	0	0	0	0	0	0
GMDC	0	0	0	0	0	0
SAIL	2	0	0	0	0	0
RSMM	0	0	0	0	0	0
Total	19	894	406	9	8	35

(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 2012																
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	60	2	346	0	8	74	75	18	77	24	
ECL	0	1	0	0	15	18	12	14	110	5	11	12	32	9	29	8	
CCL	0	0	5	1	0	25	86	187	258	1	9	47	46	27	70	13	
MCL	0	5	26	48	0	49	28	307	11	0	3	43	33	34	54	5	
SECL	0	9	6	0	22	55	108	68	125	3	20	30	19	65	51	7	
WCL	0	3	0	179	0	0	0	402	223	0	0	71	131	21	88	0	
NECL	0	0	0	0	0	0	0	0	30	0	0	0	22	0	0	7	
TATA	0	0	0	0	0	0	41	48	11	0	7	13	3	0	17	1	
SCCL	0	2	1	0	0	144	27	15	203	0	23	12	46	22	33	0	
NCL	0	2	0	0	0	63	33	0	0	0	17	0	0	4	8	19	
GIPCL	0	0	0	0	0	0	0	5	158	0	0	1	43	0	0	0	
NLC	33	0	0	413	0	0	0	0	42	0	0	0	81	9	8	14	
JSMDC	0	0	0	0	0	0	0	0	16	0	0	0	4	0	0	2	
GMDC	0	0	0	0	0	0	0	23	244	0	0	7	76	0	0	0	
SAIL	0	0	0	10	0	0	0	0	21	0	0	0	13	0	0	6	
RSMM	0	0	0	0	0	0	0	0	64	0	0	0	21	0	0	0	
Total	33	24	38	651	37	354	395	1071	1862	9	98	310	645	209	435	106	

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 2012 IN COAL MINES			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
BCCL	0	745	25967	19369
ECL	1137	1137	14876	14988
CCL	893	893	10455	10943
MCL	1100	1100	4267	4352
SECL	238	238	24545	21526
WCL	933	933	16680	16572
NECL	0	0	332	347
TATA	738	738	1215	1244
SCCL	0	6031	22008	19785
NCL	0	203	612	615
GIPCL	240	240	37	37
NLC	1701	1701	2659	3477
JSMDC	5	5	12	15
GMDC	17	13	262	299
SAIL	0	44	594	146
RSMM	135	135	0	0
Total	7137	14156	124521	113715

(b)Cases of Notified Diseases in Coal Mines:

TABLE: 31	CASES OF NOTIFIED DISEASES IN COAL MINES DURING YEAR 2012	
Mining Companies	**Name of Disease**	**Number of cases**
SECL	Pneumoconiosis	1
SCCL	Carcinoma lung	9
	Carcinoma Stomach	4

2.6 Vocational Training

Recognizing the need for safety education to enable the mine workers 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 2012 was reported to be as follows.

TABLE: 32	PROGRESS OF VOCATIONAL TRAINING IN COAL MINES DURING YEAR 2012					
Name of the Company.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
BCCL	12	539	539	8448	9900	4068
ECL	21	1873	2983	12748	10432	4832
CCL	12	1664	1664	5405	5405	562
MCL	5	3224	3224	3930	3555	1362
SECL	25	0	3891	9360	10593	5073
WCL	12	3268	3268	7675	8443	2218
NECL	2	0	287	332	359	137
TATA	2	486	505	1686	1619	2031
SCCL	9	5318	5318	12765	12765	6390
NCL	1	0	354	385	132	2385
GIPCL	1	390	390	33	33	0
NLC	1	1897	1897	2670	2739	1626
JSMDC	1	15	15	32	40	10
GMDC	1	805	805	241	227	57
SAIL	3	1	1	433	195	133
RSMM	1	59	59	0	0	0
Total	109	19539	25200	66143	66437	30884

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 2012.

TABLE: 33	**NUMBER OF WORKMEN'S INSPECTOR IN POSITION, SAFETY COMMITTEE, WELFARE OFFICERS IN COAL MINES DURING 2012**					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
BCCL	52	42	126	126	42	42
ECL	94	90	249	273	99	99
CCL	58	58	174	174	58	58
MCL	23	23	70	70	23	23
SECL	89	89	264	267	89	89
WCL	72	72	216	216	72	72
NECL	3	3	12	12	4	4
TATA	7	7	36	36	7	7
SCCL	42	42	191	191	64	64
NCL	0	1	4	4	6	6
GIPCL	2	2	8	8	17	17
NLC	6	7	22	24	10	11
JSMDC	0	0	2	2	1	1
GMDC	1	1	12	15	5	5
SAIL	3	3	9	10	3	3
RSMM	0	0	6	6	2	2
Total	452	440	1401	1434	502	503

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	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	0.30	0.68	0.29	0.36
	2010	1	1	6	6	0	0	7	7	0.04	0.69	0.00	0.15
	2011	3	4	3	3	0	0	6	7	0.17	0.37	0.00	0.15
	2012	3	3	6	6	3	3	12	12	0.13	0.74	0.22	0.26
CCL	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	1	1	3	3	2	2	6	6	0.11	0.26	0.16	0.18
	2010	1	2	5	6	2	2	8	10	0.24	0.55	0.17	0.33
	2011	1	1	3	3	2	2	6	6	0.13	0.26	0.16	0.19
	2012	1	2	3	3	1	1	5	6	0.26	0.26	0.08	0.19
ECL	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	2	2	0	0	8	9	0.17	0.45	0.00	0.13
	2010	5	5	4	4	4	4	13	13	0.13	0.93	0.19	0.20
	2011	4	4	4	4	0	0	8	8	0.11	1.03	0.00	0.13
	2012	7	7	4	4	0	0	11	11	0.19	1.03	0.00	0.18
MCL	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	0.13	0.33	0.17
	2010	0	0	2	2	0	0	2	2	0.00	0.24	0.00	0.11
	2011	0	0	1	1	3	3	4	4	0.00	0.11	0.52	0.21
	2012	0	0	1	1	1	1	2	2	0.00	0.11	0.17	0.11
NCL	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	0.44	0.00	0.23
	2010	0	0	9	9	3	3	12	12	0.00	0.86	0.45	0.70
	2011	0	0	3	3	2	2	5	5	0.00	0.24	0.34	0.27
	2012	0	0	4	4	3	3	7	7	0.00	0.32	0.50	0.38
NEC	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	1.16	0.00	0.47
	2011	0	0	2	2	0	0	2	2	0.00	2.44	0.00	0.96

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
	2012	0	0	0	0	1	1	1	1	0.00	0.00	1.32	0.48
SECL	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	0.77	0.00	0.18
	2010	15	29	1	1	3	3	19	33	0.96	0.17	0.22	0.67
	2011	6	6	3	3	2	2	11	11	0.19	0.61	0.14	0.21
	2012	5	6	3	3	2	2	10	11	0.19	0.61	0.14	0.21
WCL	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	0.46	0.30	0.14	0.32
	2010	5	8	6	6	2	2	13	16	0.42	0.94	0.16	0.42
	2011	3	3	2	3	3	3	8	9	0.16	0.44	0.23	0.23
	2012	4	4	5	6	0	0	9	10	0.22	0.88	0.00	0.26
CIL	**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	**25**	**29**	**20**	**23**	**10**	**10**	**55**	**62**	**0.22**	**0.41**	**0.11**	**0.22**
	2010	**27**	**45**	**34**	**35**	**14**	**14**	**75**	**94**	**0.36**	**0.63**	**0.16**	**0.35**
	2011	**17**	**18**	**21**	**22**	**12**	**12**	**50**	**52**	**0.14**	**0.38**	**0.14**	**0.19**
	2012	**20**	**22**	**26**	**27**	**11**	**11**	**57**	**60**	**0.18**	**0.47**	**0.13**	**0.22**
JSMDC	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
DVC	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GMDC	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	1.01	0.00	0.59
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	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
IISCO	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	1.50	1.75	0.00	1.16
	2011	0	0	1	1	0	0	1	1	0.00	1.67	0.00	0.50
	2012	0	0	1	1	0	0	1	1	0.00	1.67	0.00	0.50
NLC	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	0.30	0.24	0.28
	2010	0	0	2	2	1	1	3	3	0.00	0.31	0.21	0.26
	2011	0	0	2	2	0	0	2	2	0.00	0.30	0.00	0.21
	2012	0	0	3	3	1	1	4	4	0.00	0.45	0.39	0.43
SCCL	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	0.51	0.00	0.32
	2010	8	9	2	3	1	1	11	13	0.19	0.24	0.10	0.19
	2011	5	5	2	2	1	1	8	8	0.11	0.16	0.11	0.12
	2012	4	5	6	6	5	5	15	16	0.11	0.49	0.57	0.24
TISCO	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	0.51	0.00	0.00	0.37
	2010	4	4	0	0	0	0	4	4	0.71	0.00	0.00	0.51
	2011	1	1	2	2	0	0	3	3	0.18	1.40	0.00	0.39
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GIPCL	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GHCL	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
APMDTC	2005	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
	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	2.92	2.78
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ICML	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	1.13	0.00	0.82
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
MIL	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
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JNL	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	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
KECML	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
JPL	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
	2011	0	0	1	1	0	0	1	1	0.00	0.00	0.00	3.97
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ELCALTD	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	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	1	1	1	1	1	1	3	3	7.46	16.39	43.48	13.76
JSPL	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	38.46	26.32
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	83.33	0.00	26.32
ALL INDIA	**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	**39**	**46**	**29**	**32**	**15**	**15**	**83**	**93**	**0.25**	**0.40**	**0.14**	**0.25**
	2010	**41**	**60**	**40**	**42**	**16**	**16**	**97**	**118**	**0.33**	**0.51**	**0.15**	**0.32**
	2011	**23**	**24**	**29**	**30**	**13**	**13**	**65**	**67**	**0.13**	**0.35**	**0.13**	**0.18**
	2012	**25**	**28**	**39**	**40**	**19**	**19**	**83**	**87**	**0.16**	**0.47**	**0.19**	**0.24**

BG- Belowground OC-Opencast AG-Aboveground

Note : Figures for the year 2011 & 2012 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	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	0.79	1.60	0.65	0.89
	2010	21	21	1	4	3	4	25	29	0.89	0.46	0.28	0.62
	2011	24	30	3	3	9	9	36	42	1.28	0.37	0.65	0.92
	2012	17	18	4	5	3	3	24	26	0.77	0.62	0.22	0.57
CCL	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	0.11	0.09	0.48	0.24
	2010	1	1	3	4	4	4	8	9	0.12	0.37	0.34	0.29
	2011	7	7	8	8	1	1	16	16	0.91	0.70	0.08	0.50
	2012	4	4	2	2	3	3	9	9	0.52	0.17	0.24	0.28
ECL	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	2.01	2.00	0.85	1.64
	2010	44	44	4	4	9	9	57	57	1.12	0.93	0.43	0.89
	2011	60	63	7	8	17	17	84	88	1.68	2.05	0.88	1.45
	2012	60	63	7	8	20	20	87	91	1.68	2.05	1.04	1.50
MCL	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	0.98	0.25	0.00	0.33
	2010	2	2	3	3	1	1	6	6	0.44	0.36	0.17	0.32
	2011	6	6	4	4	0	0	10	10	1.36	0.45	0.00	0.53
	2012	5	5	2	2	2	2	9	9	1.14	0.23	0.35	0.47
NCL	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	0.22	0.00	0.12
	2010	0	0	9	9	1	1	10	10	0.00	0.86	0.15	0.58
	2011	0	0	5	6	0	0	5	6	0.00	0.48	0.00	0.33
	2012	0	0	6	6	0	0	6	6	0.00	0.48	0.00	0.33
NEC	2005	0	1	0	0	0	0	0	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	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
SECL	2005	68	72	9	9	18	19	95	100	2.06	1.28	1.20	1.73

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
	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	1.36	0.31	0.56	1.02
	2010	35	43	6	8	2	2	43	53	1.43	1.39	0.15	1.07
	2011	25	26	11	11	5	5	41	42	0.81	2.24	0.34	0.81
	2012	19	20	6	6	8	8	33	34	0.62	1.22	0.54	0.66
WCL	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	1.52	0.45	0.43	0.97
	2010	22	25	12	13	6	6	40	44	1.32	2.04	0.47	1.16
	2011	20	24	11	13	11	11	42	48	1.29	1.90	0.85	1.25
	2012	15	15	7	9	9	9	31	33	0.81	1.32	0.70	0.86
CIL	**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**	**1.38**	**0.59**	**0.52**	**0.94**
	2010	**125**	**136**	**38**	**45**	**26**	**27**	**189**	**208**	**1.09**	**0.81**	**0.31**	**0.78**
	2011	**142**	**156**	**49**	**53**	**43**	**43**	**234**	**252**	**1.25**	**0.92**	**0.50**	**0.94**
	2012	**120**	**125**	**34**	**38**	**45**	**45**	**199**	**208**	**1.00**	**0.66**	**0.52**	**0.78**
JSMDC	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
DVC	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GMDC	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
IISCO	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	2.91

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
	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	3.00	0.00	0.00	1.54
	2011	2	2	0	1	0	0	2	3	2.33	1.67	0.00	1.51
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
J&K	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
NLC	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	0.74	0.97	0.83
	2010	0	0	3	3	2	3	5	6	0.00	0.46	0.62	0.53
	2011	0	0	3	3	2	2	5	5	0.00	0.45	0.77	0.54
	2012	0	0	3	3	3	3	6	6	0.00	0.45	1.16	0.64
SCCL	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	7.50	1.37	5.60	6.11
	2010	219	230	20	20	42	42	281	292	4.86	1.58	4.31	4.19
	2011	235	239	22	22	36	36	293	297	5.38	1.80	4.09	4.54
	2012	236	237	20	20	48	48	304	305	5.34	1.64	5.45	4.66
TISCO	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
	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	0.17	0.00	1.17	0.25
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	2	2	0	0	0	0	2	2	0.37	0.00	0.00	0.26
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
	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	5.41	0.00	4.29
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
GIPCL	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

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
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	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
	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	1	1	0	0	0	0	1	1	0.69	0.00	0.00	0.61
JNL	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	2.32	0.00	0.00	1.54
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	1	1	0	0	0	0	1	1	1.84	0.00	0.00	1.34
ELCALTD	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	1	2	0	0	0	0	1	2	14.93	0.00	0.00	9.17
JSPL	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	1	0	1	0.00	0.00	38.46	26.32
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
ALL INDIA	**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**	**2.72**	**0.67**	**0.93**	**1.76**
	2010	**348**	**370**	**62**	**69**	**70**	**72**	**480**	**511**	**2.03**	**0.83**	**0.68**	**1.38**
	2011	**379**	**397**	**74**	**79**	**81**	**81**	**534**	**557**	**2.23**	**0.92**	**0.79**	**1.52**
	2012	**361**	**368**	**58**	**62**	**96**	**96**	**515**	**526**	**2.07**	**0.72**	**0.94**	**1.44**

BG- Belowground OC-Opencast AG-Aboveground

Note : Figures for the year 2011 & 2012 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 2174 non-coal mines including 86 oil mines submitted returns for the year 2012.

Average daily employment in non-coal mines during the year 2012 was 202910 as compared to 200122 in 2011. Average daily employment in workings belowground, opencast and aboveground during the year 2012 was 7700, 108965 & 84355 as compared to 9783, 104665 & 85674 respectively during the year 2011. The average daily employment in various minerals is depicted in the table below:

TABLE: 34	**Average daily employment and output in non-coal mines during 2012**					
Mineral	**No. of Mines Submitted return**	**Average daily employment**				**Output ('000 tonnes)**
		U / G	**O/C**	**Surface**	**Total**	
Bauxite	115	0	6305	1123	7428	16808
Copper	6	2099	229	1454	3782	3437
Gold	5	1645	0	1545	3190	683
Granites	241	0	8881	2579	11460	3949
Lime Stone	517	4	23770	6357	30131	367725
Iron-ore	362	0	29998	25292	55290	250106
Manganese	132	2880	8174	5405	16459	6769
Marble	21	0	1590	406	1996	3594
Stone	181	0	5010	2192	7202	37001
Galena & sphalarite	13	1368	708	1983	4059	8590
Others	495	1594	24300	13221	39114	59770
Oil & Natural Gas	86	0	0	22798	22798	17678(OIL) ***19393(GAS)**
Total Non-Coal	**2174**	**9590**	**108965**	**84355**	**202910**	****776110**

Production of Natural Gas (Expressed in Million Cu Meter)
** The figure excludes the production of gas.
Note: Data for the year 2012 are provisional.

3.2 Accidents

3.2.1 Accidents

There was no major accident in Non-coal mines during the year 2012.

There had been decrease in fatal accidents in the year 2012 wherein 39 fatal accidents involving 41 fatalities and 44 serious accidents involving 41 persons seriously injured as compared to 47 fatal accidents involving 53 fatalities and 97 serious accidents involving 99 persons seriously injured during 2011. Table 35 & 36 given below shows trend in fatal accidents, death rates, serious accidents and 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	36	44	3	0.60	0.32	0.09	0.24
2010	54	91	5	0.44	0.71	0.18	0.47
2011*	47	53	9	0.20	0.34	0.18	0.26
2012*	39	41	4	0.51	0.29	0.07	0.20

* Provisional

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

TABLE:36	TREND IN SERIOUS ACCIDENTS AND SERIOUS INJURY RATES IN NON-COAL MINES					
YEAR	Number of		Serious injury rate per 1000 persons employed			
	Serious accidents	Persons seriously injured#	Below ground	Open cast	Above ground	Overall
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	1.65	0.24	1.12	0.67
2009	94	101	4.34	0.19	0.64	0.56
2010	61	63	1.44	0.21	0.41	0.35
2011*	97	99	2.35	0.41	0.49	0.54
2012*	44	44	1.53	0.18	0.16	0.24

* 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 2008-2012.

TABLE:37	TREND IN FATAL ACCIDENTS DUE TO DIFFERENT CAUSES IN NON-COAL MINES				
Cause	**2008**	**2009**	**2010**	**2011***	**2012***
Ground movement	13 (20)	14 (20)	14 (48)	7 (9)	13 (13)
Winding in shafts	-	-	-	1 (1)	1 (1)
Transportation machinery (other than winding)	15 (15)	9 (9)	12 (13)	11 (12)	6 (6)
Machinery other than transportation machinery	4 (6)	3 (3)	5 (5)	10 (10)	5 (5)
Explosive	2 (10)	1 (3)	3 (3)	4 (7)	4 (4)
Electricity	2 (3)	-	1 (1)	-	-
Gas, Dust etc.	2 (3)	1 (1)	-	1 (1)	-
Falls other than fall of ground	11 (11)	8 (8)	15 (17)	10 (10)	9 (9)
Other causes	5 (5)	-	4 (4)	3 (3)	1 (3)
TOTAL	**54 (73)**	**36 (44)**	**54 (91)**	**47 (53)**	**39 (41)**

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

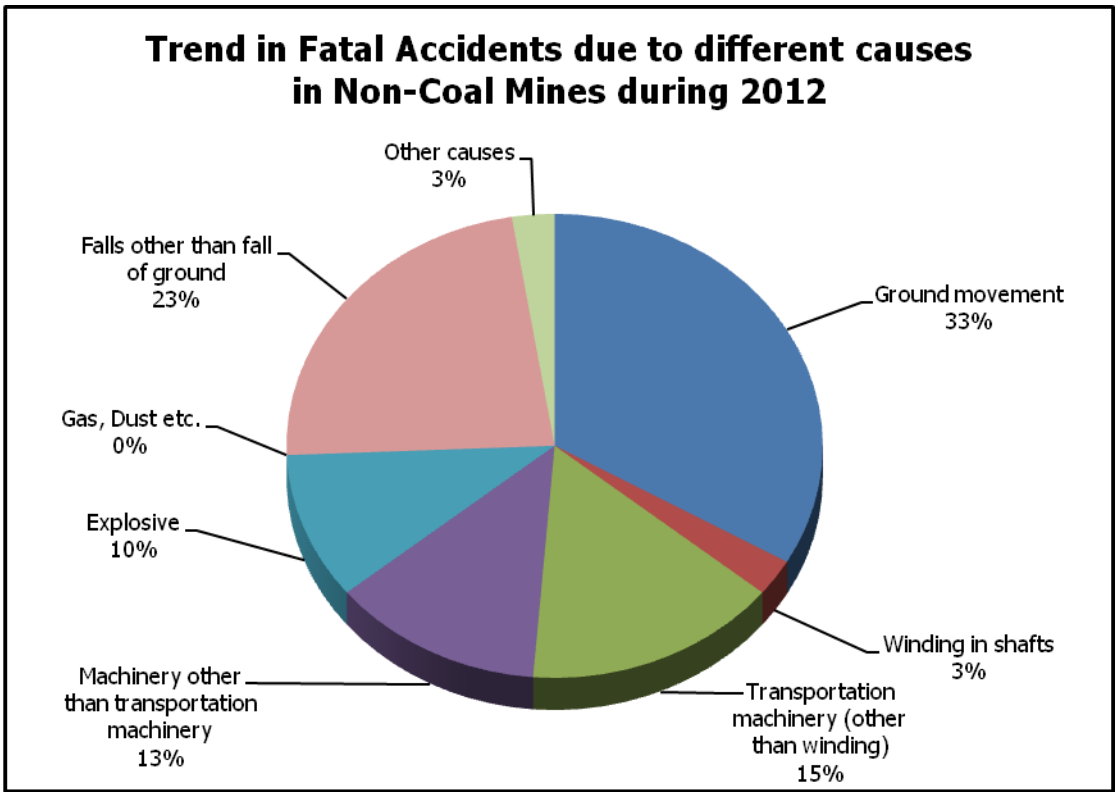


TABLE:37A	TREND IN FATAL ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2008**	**2009**	**2010**	**2011***	**2012***
Belowground	3 (4)	4 (5)	4 (4)	2 (2)	5 (5)
Opencast	35 (42)	25 (32)	35 (72)	32 (36)	28 (30)
Aboveground	16 (27)	7 (7)	15 (15)	13 (15)	6 (6)
Total	**54 (73)**	**36 (44)**	**54 (91)**	**47 (53)**	**39 (41)**

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	**2008**	**2009**	**2010**	**2011***	**2012***
Ground movement	1 (8)	1 (4)	1 (4)	5 (6)	7 (8)
Winding in shafts	2 (3)	3 (6)	2 (2)	3 (4)	3 (3)
Transportation machinery (other than winding)	9 (12)	11 (14)	5 (5)	11 (15)	3 (3)
Machinery other than transportation machinery	10 (12)	13 (14)	10 (10)	17 (17)	8 (8)
Explosive	1 (21)	1 (1)	1 (3)	0 (4)	1 (4)
Electricity	1 (3)	3 (3)	2 (2)	3 (4)	-
Gas, Dust etc.	1 (1)	-	2 (2)	-	-
Falls other than fall of ground	39 (39)	39 (39)	31 (33)	51 (51)	20 (20)
Other causes	19 (21)	23 (23)	7 (7)	7 (7)	2 (2)
TOTAL	**83 (120)**	**94 (104)**	**61 (68)**	**97 (108)**	**44 (48)**

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

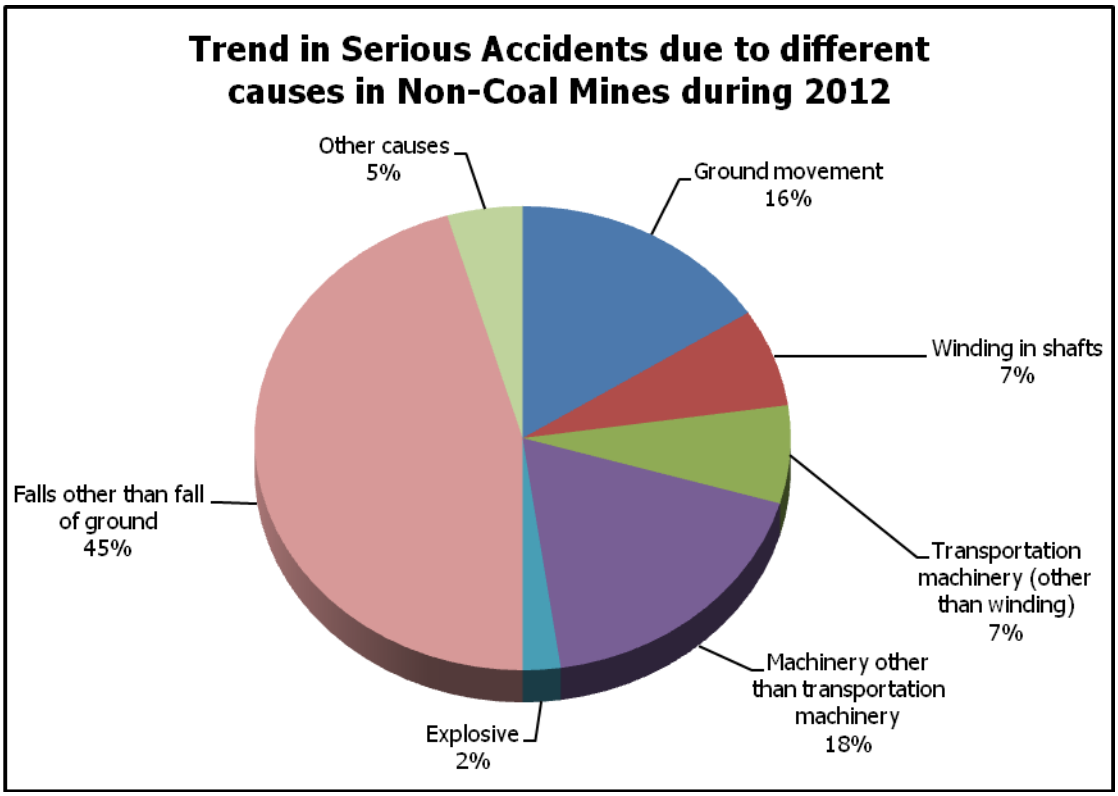


TABLE: 38A	TREND IN SERIOUS ACCIDENTS IN DIFFERENT PLACES OF NON-COAL MINES				
Place	**2008**	**2009**	**2010**	**2011***	**2012***
Belowground	14 (15)	33 (36)	12 (13)	22 (23)	15 (15)
Opencast	13 (23)	13 (19)	16 (21)	39 (43)	15 (19)
Aboveground	56 (82)	48 (49)	33 (34)	36 (42)	14 (14)
Total	**83 (120)**	**94 (104)**	**61 (68)**	**97 (108)**	**44 (48)**

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 2008-2012

TABLE: 39	FATAL AND SERIOUS ACCIDENTS MINERAL-WISE IN NON-COAL MINES DURING 2008-2012									
Mineral	**Fatal accidents**					**Serious accidents**				
	2008	**2009**	**2010**	**2011***	**2012***	**2008**	**2009**	**2010**	**2011***	**2012***
Copper	1	1	-	1	1	3	5	3	9	1
Galena & sphalerite	2	-	1	3	-	21	24	7	15	6
Gold	-	1	-	-	-	9	15	11	-	-
Granite	6	3	8	9	4	1	-	4	2	1
Iron-ore	11	8	9	4	4	19	20	9	20	6
Lime stone	9	2	4	5	5	3	4	3	5	4
Manganese ore	3	-	2	3	4	2	2	-	2	5
Marble	5	4	10	8	3	-	-	-	-	-
Oil	5	3	4	5	2	20	18	16	30	10
Stone	5	5	3	6	9	-	-	-	-	-
Others	7	9	13	3	7	5	6	8	14	11
TOTAL	**54**	**36**	**54**	**47**	**39**	**83**	**94**	**61**	**97**	**44**

* 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 13 (33.33% of the total) fatal accidents due to ground movement in the year 2012 as compared to 7 (15% of the total) fatal accidents due to ground movement in the year 2011.

3.2.2.1A Roof fall Accidents

There was 3 fatal accident occurred due to roof fall during the year 2012 in non-coal mines.

3.2.2.1B Side fall Accidents

There were 10 fatal accidents occurred due to side fall during the year 2012 in non-coal mines.

3.2.2.2 Transportation machinery (Winding)

One accident reported due to transportation machinery (winding) due to worker slip and fell down on the floor during he year 2012.

3.2.2.3 Transportation machinery (other than winding)

There were altogether 6 accident involving 6 fatalities due to transportation machinery (other than winding) during the year, 2012.

The cause wise details are given below.

TABLE-40	FATAL ACCIDENTS DUE TO TRANSPORTATION MACHINERY(OTHER THAN WINDING) IN NON COAL MINES IN YEAR 2012		
Sl. No.	Causes	Fatal	Persons Killed
1.	Rope Haulages	1	1
2.	Conveyors	-	-
3	Dumpers	3	3
4	Wheeled Trackless(Truck,Tanker etc.)	2	2
5.	Others	-	-
	Total	**6**	**6**

Rope Haulage:

One accident occurred due to rope haulage.

Conveyor:

No accident occurred due to Conveyor.

Dumpers/Tipper;

3 accidents occurred causing 3 fatalities due to truck & tanker contributing 50% of total accidents.

Truck & Tanker :

Two accidents occurred causing two fatalities due to truck & tanker contributing 33.33% of total accident.

Other (Wagon):

No accident occurred due to this cause.

3.2.2.5 Accidents due to machinery other than transportation machinery.

TABLE-41		Fatal accidents due to machinery other than transportation machinery in Non-Coal mines during 2012	
Sl. No.	**Causes**	**No. of fatal accidents**	**Persons killed**
1.	Drilling Machine	-	-
2.	Excavator/loader	1	1
3.	Crane	1	1
4.	Crushing Plant	1	1
5.	Other HEMM	-	-
6.	Others Non-Transportation Machinery	2	2
Total		**5**	**5**

It is seen that most of the accident due to machinery and other machinery were causing due to operator's negligence, indiscipline and lack of supervisions. Improved standard of training and education of workers are necessary to control such accidents. Some cases the equipment failure was observed due to poor maintenance. Higher standard of maintenance of machinery in the opencast sector are required to be stressed upon.

Table: 42 - Detail break-up of serious accidents due to this cause during 2012.

TABLE : 42	**BREAK-UP OF SERIOUS ACCIDENTS DUE TO MACHINERY OTHER THAN TRANSPORTATION MACHINERY IN NON-COAL MINES DURING 2012**			
Cause	Number of serious accidents			
	Belowground	Opencast	Aboveground	Total
Drilling Machine	-	2	-	2
Cutting Machines	-	-	-	-
Loading Machine	-	1	-	1
Shovels, draglines, excavators etc.	-	-	-	-
Crushing & screening plants	-	-	-	-
Other HEMM	-	1	1	2
Others	-	1	2	3
TOTAL	**-**	**5**	**3**	**8**

3.2.2.5 Explosives

4 (10% of the total) fatal accidents involving 4 fatalities & one serious accident(2.27%) involving 4 persons occurred due to explosive during the year 2012.

3.2.2.6 Electricity

No fatal accident occurred due to electricity during the year 2012.

3.2.2.7 Dust, Gas & other combustible material

No fatal and no serious accidents occurred due to Dust, Gas & other combustible materials during the year 2012.

3.2.2.8 Falls other than falls of ground

9 (23% of the total) fatal accidents involving 9 persons and 20 serious accidents involving 20 persons occurred due to this cause during the year 2012,

3.2.2.9 Other causes

There was 1 (2.56% of the total) fatal accidents involving 3 fatalities and 2 serious accidents involving 2 persons occurred due to miscellaneous causes during the year 2012.

3.3 Responsibility

The responsibilities fixed as a result of fatal accident enquiry conducted by officers of DGMS in the year 2012 is indicated in the table below:

TABLE:43	RESPONSIBILITY FOR FATAL ACCIDENTS IN NON-COAL MINES DURING THE YEAR 2012	
SL. NO.	Responsibility	No. of accidents
1.	Misadventure	2
2.	Management	11
3.	Management, Subordinate Supervisory Staff (SSS)	10
4.	Management, SSS & Co-worker	-
5.	Management, SSS & Shotfirer	-
6.	Management, SSS & Deceased	-
7.	Management & Co-worker	2
8.	Management & Deceased	-
9.	Subordinate Supervisory Staff (SSS)	4
10.	Subordinate Supervisory Staff (SSS) & Deceased	1
11.	Co-Worker	-
12.	Co-Worker & Deceased	1
13.	Deceased	3
14.	Others	5
	TOTAL	**39**

3.4 Dangerous Occurrence

The table indicated below gives dangerous occurrences reported during the year 2012 under various causes:

TABLE:44	DANGEROUS OCCURRENCES IN NON-COAL MINES DURING 2012	
Sl.No.	**Cause**	**No. of cases**
1.	Overwinding of cages, skip of bucket etc.	-
2.	Outbreak of fire belowground	2
3.	Outbreak of fire on 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.	Rock burst	-
10.	Irruption of water	-
11.	Bursting of equipment under high pressure	-
12.	Oil well blowout without fire	-
13.	Fire in pipeline/well heads	-
14.	Others	5
	TOTAL	**9**

3.5 Technical Developments

Total numbers of mines working by deploying HEMM is 943. Total number of machines and capacity of shovels and dumpers used in mines have been increased. The following table shows the different types of machines deployed in mines since 2001.

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
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
2010	812	88	2258	2346	8370	2452	13146	2693511
2011	883	71	2369	2440	9104	3124	14668	2999234
2012*	943	22	2617	2639	9246	3003	14888	3062896

*Figures for the year 2012 are provisional.

Following table shows the various types and quality of explosives used in non-coal mines since 2001.

TABLE:46	TREND IN USE OF EXPLOSIVES IN NON-COAL MINES							
YEAR	Consumption of explosives in tones							
	NG Based	ANFO	LOX	Slurry large dia	Slurry small dia	Booster	Gun powder	Total
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
2010	438	34249	268	54621	7220	369	106	97272
2011	917	32657	63	57942	6200	370	64	98213
2012*	604	37526	50	56939	6505	563	61	102248

*Figures for the year 2012 are provisional.

3.6 Occupational Health & Environments

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

TABLE: 47	PROGRESS OF INITIAL & PERIODICAL MEDICAL EXAMINATION DURING 2012 IN NON-COAL MINES			
Name of Company	Initial Medical Examination		Periodical Medical Exam.	
	Required	Provided	Required	Provided
OIL	188	188	1800	1687
ONGC	2577	2747	7148	3118
MOIL	1291	1291	1404	1404
TATA	875	1133	1401	1399
SAIL	118	118	1649	1285
IREL	699	699	778	769
UCIL	159	159	842	928
HGMCL	0	295	670	372
NMDC	1444	1444	798	869
NALCO	257	257	422	422
BALCO	4	249	300	301
HCL	560	560	610	449
CCIL	0	0	7	7
ACC	188	188	346	624
MML	179	0	456	154
OMC	1393	118	2042	1429
GMDC	17	13	162	299
HZL	0	1273	450	895
RSMM	248	230	164	172
Total	10197	10962	21449	16583

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

TABLE: 48	NUMBER OF NOTIFIED DISEASES DURING 2012 IN NON-COAL MINES	
Mining Companies	Name of disease	Number of cases
MOIL	Noise induced hearing loss	02

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 2012					
Cos.	No. of VT Centers	Basic Training		Refresher Training		Special Training Provided
		Required	Provided	Required	Provided	
OIL	1	0	1047	0	252	271
ONGC	3	4222	2712	515	1187	2348
MOIL	6	618	1136	1171	1326	1805
TATA	4	3214	3214	1000	986	2790
SAIL	8	328	324	1016	1753	584
IREL	3	604	556	493	648	662
UCIL	3	242	242	743	698	310
HGMCL	1	0	250	478	353	49
NMDC	4	1355	1349	745	739	1689
NALCO	1	345	345	62	62	0
BALCO	1	2	247	142	142	22
HCL	4	768	768	817	864	517
CCIL	1	6	6	0	0	0
ACC	8	178	178	192	217	239
MML	3	112	132	433	222	39
OMC	8	1287	184	888	909	40
GMDC	1	805	805	241	227	57
HZL	4	55	1524	266	962	1590
RSMM	4	228	228	10	10	0
Total	68	14369	15247	9212	11557	13012

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 2012					
Name of Company	Welfare Officers		Workmen Inspectors		Safety Committee	
	Required	Provided	Required	Provided	Required	Provided
OIL	6	6	15	15	6	24
ONGC	4	4	102	150	61	64
MOIL	8	9	27	27	9	9
TATA	3	3	14	17	5	5
SAIL	9	9	30	37	10	10
IREL	3	3	9	10	4	4
UCIL	5	5	20	21	6	6
HGMCL	3	3	6	6	1	3
NMDC	4	4	18	18	4	4
NALCO	1	1	3	6	1	1
BALCO	3	3	4	4	2	2
HCL	4	4	13	13	4	4
CCIL	1	1	1	1	1	1
ACC	2	2	9	15	7	11
MML	1	1	2	2	1	1
OMC	13	14	22	19	9	9
GMDC	1	1	12	15	5	5
HZL	7	7	26	21	13	12
RSMM	2	2	4	5	2	2
Total	80	82	337	402	151	177

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					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
Oil	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	3	3	3	3	0.00	0.00	0.12	0.12
	2010	0	0	0	0	4	4	4	4	0.00	0.00	0.14	0.14
	2011	0	0	0	0	5	5	5	5	0.00	0.00	0.18	0.18
	2012	0	0	0	0	2	2	2	2	0.00	0.00	0.07	0.07
Apatite & Rock Phosphate	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	1.02	0.00	0.52
	2010	0	0	0	0	1	1	1	1	0.00	0.00	1.36	0.50
	2011	0	0	1	1	0	0	1	1	0.00	0.80	0.00	0.48
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Asbestos	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	16.67	0.00	7.19
Barytes	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
	2011	0	0	1	1	0	0	1	1	0.00	2.81	0.00	1.68
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Bauxite	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
	2011	0	0	1	1	0	0	1	1	0.00	0.17	0.00	0.15
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
China Clay, Clay, White-clay	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
	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	0.68	0.00	0.36
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	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					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
Chromite	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	0.27	0.28	0.23
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Copper	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	0.53	0.00	0.00	0.33
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	1	1	1	1	0.00	0.00	0.83	0.31
	2012	1	1	0	0	0	0	1	1	0.55	0.00	0.00	0.31
Dolomite	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	0.51	0.00	0.34
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Felspar	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	4	0	0	1	4	0.00	24.10	0.00	21.39
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	6.71	0.00	5.88
Galena & Sphalarite	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	0.59	0.29
	2011	0	0	1	1	2	3	3	4	0.00	1.41	1.52	1.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Garnet	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	4.39	0.00	4.17
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gold	2005	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					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
	2006	1	1	0	0	0	0	1	1	0.63	0.00	0.00	0.32
	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	0.65	0.49
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Granite	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	0.46	0.00	0.35
	2010	0	0	7	20	1	1	8	21	0.00	2.75	0.50	2.26
	2011	0	0	8	9	1	1	9	10	0.00	1.12	0.43	0.96
	2012	0	0	4	4	0	0	4	4	0.00	0.50	0.00	0.38
Graphite	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gypsum	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Iron	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	0.22	0.10	0.17
	2010	0	0	7	9	2	2	9	11	0.00	0.34	0.10	0.23
	2011	0	0	3	3	1	1	4	4	0.00	0.10	0.04	0.08
	2012	0	0	2	2	2	2	4	4	0.00	0.07	0.08	0.08
Limestone	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	2	2	0	0	2	2	0.00	0.09	0.00	0.07
	2010	0	0	4	5	0	0	4	5	0.00	0.23	0.00	0.18
	2011	0	0	3	3	2	2	5	5	0.00	0.13	0.33	0.17
	2012	0	0	5	5	0	0	5	5	0.00	0.22	0.00	0.17
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

Mineral	Year	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	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	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	0.45	0.00	0.43
Manganese	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	0.92	0.00	0.00	0.14
	2011	2	2	1	1	0	0	3	3	0.70	0.13	0.00	0.19
	2012	2	2	1	1	1	1	4	4	0.70	0.13	0.20	0.25
Marble	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	4	5	0	0	4	5	0.00	3.47	0.00	2.67
	2010	0	0	9	16	1	1	10	17	0.00	10.55	2.77	9.05
	2011	0	0	8	8	0	0	8	8	0.00	5.24	0.00	4.14
	2012	0	0	3	5	0	0	3	5	0.00	3.27	0.00	2.59
Mica	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	2	2	0	0	0	0	2	2	6.97	0.00	0.00	3.02
Quartz	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	2.34	0.00	1.94
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sandstone	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	1.17	0.89
	2010	0	0	0	0	2	2	2	2	0.00	0.00	5.17	2.74
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sillimanite	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	Fatal Accidents								Death Rate per 1000 persons			
		Belowground		Opencast		Aboveground		Total					
		Acc	Killed	Acc	Killed	Acc	Killed	Acc	Killed	BG	OC	AG	TOTAL
	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	0.57	0.28
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Steatite	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	4.30	0.28	0.00	0.61
	2010	0	0	1	8	0	0	1	8	0.00	2.09	0.00	1.57
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	0.27	0.00	0.20
Stone	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	5	11	0	0	5	11	0.00	2.20	0.00	1.52
	2010	0	0	2	2	1	1	3	3	0.00	0.40	0.46	0.42
	2011	0	0	5	8	1	2	6	10	0.00	1.62	0.94	1.42
	2012	0	0	8	8	1	1	9	9	0.00	1.62	0.47	1.28
Vermiculite	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	30.30	0.00	24.39
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Wollastonite	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	1.34	0.00	1.03
Non-Coal	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	25	32	7	7	36	44	0.60	0.32	0.09	0.24
	2010	4	4	35	72	15	15	54	91	0.44	0.71	0.18	0.47
	2011	2	2	32	36	13	15	47	53	0.20	0.34	0.18	0.26
	2012	5	5	28	30	6	6	39	41	0.51	0.29	0.07	0.20

BG – Belowground OC- Opencast AG- Aboveground

Note : Figures for the year 2012 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					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
Oil	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	18	18	18	0.00	0.00	0.72	0.72
	2010	0	0	0	0	16	17	16	17	0.00	0.00	0.58	0.58
	2011	0	0	7	7	23	23	30	30	0.00	0.00	0.84	1.10
	2012	0	0	1	1	9	9	10	10	0.00	0.00	0.33	0.37
Apatite & Rock Phosphate	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	0.84	0.00	0.50
	2011	0	0	3	3	1	1	4	4	0.00	2.40	1.38	1.94
	2012	0	0	1	1	0	0	1	1	0.00	0.80	0.00	0.48
Asbestos	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Bauxite	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	0.17	0.00	0.15
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
China Clay, Clay, White-clay	2005	0	0	1	1	0	0	1	1	0.00	0.54	0.00	0.31
	2006	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Chromite	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
	2011	1	1	1	1	0	0	2	2	0.74	0.28	0.00	0.22
	2012	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					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
Copper	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	2.11	15.69	0.00	2.61
	2010	3	3	0	0	0	0	3	3	1.77	0.00	0.00	1.03
	2011	8	8	0	0	1	1	9	9	4.38	0.00	0.83	2.75
	2012	0	0	0	0	1	1	1	1	0.00	0.00	0.83	0.31
Diamond	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	28.57	0.00	8.26
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Dolomite	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	0.94	0.33
	2010	0	0	1	1	0	0	1	1	0.00	0.51	0.00	0.34
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	1	1	2	2	0.00	0.54	0.87	0.67
Galena & Sphalarite	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	15	18	1	1	8	9	24	28	14.14	2.07	5.60	8.33
	2010	2	2	2	2	3	3	7	7	1.54	4.13	1.76	2.01
	2011	7	7	3	3	5	10	15	20	5.32	4.24	5.07	5.01
	2012	4	4	1	1	1	1	6	6	3.04	1.41	0.51	1.50
Gold	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	11	11	0	0	4	4	15	15	22.04	0.00	2.62	7.40
	2010	6	6	0	0	5	5	11	11	3.91	0.00	3.33	3.62
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Granite	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	0.69	0.00	0.54
	2011	0	0	2	2	0	0	2	2	0.00	0.25	0.00	0.19
	2012	0	0	1	1	0	0	1	1	0.00	0.12	0.00	0.10
Graphite	2005	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					
		Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	Accident	S/Inj	BG	OC	AG	Total
	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
	2011	0	0	1	1	0	0	1	1	0.00	3.21	0.00	3.07
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Iron	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	0.25	0.67	0.42
	2010	0	0	4	4	5	5	9	9	0.00	0.15	0.24	0.19
	2011	0	0	15	15	5	5	20	20	0.00	0.52	0.21	0.38
	2012	0	0	5	5	1	1	6	6	0.00	0.17	0.04	0.11
Limestone	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	0.15	0.14
	2010	0	0	2	3	1	1	3	4	0.00	0.14	0.16	0.14
	2011	1	1	3	3	1	1	5	5	0.00	0.13	0.16	0.17
	2012	0	0	3	3	1	1	4	4	0.00	0.13	0.16	0.14
Magnesite	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	6.33	0.42
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	1	1	0	0	1	1	0.00	0.45	0.00	0.43
	2012	0	0	1	1	0	0	1	1	0.00	0.45	0.00	0.43
Manganese	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	0.44	0.00	0.27	0.15
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	2	3	0	0	0	0	2	3	1.05	0.00	0.00	0.19
	2012	5	5	0	0	0	0	5	5	1.74	0.00	0.00	0.32
Marble	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	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	0.66	0.00	0.53
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sandstone	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

Mineral	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	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
	2011	0	0	1	1	0	0	1	1	0.00	2.82	0.00	1.35
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Silica	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
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sillimanite	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	1.14	0.55
	2011	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2012	0	0	1	1	0	0	1	1	0.00	0.56	0.00	0.26
Steatite	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
	2010	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
	2011	0	0	1	2	0	0	1	2	0.00	0.54	0.00	0.41
	2012	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Stone	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	3	0	0	0	3	0.00	0.60	0.00	0.41
	2010	0	0	0	2	0	0	0	2	0.00	0.40	0.00	0.28
	2011	0	0	0	3	0	1	0	4	0.00	0.61	0.47	0.57
	2012	0	0	0	4	0	0	0	4	0.00	0.81	0.00	0.57
Atomic Mineral	2005	2	2	0	0	1	1	3	3	NA	NA	NA	NA
	2006	4	4	0	0	0	0	4	4	NA	NA	NA	NA
	2007	1	1	0	0	0	0	1	1	NA	NA	NA	NA
	2008	1	1	0	0	1	1	2	2	NA	NA	NA	NA
	2009	2	2	0	0	1	1	3	3	NA	NA	NA	NA
	2010	1	2	1	1	1	1	3	4	NA	NA	NA	NA
	2011	3	3	1	1	0	0	4	4	NA	NA	NA	NA
	2012	6	6	0	0	0	0	6	6	NA	NA	NA	NA
Non-Coal	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

Mineral	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
	2008	14	15	13	23	56	82	83	120	1.65	0.24	1.12	0.67
	2009	33	36	13	19	48	49	94	104	4.34	0.19	0.64	0.56
	2010	12	13	16	21	33	34	61	68	1.44	0.21	0.41	0.35
	2011	22	23	39	43	36	42	97	108	2.35	0.41	0.49	0.54
	2012	15	15	15	19	14	14	44	48	1.53	0.18	0.16	0.24

BG- Belowground OC- Opencast AG- Aboveground

N.A. = Employment Figures not Available.

Note : i) Figures for the year 2012 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 2012.

Equipment, appliances, materials and machinery approved during the year 2012		
Sl. No.	Equipment/appliances/materials/ machinery	No. of approvals granted/renewed/ extended during the year
1.	Methanometer	0
2.	Helmet	6
3.	Cap Lamp	7
4.	Footwear	19
5.	Gas Detector/Monitor	5
6.	Cap Lamp Bulb	0
7.	Ventilation ducting	2
8.	Co detector tubes/aspirator	0
9.	Environmental monitoring system	1
10.	Safety goggles	1
11.	Ear plug	1
12.	Visibility harness	1
13.	Dust Respirator (Mask)	1
14.	Full Body Harness/Safety Belt	0
15.	Flame Safety Lamp	1
16.	Noise Dosi-Meter	0
17.	Brattice Cloth	0
18.	Self-rescuers	0
19.	Breathing Apparatus	2
20.	Resuscitator/Reviving Apparatus	1
21.	Hydraulic props	3
22.	Powered support & its components	1
23.	STDA Legs	1
24.	Explosives	12
25.	Exploders	2
26.	Detonators	16
27.	Flame proof equipment - motor, switches, circuit breakers etc	126
28.	Intrinsically safe apparatus	35
29.	Equipment for use in hazardous area	0
30.	Cables	40
31.	Gas Detector and Monitor	1
32.	Cage suspension gears	7
33.	Fire resistant conveyor belting	0
34.	Automatic contrivance/Power break & emergency stock valve	3
35.	Man riding system	4
36.	Fire resistant hydraulic fluid	7
37.	High pressure hose	4
38.	Accreditation of Test House	1
39.	Chair lift system	0
40.	Top man emergency escape device & escape line	0
41.	Audio Video Alarm	0
42.	Winding Rope	0
43.	Automatic Recording Speed Indicator	1
44	Man riding chair lift system	4
45	Dust control system	3
	TOTAL	**320**

5.0 Coal & Metalliferous Mining Examinations during 2012

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

Shri S Puri	Director General of Mines Safety
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 Limited
Shri Pradip Kumar Roy Chowdhury,	Director (Technical) Operations, M/s South Eastern Coalfields Limited,

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

Shri S Puri	Director General of Mines Safety
Dr. Bal Krishna Shrivastva,	Professor & Coordinator, Centre of Advanced Studies, Department Of Mining Engineering, Institute of Technology, Banaras Hindu University,
Shri Diwakar Acharya,	Shri Diwakar Acharya, Chairman & Managing Director M/s. Uranium Corporation of India Ltd.,
Dr. Upendra Kumar Singh,	Dr. Upendra Kumar Singh, Professor, Department of Mining Engineering, Indian School of Mines University,
Shri Narendra Kumar Nanda	Shri Narendra Kumar Nanda,Director (Technical) NMDC Limited.
Shri Avijit Ghosh	Shri Avijit Ghosh, Director(Mining) Hindustan Copper Limited,Tamra Bhavan,

Examiners for Certificates of Competency

Coal Mining Examinations

(a) Following were the Examines for Manager's Certificates of Competency Examinations held in 2012.

Subject	First Class manager's Certificate	Second Class Manager's Certificate
Mine Management, Legislation & General Safety	Shri R B Chakraborty	Shri P. K. Sarkar
Winning & Working	Shri C. B Sood	Shri J. P. Singh
Mine Ventilation	Shri S. K. Jagnania	Shri S S. Malhi
Mining Machinery & Electricity	Shri R.R. Sharma	Shri S. Ghosh
Mine Surveying	Shri B. B. Sood	Shri S. M. Daithankar

(b) Following were the Examiners for Surveyor's Certificate of Competency Examinations held in 2012.

Surveying Paper-I	Shri G V Kumar
Surveying Paper-II	Shri S. Rajoria

(c) Following were the Examiners for Overman's Certificate of Competency Examinations held in 2012.

Paper-I	Shri P. C. Rajak

Metal Mining Examinations

(a) Following were the Examiners for Manager's Certificates of Competency Examinations held in 2012.

Subject	Ist Class manager's Certificate (Un-Restricted)	IInd Class Manager's Certificate (Un-Restricted)
Mine Management, Legislation & General Safety	Shri P. K. Sarkar	Shri B P Ahuja
Winning & Working	Shri S.C.Bhowmick	Shri A Gade
Mine Ventilation, Explosion, Fires & Inundation	Shri A . K. Lal	Shri M. Kundu
Mining Machinery	Shri R. R. Kumar	Shri L.S.Sekhawat
Mine Surveying	Shri P. N..Sarkar	Shri M.Paliwal

Subject	Ist Class manager's Certificate (Restricted)	IInd Class Manager's Certificate (Restricted)
Mine Management, Legislation & General Safety	Shri R.B.Chakraborty	Shri A Biswas
Winning & Working	Shri S.K.Bhattacharya	Shri L.N.Mathur
Mining Machinery	Shri H S Rathore	Shri R.K.Udge
Mine Surveying	Shri A.N.Joshi	Shri R.G.Sathe

(b) Following were the Examiners for Surveyor's Certificate of Competency Examinations held in 2012

Subject	Un-Restricted	Restricted
Paper-I	Shri G V Kumar	Shri A.K.Sahay
Paper-II	Shri P.K.Padhi	

(c) Following were the Examiners for Foreman's Certificate of Competency Examinations held in 2012.

Subject	Un-Restricted	Restricted
Paper-I	Dr A K Sinha	Shri P .C. Rajak

Following were the Examiners for Exchange Certificate of Competency Examinations held in 2012.

Examination	Examiner
First Class Metal(Coal to Metal)	Shri S I Hussain, DDG,SCZ
Second Class(Metal to Coal)	Shri P. Ranganatheeswar, DMS
First Class Coal(Metal to Coal)	Shri P. K.Sarkar, DDG(NZ)
Mine Mate (unrestricted)	S/shri V. Kalundia,DDMS, Manoj Kumar, Manager, Jadugoda Mines and K. Mondal, Manager Banduhurang Mine

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

6.0 National Safety Awards (Mines)

6.1 Introduction

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

6.2 Scope

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

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

6.3 Schemes

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

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

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

It is expected that every mine shall endeavor 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 as member 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 2008, 2009 & 2010 was given away on 21st November 2012 at New Delhi by the Hon'ble 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 the status of the safety in mines 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 Conference was held in the year 1958 and the tenth conference was held on 26th and 27th November, 2007 at New Delhi. A number of recommendations of these conferences have been given statutory backing and most of the others have been absorbed in management practices and policies.

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:

Mine Accident Analysis and Information Database

- To mitigate risk of disasters and accidents in mines through detailed analysis of accidents and dangerous occurrences using risk assessment and management techniques and activate promotional channels ;

- Identification of mines having highest risk of accidents/disasters through detailed investigation into the operating systems and environment in the mine and prepare a Risk Management Plan for such mines for implementation; and

- Dissemination of mine information system though various reports, technical instructions' guidelines, circulars on electronic as well as other conventional media.

The major activities taken up during the year included –

- Publication of Annual Report, 2010 and compilation of Annual Report for the year 2011.
- Publication of Standard Note on DGMS as on 1.1.2012
- 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), 2009
    - Statistics of Mines in India, Vol.II (Non-Coal), 2009
    - Monthly Review of Accidents and
    - Report on Monthly Inspection Analysis
- National Safety Awards (Mines) for the contestant years 2008, 2009 and 2010 were given away on 21st November, 2012 at New Delhi by the Hon'ble President of India..
- Risk Assessment in five coal mines, two non coal mines & in two oil mines has been carried out.
- Video spot was developed with regard to awareness generation for occupational and health on Silicosis through NFDC, New Delhi & it was broadcasted by Prasar Bharti, New Delhi.
- Training was provided to newly recruited Deputy Director of Mines Safety on inspection & Enquiry procedures.

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 the 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.

Details of achievement during January to December, 2012:

SN	Activity	Achievement
A. S&T Cell		
1.	Mine Environment & Fire	14
2.	Occupational Health Review, Survey & Medical Exam. Etc.	06
3.	Ground Control	07
4.	Mine Mechanization	-
5.	Additional Job: Gas Analysis	-
6.	Testing of FRHF (Fire Resistant Hydraulic Fluid)	-
B. Development of Mines Rescue Services		
1.	Testing of Filter Self-Rescuer	-
2.	Testing of Self-contained Self-rescuer (SCSR)	-
3.	Rescue competition	07
4.	Field visits	-
5.	Organization of conference on Rescue/Recovery experience	-
6.	Monitoring of First aid competition	-
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		
i.	Conduct of training Programmes: i. DGMS Officers ii. Key Personnel from mining industry iii. Workmen's Inspectors	 67 199 79

6.3 e-Governance in Directorate General of Mines Safety [e-DGMS]"

(A) Objective of the Project/ Scheme :

- Re-engineer work processes to change governance pattern for simplicity, transparency, productivity and efficiency.
- Transform from process bound System to Computerized Automated System.
- Provide Dedicated Network Facility for Data, Audio-Video and Mail messaging with Online Interactive Communication and Data Processing System.
- Computerize Mines Safety Examination & Certification System.
- Develop National Mines Safety & Health Resource Centre.
- Develop National Mine Safety & Disaster Management Newwork.

(B) Scope :

The Scheme envisages to completely computerize work flow system and procedures to be web enabled with facilities of on-line interactive. In order to achieve the objective, it is proposed to develop infrastructure facilities such as Local Area Network (LAN), Wide Area Network (WAN) and dedicated network facilities supported by Data Centres as well as Data Recovery Centres.

The following subjects shall be undertaken for computerization on priority :

- Mines Safety Examination & Certification System
- Inspections, Enquires and Compliance Tracking System
- Permissions, Approvals, Standards & Testing System
- Mines Statistical Information & Analysis System
- National Archieves of OSH in Mines and Disaster Control & Management
- Budget and Finance Management System
- Other Associated Systems

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