REPORT

OF

THE WORKING GROUP

ON

OCCUPATIONAL SAFETY AND HEALTH

FOR

THE TWELFTH FIVE YEAR PLAN
(2012 TO 2017)

GOVERNMENT OF INDIA
MINISTRY OF LABOUR AND EMPLOYMENT

AUGUST – 2011

ACKNOWLEDGEMENT

A Working Group under the chairmanship of Shri P. C Chaturvedi, Secretary, Ministry of Labour and Employment, Government of India, was constituted by Planning Commission to prepare the 12th Five Year Plan on Occupational Safety and Health at the workplace. To work on the terms of reference assigned for preparing the 12th Five Year Plan report, in respect of three major sectors of economic activity namely mining sector, factories & docks and unorganized sector.

In accordance with the specific provisions for ensuring OSH for working population in the Constitution of India, several legislations have been framed dealing with the safely, health and welfare of the workers employed in the organised sector. The Working Group report has made incisive observations regarding the present OSH scenario and offered insightful recommendations for legislative measures and other pragmatic interventions to make sustainable changes and to make significant difference in OSH status in the country by the end of 2017.

The report is a document of action-focussed legislative and pragmatic interventions to transform the existing state of OSH in the country both in the formal and informal sectors of economic activity through proactive approaches and implementation of the National Policy on Safety, Health and Environment at Workplace by all stake holders

I on behalf of the Working Group express my deep sense of gratitude to Shri P. C. Chaturvedi, Secretary and Shri Ravi Mathur, Additional Secretary, Ministry of Labour and Employment for their perceptive observations, continuous support and encouragement in the process of completion of the report.

I would like to convey my thanks to Shri. Satish Puri, DG, DGMS; Dr. Rajaram DDG and HOD, DGFASLI; representatives of the Employers and Employees, members of the Working Group on OSH for the 12th Five Year Plan who shared their experience and expertise from varied disciplines of occupational safety and health. I gratefully acknowledge the invaluable help and cooperation extended by Ms Vandana Sharma, Director, Ministry of Labour & Employment, ISH Section, Shri B.P. Singh Director (HQ) DGMS, Shri S. B. Mathur DDG, DGFASLI and Shri H. Vishvanathan, Director (Safety) DGFASLI, Mumbai.

A. C. PANDEY,
Joint Secretary,
Ministry of Labour and Employment
and Convenor

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INTRODUCTION

CHAPTER ONE

INTRODUCTION

1.1 The constitution of India enshrines detailed provisions for the rights of the citizens and other persons and for the principles in the governance of the country labeled as "Directive Principles of State Policy".

1.2 These Directive Principles provide for securing the health and strength of employees, men and women, that the tender age of children are not abused, that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength (Article 39), just and humane conditions of work and maternity relief are provided (Article 42), that the Government shall take steps, by suitable legislation or in any other way, to secure the participation of employee in the management of undertakings, establishments or other organizations engaged in any industry (Article 43A), for ensuring that no child below the age of 14 is employed to work in any factory or mine or engaged in any other hazardous employment (Article 24).

1.3 On the basis of these Directive Principles and international instruments, the Government of India declares its policy, priorities, strategies and purposes through the exercise of its power. The Government is committed to regulate all economic activities within the country with a view to ensuring that every working employee is provided with safe and healthful working conditions. Accordingly, Govt. of India enacted the statutes relating to Occupational Safety & Health (OSH) at workplaces namely The Mines Act, 1952 and Rules and Regulations framed thereunder; The Factories Act, 1948 and Rules framed thereunder; Dock Workers (Safety, Health and Welfare) Act, 1986 and Regulations and Rules framed thereunder; The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and Rules framed thereunder; The Dangerous Machines (Regulation) Act, 1983 and Rules framed thereunder; The Insecticides Act, 1968 and Rules framed thereunder; The Shops and Establishments Act of State Governments; The Beedi and Cigar Workers' (Conditions of Employment) Act, 1966; The Municipal Solid Waste (Management and Handling) Rules, 2000 notified under the Environment (Protection) Act, 1986; The Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989; The Electricity Act, 2003 etc. These are some of the important statutes covering OSH aspects of workers.

At present, comprehensive safety and health statutes for regulating OSH at work places exist only in respect of the four sectors namely, mining, factories, ports, and construction.

1.4 Under the Constitution of India, Labour is a subject in the concurrent list where both the Central and the State Governments are competent to enact legislation subject to certain matters being reserved for the Central Government. Occupational Safety and Health is one of the subjects allotted to Ministry of Labour & Employment under the Government of India Allocation of Business Rules. The Ministry of Labour & Employment, Govt. of India & Labour Departments of the States and Union Territories are responsible for the safety & health of the workers. Directorate General of Factory Advice Service & Labour Institutes (DGFASLI) and Directorate General

of Mines Safety (DGMS) assist the Ministry in the technical aspects of Occupational Safety & Health in factories & port sectors and mines respectively.

1.5 DGFASLI is an attached office of the Ministry of Labour & Employment, Government of India and serves as a technical arm to assist the Ministry in formulation of national policies on OSH in factories and ports. It is responsible for coordination and implementation of the measures under the Factories Act, 1948 by the State Governments and formulation of Model Rules thereunder. It is also concerned with the administration of the Dock Workers (Safety, Health and Welfare) Act, 1986 in respect of 12 major ports in the country. It undertakes research and consultancy studies in Industrial Safety, Occupational Health, Industrial Hygiene, Industry Psychology and Industrial Physiology, in addition to safety audits. It provides training to the Inspectors of Factories (Enforcement Authorities) and various target groups from the factories including statutory long duration courses for safety officers, factory medical officers and supervisors engaged in hazardous process industries. These activities are carried out at the headquarters located at Mumbai and five Labour Institutes at Mumbai, Chennai, Kolkata, Kanpur & Faridabad.

1.6 DGMS is a subordinate office of the Ministry of Labour & Employment. The organisation has its headquarters at Dhanbad (Jharkhand) with field offices spread all over the country. With the exponential growth in mineral sector, increased number of mines coming into existence during past few years and a prospective planning to meet the growing demands of energy, steel, cement, aluminum and other industries, more and more number of coal, oil and gas and other mineral blocks have been allocated to both public and private sectors including Multi-National Companies (MNCs) by various Ministries and Departments of the Government of India. This necessitated the Ministry to review the existing set up of DGMS and an expansion and re-organisation programme was undertaken in 2008 and the number of zonal offices was increased from six to eight and regional offices from twenty one to twenty nine. The entire country is now divided into eight zones and under each zone there are three to four regional offices. There are twenty nine such regional offices and three sub-regional offices in the country.

Total 196 numbers of new posts has been created in DGMS thereby 105 numbers of Inspecting Officers have been added to the organisation. Besides having inspecting officers in mining cadre, officers in electrical, mechanical and occupational health cadre are also provided.

1.7 The mechanism for enforcement of the provisions of occupational safety, health and welfare statute in mines includes inspection of mines, inquiry into accidents, surveys, grant of permissions & exemptions, approvals, etc. In addition, Non-statutory promotional measures like National Conference on Safety in mines, National Safety Awards in mining, observance of Safety Weeks, promoting self regulation through Internal Safety Organisation and awareness programme are undertaken by DGMS. Certain advisory initiatives are also undertaken by DGMS through dissemination of information by issuing circulars, development of guidelines & standards and interaction in different bipartite and tripartite fora.

1.8 The First Mines Act came into being in 1901. The Act was repealed in 1923 and 1952. The present Mines Act was promulgated in 1952 and was amended in 1959 and

1983. Mines Act, 1952 is in the process of amendment, which is likely to be completed soon. This Act is administered by Directorate General of Mines Safety under the Ministry of Labour and Employment. The Act empowers the Central Government to make Regulations and Rules elaborating the objectives of the Act under various enabling provisions. The Act extends to whole of India up to the limits of territorial waters but does not extend up to the continental shelf, exclusive economic zone and other maritime zones, which has been included in the proposed amendments.

1.9 In India, 89 minerals are being produced by operating 569 coal mines, 67 oil and gas mines and 1770 non-coal mines (which are submitting returns) and many more small mines, may be more than a lakh, which are very small in size, capacity and infrastructure. The total direct employment in mining industry in India is about 1 million on a daily average basis. The trend of fatal accidents and fatality rate per thousand persons employed at ten yearly average is declining. The average number of fatal accidents in coal mines which was 162 during 1981-90 and 140 during 1991-2000 has reduced to 86 during 2001-2010 i.e. it has come down from three digits to two digits. Similarly, the fatality rate in coal mines has also declined from 0.34- 0.33 during 1981-90 and 1991-2000 to 0.27 during 2001-2010.

However, the matter of serious concern is the occurrence of disasters at regular intervals in coal mines, mostly in underground mines and also in some of the metalliferous mines i.e. irons ore, soapstone and granite mines. The frequency of occurrence of disasters due to explosion has alarmingly increased in the recent past. Serious injuries in mines show a steady decline. While analysing accidents in details, it could be seen that causes of accidents repeat themselves in a disturbing manner. The other yardstick of safety status could be the contraventions of statutory provisions observed during inspections, which show that similar contraventions are repeated regularly.

Moreover, the persons employed in mines are exposed to number of hazards at workplace which adversely affect their health. Some of the important ones are dust, noise, vibrations, heat, humidity etc. Surveys conducted in few selected mines by DGMS show that a significant number of persons employed in the mines are suffering from occupational diseases including Silicosis, Coal Workers' Pneumoconiosis, Noise Induced Hearing Loss, etc. Because of the acute shortage of Occupational Health Inspectors, a complete picture of the occupational health status in mines is not available and there is a strong need to undertake occupational health survey in a big way as per the International standards and guidelines. This will help in assessment of the situation and to identify the thrust areas in this regard.

Fresh initiatives such as mechanization to reduce personal exposure to risks, standardization and testing of materials, equipment including personal protective equipment (PPE), use of latest instruments and system in environmental monitoring, use of Slope Stability Radars (SSRs) for pit and dump slope monitoring in large opencast mines and many other technology (Continuous Miner with Shuttle Car, Longwall and Highwall Mining in underground coal mines) have been undertaken and approved by DGMS to improve the working conditions and safety in mines. In addition, to make the statutory provisions more effective and prohibitive to violation, the duties and responsibilities of owner and agents have been redefines and clearly

specified and the provisions of fines and penalty which are very less because it was not amended since 1952, have been proposed to be enhanced in the proposed amendments of the Mines Act, 1952.

Similarly, the Coal Mines Regulations, 1957, Metalliferous Mines Regulations, 1961 and the Oil Mines Regulations, 1984 made under the Mines Act, 1952 are in the process of amendments in which all the aspects of new technology, system, machinery, risk assessment and management, disaster control, management and emergency response, occupational health risks and management etc. have been included.

In addition, more and more information dissemination through circulars, technical updates, annual reports, training programmes etc. is being done to extend the area of workers participation is safety management and improve the status Occupational Safety, Health (OSH) and Welfare of persons working in the mines and to those residing in the vicinity thereof.

1.10 As per the data available, the number of working factories for the years 2003 to 2007 has increased by about 46% with the increase in average daily employment from 4.92 million to 8.02 million. The number of injuries also decreased by about 7% i.e. from 16,432 to 15,290 however the fatalities during the period increased from 525 to 821. It may be noted that the frequency rate of injuries significantly reduced by about 30% during the above period.

1.11 The number of reportable accidents in major ports from 2003-2007 decreased from 191 to 158 thus registering a decrease of about 17%. The number of fatal accidents also decreased from 29 to 23 thus registering the a decreased of about 20% during the same period.

1.12 There are comprehensive safety and health statutes for regulating safety and health of persons at work exists only in respect of three sectors – namely, factories, docks and construction sectors and these statutes are highly sector-specific. The approach in the statutes is to lay down specific and detailed requirements to prevent risk of injuries in specific operations or circumstances. This lacks uniformity and a well-coordinated approach to safety and health in all sectors of the economy except mining sector. There is a strong need for a general (umbrella) legislation covering safety and health aspects of workers employed in all sectors of economy irrespective of the number of employees employed in those units except mining sector. There is a trend all over the world, except the major mining countries in the world like USA, South Africa, Australia etc., to enact legislation on the subject, which has general applicability to all work-sites. This legislation should be applicable to factories, plantation, ports, construction, unorganized sectors except mining sector and also to such categories of workplaces or work activities as may be notified by Central Government.

Mining, particularly coal mining, is recognized as one of the most hazardous peacetime occupation and cannot be compared with other industries in terms of occupational safety and health requirement mainly because of highly unpredictable and varying nature of working conditions in the mines. India is the third largest producer of coal in the world and there are ambitious targets of production in XIIth Plan and beyond. In spite of many initiatives, the standards of safety in mines have

not yet reached to a worldwide accepted norm of Zero Harm at Workplace. Further, there are periodic occurrences of disasters in coal mines. This calls for fresh initiatives with use of modern technologies and tools, scientific data acquisition, analysis and formulation of action plans on each identified thrust areas, proper implementation and effective monitoring of results. In the area of statutory enforcement, result based inspections and enquiries, compliance tracking system and on-line monitoring of processes are proposed to be undertaken through various plan schemes proposed during the XIIth Five Year Plan.

1.13 In the context of the above occupational safety and health scenario, for the formulation of Twelfth Five Year Plan (2012-2017), the Planning Commission had set up a working group on Occupational Safety and Health under the chairmanship of the Secretary, Ministry of Labour & Employment, Government of India vide their order No. Q20017/7/11-LEM/LP dated 7.4.2011.

(i) **Setting up Working Group on Occupational Safety and Health by the Planning Commission vide the composition of the Working Group**.

1.	Secretary, Ministry of Labour and Employment, Government of India, Shram Shakti Bhavan, New Delhi – 110001.	Chairman
2.	Secretary (or his nominee), Ministry of Agriculture, Government of India, Krishi Bhavan, New Delhi – 110001.	Member
3.	Secretary (or his nominee), Ministry of Mines, Government of India, Shastri Bhavan, New Delhi – 110 001	Member
4.	Secretary (or his nominee), Ministry of Road Transport & Highways, Government of India, Transport Bhavan, 1, Parliament Street, New Delhi – 110 001	Member
5.	Secretary (Labour), Government of Maharashtra, Mantralaya, Room No.620-A, Mumbai 400 032.	Member
6.	Secretary (Labour), Government of Karnataka, M.S. Building, Bangalore – 560 001.	Member
7.	Principal Secretary (Labour) Govt. of Mandhya Pradesh, Mantralaya, Vallabh Bhavan, Bhopal - 462004.	Member
8.	Secregtary (Mines), Government of Jharkhand, HEC, Mantralaya, Project Bldg., Dhurba, Ranchi – 834001.	Member
9.	Secretary (Labour), Government of Rajasthan, Secretariat, Jaipur – 302005	Member
10.	Secretary (Labour), Government of Haryana, Haryana Civil Secretariat, Chandigarh – 160001	Member
11.	Director, National Institute of Occupational Health, Meghani Nagar, Ahmedabad – 380 016.	Member
12.	Director General, National Safety Council, Belapur, Navi Mumbai.	Member
13.	Director General, Indian Council of Medical Research, Post Box No.4911, Ansari Nagar, New Delhi – 110 029.	Member
14.	Director General, Factory Advice Service and Labour Institutes, CLI, Bldg., N.S. Mankiker Marg, Sion, Mumbai-400022	Member
15.	Director General, Mines Safety (DGMS), Dhanbad, Jharkhand - 826001.	Member
16.	Dr. M.K. Pandhe, Vice President, CITU, 13-A, Rouse Avenue, New Delhi - 110002.	Member

17.	Dr. G. Sanjeev Reddy, President, Indian National Trade Union Congress, "Shramik Kendra",4, Bhai Veer Singh Marg, New Delhi - 110001.	Member
18.	Secretary General or nominee, SEWA, SEWA Reception Centre, Opp. Victoria Garden, Bhadra, Ahmedabad-380001.	Member
19.	President nominee, Hiind Mazdoor Sabha, 120, Babar Road, New Delhi - 110001.	Member
20.	President or nominee, Council of Indian Employers, Federation House, Tansen Marg, New Delhi 110 001.	Member
21.	All India Manufacturers' Organisation Jeevan Sahakar 4th floor, Sir Phirozshah Mehta Road, Fort, Mumbai - 400 001.	Member
22.	Shri Chandrajeet Banerjee, Director General, Confederation of Indian Industry (CII), The Mantosh Sondhi Centre, 23 Institutional Area, Lodhi Road, New Delhi - 110003.	Member
23.	Secretary General, FICCI, Federation House, Tansen Marg, New Delhi - 110001.	Member
24.	President or nominee, ASSOCHAM, ASSOCHAM Corporate Office, 1, Community Centre Zamrudpur Kailash Colony, New Delhi - 110048	Member
25.	Adviser (Health) Planning Commission	Member
26.	Joint Secretary (Occupational Safety & Health)	Member
27.	Adviser (Labour, Employment and Manpower), Planning Commission	Member
28.	Additional Secretary (Occupational Safety and Health), Ministry of Labour and Employment, Government of India, Rafi Marg, New Delhi 110 001.	Convener

1.15 TERMS OF REFERENCE OF WORKING GROUP

(a) To review the existing set-up for Occupational Safety and Health in the work place and to suggest ways to improve it.

(b) To examine the efficacy of the administrative machinery under the State Governments to ensure Occupational Safety and Health to the workers in factories and other non-agricultural establishments through the institution of “Factory Inspector” which exists under the Factories Act, 1948 and any other relevant Act(s).

(c) To suggest the modalities for setting up of a National Board of Occupational Safety and Health so as to develop service providers/a band of professionals who are proficient in assessing the health and occupational safety at workplace.

(d) To suggest such other measures as may be necessary to ensure occupational health and safety of workers in (i) the agricultural occupations and (ii) non-agricultural occupations, in particular, workers in non-registered factories, road transport, shops, eating establishments, printing, dyeing, chemical storage and handling, etc.

(e) To suggest ways to improve occupational safety and health practices in low income but high workers density occupation clusters.

(f) To examine the efficacy of regulations concerning the health and safety implemented by Government Departments other than “Labour” such as Explosive Act, Boiler Act, etc.

(g) Any other issue(s) concerning occupational safety and health with the consent of the Chairman of the Working Group.

1.18 Two meetings of the Working Group on the formulation of the 12th Five year Plan for OSH was held on 25-05-11 and 07-07-11 at 11.00 am. in Shram Shakti Bhavan, New Delhi under the Chairmanship of Shri P. C. Chaturvedi Secretary, Ministry of Labour & Employment to discuss and finalise the various schemes to be operated by DGFASLI and DGMS during the XIIth five year plan. The minutes of the two meetings are enclosed as Annexure 1 & 2.

1.19 On the basis of the discussion held and decisions taken in the two Working Group Meetings the reports were consolidated to make the draft of the final Report of the Working Group. This report consists of five chapters. The reports of the Mining, Manufacturing & Port and Unorganized sectors have been incorporated in third, fourth and fifth chapters respectively. The first two chapters contain the Introduction and Executive Summary. For easy reference, summary of the important recommendations made in the Reports on each of the three sectors has been included in the Executive Summary in Chapter 2 of this report. However sector-wise detailed recommendations have been incorporated in the individual reports of the three sectors.

CHAPTER 2

EXECUTIVE SUMMARY

CHAPTER TWO

EXECUTIVE SUMMARY

Occupational Safety and Health at workplaces being a priority area for formulation of activities in the XIIth five year plan, the Planning Commission had set up a Working Group on Occupational Safety and Health (OSH) under the chairmanship of Secretary, Ministry of Labour and Employment Govt.of India.

There are **five chapters** in the report.

In the **first chapter,** a background note on different issues pertaining to OSH in different sectors has been incorporated. A brief introduction of the two executing bodies (DGMS & DGFASLI) looking after the OSH issues has been given.

The reports of Mining, Industry & Port and Un-organised sectors comprise of **chapter three, four and five**, respectively. In the report of each of the three sectors, important issues related to OSH in the specific sector have been dealt with in detail as per the terms of reference of the working group. Each report has incorporated separate chapters on overview of the OSH status, existing set-up in OSH management, constraints in the existing set up along with suggestions for improvement.

Some of the salient recommendations given in the report are as follows:

MININING SECTOR

Directorate General of Mines Safety (GMS) under the Ministry of Labour and Employment is putting all its resources and efforts to ensure that the objective of Zero Harm at Workplace is achieved and the conditions of work in the mines are brought to an international level. The Working Group discussed all aspects of the occupational safety and health for mining sector and suggested following measures to be taken through the plan schemes during the XIIth Plan Period:

1. The amendments of the Mines Act, 1952, Rules and Regulations made thereunder need to be taken on priority to incorporate changes in the ownership, new technology, system, machinery and to ensure proper safety, health and welfare conditions for the contractual workers. Suitable mechanism should be developed in DGMS to effectively enforce such OSH provisions in mines;
2. DGMS should be provided with more manpower and the inspecting officers so that the mines which are left uninspected for years together, are inspected at least once or twice in a year;
3. The Office and Residential buildings in DGMS wherever exist are very old which need frequent repairs and maintenance. New Offices have recently been opened at various places. Many of the Offices of DGMS at various places are in rented accommodations. Adequate provisions need to be made under Civil Works so that the requirements of offices and residential accommodations are properly met;

4. Research and Development works require to be directed towards the expected future scenario in the coal, metalliferous, oil and gas sectors in the country. The R & D work should be focused on identified application research projects in association with national and international institutions through mutual cooperation;

5. In order to reduce the incidence of accidents, disasters and dangerous occurrences in the mines, a special initiative need to be undertaken through use of analytical tools and risk assessment techniques that would be put in places at identified mines so that the expected results are achieved;

6. The hazardous mining sector requires effective emergency response and disaster management system installed at mine level, rescue station level as well as at DGMS level. DGMS require adequate number of vehicles, communication facilities, DMRS Labs and facilities, emergency mobile rescue lab and vans along with other facilities to meet the emergency needs in cases of accidents, disasters and other dangerous occurrences in mines;

7. Suitable strategies should be framed to identify the extent of prevalence of existing occupational diseases as well as identify the emerging health problems to miners and mitigation of the same. For this purpose the existing resources in the mining industry as well as DGMS need to be strengthened both in terms of manpower and infrastructure. International standards in occupational health need to be adopted and strategies formulated for its implementation to properly diagnose and detect silicosis, pneumoconiosis, manganese poisoning, sidderosis and many dustborne diseases including other disease notified under the Mines Act.

8. DGMS will continue to develop standards, testing protocols for critical machinery, equipments, tools and materials. A Center for Standardization, Testing and Certification needs to be developed in DGMS with a National Centre at Dhanbad and its branches at identified locations suitable for metalliferous, Oil & Gas Sectors;

9. The existing system of examination and issue of statutory certificates for the key mining personnel including the mine managers may be upgraded and improved with thrust on uniform standard of examinations, transparency, quick delivery of certificates and fast grievance redressal through computerization and networking. System of On-Line Examination and Certification should be developed and implemented on priority;

10. DGMS is more than 109 years old organisation working in the field of occupational safety, health and welfare in mining in India. It has a huge resource of information in its database. A National Resource and Archives Centre on OSH in Mines should be developed and put in use for public and concerned industries so that the information, technology and system available in the mining sector is effectively used not only for the mining industry but also for other industries;

11. Mines Safety and Health Academy (MSHA) at DGMS, Dhanbad is functioning well and is regularly imparting specialized OSH Training to not only DGMS Officials but also to the Managers, Safety & Ventilation Officers, Supervisors, Workmen's Inspector and members of safety committee from mines through suitably structured training programmes. Necessary centre with modern facilities require to be developed at other places across the country especially for oil & gas sector at Ahmedabad,

Surat, Guahati, Mumbai and Goa; and at Nagpur, Hyderabad and Ghaziabad for mineral and coal sector;

12. The role of proper and sound planning in ensuring better productivity and safety more so in view of introduction of new technology should be well recognized. DGMS should facilitate and encourage mine operators to use new technology and modern machines and system so that not only the productivity increases but also the safety and health of workers;

13. The DGMS should play a pivotal role in safety of mines from the planning stage itself. It has to take active part in development of standard operating procedures and codes of practices particularly those connected with new technology and new mining methods. Suitable system of skill development on selected subjects for DGMS officers should be prepared and officers need to be exposed to national and international training programmes on regular basis;

14. DGMS has to provide guidelines as well as monitor and enforce systematic closure of mines through mine closure plan;

15. Analysis of mine accidents on computer based platform and interlinking such information between the various offices of the DGMS and the industry on electronic format may be devised and implemented;

16. DGMS should develop customized software in a sustained manner on safety information generated through inspection of mines and gainfully use it for improving safety standards in mines. In order to completely computerize the system and work in DGMS an e-Governance scheme should be started on the line of National e-Governance Plan and be completed during the XIIth Five year Plan;

17. Suitable programme should be initiated to properly identify silicosis, pneumoconiosis, and other notified diseases and to see that proper action plan is prepared and implemented to prevent recurrence of such diseases in mines;

18. Special initiatives need to be undertaken to conduct occupational health surveys in unorganized sector's mines and prepare a plan of implementation so that the conditions of occupational safety, health & welfare status of small unorganised sectors mines improve and are brought at par with national level;

19. Risk Analysis Models on identified Risks should be developed through use of modern electronic devices and system. Risk Observatories and Laboratories should be developed in various Zones of DGMS so that the industry is benefited from such studies in DGMS;

20. A Separate MSHA Institute on safety, health and environment in Offshore operations need to be developed at Goa so that it can be easily linked to National Institute of Oceanography and other National and International Institutes connected with Offshore mining of minerals, oil & natural gas in deep sea areas;

Therefore the Working Group recommends for adequate manpower and funds as proposed in each plan schemes of DGMS during 12th Five Year Plan so that the basic purpose of improving the safety, health and welfare of persons employed in the mines is achieved.

MANUFACTURING & PORT SECTOR

Directorate General Factory Advice Service and Labour Institutes (DGFASLI) under the Ministry of Labour and Employment is putting in all its resources and efforts to ensure that the objective of improving the Working Conditions at Workplace in the Manufacturing and Port Sectors is achieved and the conditions of work in these Sectors are brought to an international level. The Working Group discussed all aspects of the Occupational Safety and Health for the Manufacturing and Port Sector and suggested following measures to be taken through the plan schemes during the XIIth Plan Period:

1) Implementation of National Policy on Occupational Safety, Health & Environment at workplace through time bound implementation of its action programme

2) Developing a suitable Accreditation mechanism to recognize institutes and professionals in the area of Occupational Safety & Health.

3) Carrying out amendment to various legislations such as the Factories Act, 1948 and the Dock Workers (Safety, Health and Welfare) Act, 1986 and Regulations 1990. Revising and updating the Model Factories Rules for uniformity and adoption by the respective State Govt.

4) Need for notification of the Rules/Regulations by the State Governments to extend the coverage of the Dock Workers (Safety, Health and Welfare) Regulation 1990 to the non-major ports.

5) Setting up of testing facilities for personal protective equipment (PPE) in Regional Labour Institutes Chennai, Kolkata and Kanpur to carry out testing of the various PPEs such as Helmets, ear plugs and ear muffs, Safety goggles, face masks, hand gloves, safety belts and Safety Harness and Safety Shoes as per the relevant BIS standards.

6) Need to carry out research project to identify, control and eliminate the prevalence of silicosis and asbestoses as per the directions of the Hon'ble Supreme Court and recommendations of National Human Rights Commission.

7) Organised National wide yearly campaigns on various issues such as Respiratory Diseases, Musko Skeleto Disorders, Central Nervous System (CNS), Dermatitis, Noise and Vibration through various awareness programs.

8) To set up risk observatory mechanisms with involvement of researchers, academicians employers and employee involvement.

9) Organising and conducting specialised Seminars/Workshops / Training Programs through involvement of employer and employee representatives aimed at improved OSH performance in the Manufacturing and Port Sector thereby ensuring reduction in the incidence of accidents, injuries , diseases and disasters.

10) Capacity building of DGFASLI Officials and Enforcement Officials of State Factory Inspectorates, including Inspectors Dock Safety of DGFASLI in advanced countries and national institutes of repute.

11) Strengthening of DGFASLI, CLI, RLIs, and State Factory Inspectorates with adequate manpower, infrastructure facilities, research & surveys to carry out

qualitative and quantitative activities in OSH for the benefit of industry and act as a nodal agency in OSH in the industry and port sectors in country.

12) Strengthening of RLI, Faridabad with necessary infrastructure and adequate manpower to cater to the needs of the industry in the Northern States.

13) Need for strengthening of the enforcement system by standardisation of the OSH data and introducing the system of on line-data transfer for creating an effective National OSH data base.

14) Competence enhancement of the key personnel of Major Hazard Installations by providing appropriate technical knowledge and skills and creating positive occupational safety and health culture in the organisation.

15) Ensuring integration of OSH management system in industry based on ILO Guidelines – ILO-OSH 2001 with IS 18001:2000.

Therefore the Working Group recommends for adequate manpower and funds as proposed in each plan schemes of DGFASLI during 12th Five Year Plan so that the basic purpose of improving the safety, health and welfare of workers employed in the Manufacturing and Port Sectors are achieved.

UNORGANIZED SECTOR

1) For the unorganized sector workers various segment-specific occupational, safety and health guidelines need to be developed by multi-disciplinary group of experts taking into account the uniqueness of the socio-cultural context, general characteristics, etc. of the concerned geographical region.

2) Directorate General of Factory Advice Service & Labour Institutes (DGFASLI) and National Safety Council (NSC) in collaboration with the Ministry of Agriculture will review the OSH components of the existing course contents of the Ministry of Agriculture for the training of agricultural workers in the unorganized sector.

3) DGFASLI & NSC will conduct trainers' training programme for agricultural workers in collaboration with the Ministry of Agriculture.

4) NGOs, Institutes, Departments working in the field of unorganized sector need to be identified for creating OSH awareness among the workers.

5) In four or five regions in India, model projects need to be undertaken in collaboration with the NGOs/Institutes wherein the registered unorganized sector workers will undergo regular medical check-up for developing national level Occupational Safety & Health database as a pilot project.

6) To coordinate the pilot project, a special cell with executive power attached to a government department in the Ministry needs to be formed.

CHAPTER 3

MINING SECTOR

CHAPTER – III

OCCUPATIONAL SAFETY & HEALTH – MINING SECTOR

3.1 MINERAL INDUSTRY IN INDIA

Minerals constitute the back-bone of economic growth of any nation and India has been eminently endowed with this gift of nature. There is much evidence that exploitation of minerals like coal, iron-ore, copper, lead-zinc has been going on in the country from time immemorial. However, the first recorded history of mining in India dates back to 1774. Mining activities in the country however remained primitive in nature and modest in scale till the beginning of the current century. Thereafter, with progressive industrialization the demand for and hence the production of various minerals gradually went up. After India became independent, the growth of mining under the impact of successive Five Year Plans has been very fast.

3.1.1 COAL RESOURCES

The coal Inventory of India up to a depth of 1200m has been estimated at 267.21 Billion Tonnes (Bt) as on 1.4.2009, Proved – 105.02 billion tonnes, Indicated – 123.47 Billion Tonnes, Inferred – 37.92 Billion Tonnes. Most of the coal deposits are situated in the states of West Bengal, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Part of U. P., Maharashtra, Andhra Pradesh, Assam, Meghalaya and small deposits in Jammu & Kashmir.

Lignite reserves have been estimated at 39.07 billion tonnes as on 31.3.2009.

Major deposits of Lignite are occurring in the state of Tamilnadu. Other states where Lignite reserves have been found are Rajasthan, Gujarat, Kerala, Jammu & Kashmir and Union Territories of Pondicherry.

3.1.2 OIL RESOURCES

India has prognosticated hydrocarbon reserves of more than 17 billion tonnes of which only about 5 billion tonnes have been converted into geological in-place reserves. This brings out the magnitude of exploratory efforts still to be carried out.

3.1.3 MINERAL RESOURCES (OTHER THAN COAL & OIL)

India is largely self sufficient in most of the minerals which include barytes, bauxite, chromite, dolomite, fluorspar, gypsum, iron ore, kyanite, limestone, manganese ore, magnesite, sillimanite, etc. except the minerals like copper, asbestos, lead and zinc, natural phosphates, sulphur and crude petroleum, in which domestic production meets the demand only partially. India also holds ranks in the world in some of the minerals.

Sl No.	Minerals	Rank in the World
1	Mica Block & Splittings	1st
2	Chromite and Barytes	2nd
3	Coal & Lignite	3rd
4	Iron Ore	4th

5	Crude Steel & Bauxite	5th
6	Manganese	7th
7	Aluminum	8th

The minerals reserves and the life index at the present rate of production of are indicated below in the Table:

Sl No.	Minerals	Total Reserves In Million Tonnes	Life Index (Years)
1	Coal	276810	148
2	Bauxite	3289.817	204
3	Copper	Ore – 1394.426 Metal – 11.41772	220
4	Lead & Zinc	522.58	82
5	Gold (ore)	90.289	240
6	Iron Ore	Hematite – 14630.388 Magnetite – 10619.481	104
7.	Chromite	213.063	47
8.	Magnesite	337.882	603
9.	Manganese Ore	378.569	113
10.	Lime Stone	175328.914	364
11.	Rock Phosphate	305308.576	94
12.	Sillimanite	74339.869	Very large
13.	Garnet	57655.633	61
14.	Kyanite	102613.223	Very large
15.	Dolomite	7533.108	522
16.	Diamond (in Caret)	4581913	41

3.1.4 GROWTH OF MINERAL INDUSTRIES

In India, production of minerals dates back to ancient times. Remnants of old workings can still be seen in some parts of the country. In fact, some of these have led to the discovery of several large mineral deposits which are being worked today like Lead & Zinc in Zawar, Copper in Khetri, Gold in Karnataka etc. Despite the active past, the metal mining activities in the country remained dormant over a long period until the beginning of this century. At the turn of the 18th century, India was producing only 14 minerals of commercial value.

The post-Independence era witnessed a massive expansion of exploration activities through various five-year plans which included the augmentation of mineral inventory as well as addition of a number of mineral reserves to the existing ones. This took the country into the realm of plenty in respect of some minerals which were earlier regarded as scarce.

Now India produces 89 minerals out of which 4 are fuel minerals, 11 metallic, 52 non-metallic and 22 minor minerals. The metallic production is accounted for iron-ore, copper-ore, chromite and/or zinc concentrates gold, manganese ore, bauxite, lead concentrates. Amongst the non-metallic minerals, more than 90 percent of the aggregate value is shared by limestone, magnesite, dolomite, barytes, kaolin, gypsum, apatite & phosphorite, steatite and fluorite.

With the steady growth in GDP, and the boom in infrastructure and heavy industries, the demand for Iron, Limestone, Bauxite, Manganese etc. will continue and Indian Mineral Sector is expecting steady growth in the years to come. Again there is another upcoming area in Mineral Sector i.e. the beach placer mining for extraction of rare earth elements like illmenite, monazite, zircon, titanium oxide etc. Lot of activities has been started in beach placer mining under Public and Private Sectors in Kerala, Tamilnadu and Orissa coast. Offshore mining is another new area where the government has new policy to explore and exploit valuable minerals including oil and gas in deep seas.

India has a unique blend of big and small, manual and mechanized, opencast and underground mines. The total number of working coal mines as on date is 569, mainly concentrated in the central and eastern part of the country distributed in the states like West Bengal (Raniganj & Barakar coalfield), Jharkhand (Rajmahal, Jharia, Giridih, Bermo, Karanpura etc.), MP and adjacent UP (Singrauli, Pench Kanhan), Chhattishgarh, Maharastra (Wardha Valley), AP (Godavari basin) and partly in NE States. In oil sector there are 67 oil projects mainly in Assam and Gujarat excluding installations off-shore beyond territorial waters. As far as metalliferous mines are concerned the number of mines which are submitting returns stands at about 2,500. However, there are many more mines which are small in size, seasonal in nature and which are not submitting the statutory returns. An estimate indicates that total number of metalliferous mines is more than a lakh distributed over all the states. Total direct workforce of the mining industry in India consists of over 1 (one) million workers on a daily average basis.

Table below indicates trends in mineral productions since 1951.

Trend in Output of Important Minerals (in million tonnes)

Year	Coal	Oil & Natural Gas		Other Minerals							
		Oil	Gas*	Cu. Ore	Lead & Zinc	Gold Ore	Iron Ore	Mang. Ore	Lime stone	Bau-xite	Stone
1951	35	na	na	0	0	na	4	1	3	0	1
1961	56	na	na	0	0	na	12	1	14	0	2
1971	76	7	720	1	0	1	33	2	25	1	4
1981	127	8	2220	2	1	1	43	2	33	2	4
1991	238	10	3543	5	2	0	60	2	75	4	12

1992	250	11	3510	5	2	0	61	2	78	4	9
1993	261	12	4912	5	2	0	63	2	88	5	11
1994	268	12	4740	5	2	0	65	2	87	5	11
1995	285	12	5323	5	2	0	73	2	94	5	6
1996	304	11	5451	5	2	0	72	2	121	5	5
1997	317	14	7068	4	2	0	78	2	124	5	10
1998	320	18	7289	4	2	1	77	2	117	6	12
1999	315	14	7548	3	3	1	76	2	132	6	11
2000	334	14	7821	3	3	1	85	2	149	6	16
2001	342	15	8203	4	2	0	90	2	147	7	15
2002	363	15	8024	3	3	1	100	2	159	9	14
2003	379	19	8494	3	4	0	119	2	190	11	10
2004	409	17	6456	3	4	1	136	3	257	9	13
2005	421	17	6557	3	4	1	155	3	214	9	20
2006	430	21	4548	3	4	1	194	3	214	9	22
2007	481	14	7612	3	5	0	236	4	270	11	23
2008	506	15	10419	8	7	1	235	4	269	16	32

***Gas in million cubic metres. Data rounded off to the nearest decimal.**

- Production of copper ore has almost increased by 21 times from 0.37 million tonnes in 1951 to 7.75 million tonnes in 2008.

- Lead-zinc ore achieved phenomenal growth from a level of 0.01 million tonne in 1951 to 7.02 million tonnes in 2008 i.e. 702 times increase.

- Iron-ore production has increased from 3.71 million tonnes in 1951 to 235.36 million tonnes in 2008, i.e. 63 times to that of 1951 level.

- Manganese ore production also increased from 1.18 to 4.12 million tonnes from 1951 to 2008 i.e. 3.49 times.

- Limestone production increased from 2.96 to 268.87 million tonnes since 1951 to 2008 i.e. 90.83 times.

- Bauxite production increased from 0.06 to 16.49 million tonnes i.e. 275 times increase during this period.

- Production of stone which is mostly used in construction industries has shown exponential growth for almost 43.78 times since 1951 to 2008 from 0.72 to 31.52 Million Tonnes. In this sector there has been tremendous growth almost 3 times from 10.45 Million Tonnes to 31.52 Million Tonnes during 2003 to 2008.

Following tables shows the trends in mining activities since 1951:

Growth of Mining Activities in India											
Year	No of reporting mines			Value of minerals (in Million Rupees)			Aggregate H.P. (in 1000s)			Explosives used (in 1000 tonnes)	
	Coal	Metal	Oil	Coal	Metal	Oil	Coal	Metal	Oil	Coal	Non-coal
1951	893	1810	-	505	235	N.A.	188	83	N.A.	1.5	1.0
1961	848	2323	-	1141	487	N.A.	438	159	N.A.	4.5	3.8
1971	781	1995	13	2543	1080	756	732	282	25	12.3	9.4
1981	496	1768	8	18114	3620	2748	1841	925	35	46.3	15.3
1991	561	1787	24	79794	19076	18533	4292	1519	507	124.2	40.3
1992	567	1810	27	96377	21700	23104	4653	1644	583	140.0	44.1
1993	570	1845	27	107467	23392	31777	3942	1853	541	155.6	44.1
1994	576	1869	29	122216	24648	34302	4690	1891	548	156.9	43.3
1995	579	1930	32	133314	33611	37065	5218	1735	579	189.6	46.2
1996	576	1872	32	157474	36521	37388	5300	1877	523	207.8	47.2
1997	580	1834	34	193877	43758	32608	5314	2016	570	232.7	43.4
1998	594	1864	37	205307	45286	42851	5399	2020	602	247.0	47.1
1999	598	1957	44	219101	46415	72824	5660	2147	769	267.6	49.8
2000	595	2022	45	234531	53111	92954	5561	2371	757	290.5	57.0
2001	568	1907	43	261082	54032	106747	5586	2087	712	318.8	55.8
2002	567	1870	42	286390	64964	123326	5432	2175	757	315.3	55.6
2003	562	1716	49	299954	77605	131897	5527	2129	621	304.8	63.7
2004	567	1764	47	348898	104283	166083	5409	2336	685	334.0	70.6
2005	569	1835	50	371391	133417	230586	5415	2495	701	297.2	70.8
2006	568	1720	44	374671	162160	370657	5953	2666	468	345.3	95.1
2007	567	1770	49	419279	235351	256944	5843	2646	457	352.7	97.8
2008	569	1770	67	481635	275495	287192	6099	2846	845	534.1	97.9

3.1.5 GROWTH IN COAL SECTOR

Coal production has since been increased 18 times from a level of 34.98 million tonnes in 1951 to 566.13 million tonnes/annum in 2009-2010.

Coal Vision 2025 estimates the demand of coal for future upto 2024-25 for the different sectors based on the forecast made by TERI considering the coal demand and the change in the GDP. The adopted approach indicates that the overall growth in coal demand is expected to be 5.62% with 8% GDP growth scenario and 5.04% with 7% GDP growth. Sector-wise coal demand as assessed with the above approach for the two scenarios for the as follows:

In Mte

Consumer	Period								
	2006-07	2011-12		2016-17		2021-22		2024-25	
		7 %	8%	7 %	8%	7 %	8%	7 %	8%
Power	317	413	427	517	553	635	699	719	804

utilities									
Power Captives	28	43	44	60	63	84	90	102	112
Steel	43	53	54	67	69	84	90	97	105
Cement	25	38	39	58	61	88	94	113	123
Bricks and others	60	64	65	80	82	101	106	117	123
Total	473	611	630	782	828	992	1079	1148	1267

*** Data source – Coal Vision 2025 document**

Demand of coal for the power sector is likely to increase further in the coming years, as has been recently communicated by the Ministry of Power. This shows that the demand scenario for coal is highly dynamic and is expected to grow more than that planned for in the near future.

Considering the high growth in coal demand scenario, either as per the assessment of Coal Vision 2025, or as per the estimates of the Administrative Ministries of coal consuming sectors, there is a need to increase the availability of coal from the indigenous sources. With this in mind coal Production Programme in different 'Plan Periods' has been worked out. Besides mining coal through conventional technology, avenues of harnessing CBM and in-situ gasification of coal from inaccessible deposits have been considered. Coal production plan, as envisioned in the Coal Vision 2025 document, is expected to rise to 1267 million tones per annum by 2024-25. This apart, about 25 million tones of coal equivalent energy need is expected to be met from the CBM-UCG initiatives, taken up by CIL and other companies.

Ministry of Coal has allocated 208 new coal blocks under captive use for power, steel, cement and other utilities out of which in 26 coal blocks production has already started during the last few years. The other mines are likely to come into production during 12^{th} Five Year Plan.

3.1.6 Technology for Coal Production

Opencast Mining (OC Mining)

The desire to achieve economies of scale will lead the coal mining industry to consolidate its operations, both in terms of size/ production and technology. This consolidation would continue or even accelerate over the next decades. At present 88% of the total production of coal is coming from Open cast mines and remaining 12 % from underground mines. By 2025, it is expected that 72% of the opencast production will come from mine size greater than 5 MTPA. Consolidation will have a positive impact on the flow of new technologies in mining. This will encourage greater technological integration, for example, of IT and unit-operations. Consolidation would inevitably lead to increasing the size of opencast mine operations with higher production from a single mine. As mines go deeper, increased excavation would warrant higher size equipment. Higher capacity draglines with bucket size of 45- 55 m^3 and a dumping radius of over 100m will find applicability in some of the opencast mines. Higher capacity rope shovels up to 40-45 m^3 with 240 to 370 Tonnes rear dump trucks will be introduced in the mines producing over 25 Mt of coal per annum. Though, 10 m^3 rope shovels and 85-100 Tonnes dump trucks will continue to be the backbone of opencast

operations, higher capacity rope shovels of bucket size of 20-25 m^3 and 190T dump trucks will be introduced in several more mines. Use of 10-15 m^3 hydraulic shovels will find increased acceptability. High capacity dozers of sizes up to 850 hp will complement the higher capacity excavators.

The mines are being planned by opencast methods up to 500 m depth from surface at stripping ratio ranging from 1 in 7 to 1 in 15. The dumps whether internal or external are also being planned to be of height ranging from 60 to 400 m. The mines are planned to be operated by the deployment of heavy earth moving machinery of very high capacity i.e. 40 m^3 shovels, 80 m^3 draglines and 470 tonnes dump trucks. Surface Miners, Stacker Reclaimers/Spreaders and in-pit crushers along with high capacity conveyors.

In coal and lignite sector itself large capacity opencast mines up to 15 to 20 million tonnes per annum production with 80 million m^3 of overburden per annum are in the stage planning and development. All these opencast mines will require huge quantity of explosives and initiation systems.

Underground Mining (UG Mining)

The average size of mines will change from present average production per mine approximately 0.156 MT/ Annum to 1.0 to 3.0 MT/ Annum. The present mix of manual, semi-mechanized and mechanized mines will change in favour of 100% mechanized mines. This target can be achieved near the year 2017. The presently available methods namely Longwall and Bord & Pillar will continue to be used with the limited application of other methods like Blasting Gallery etc. As we can get the target production of 124 MT by mining coal within 300m depth (other than in Jharia and Raniganj coalfields), the thrust areas may remain the B&P method with higher degree of mechanization like Continuous Miner technology in conjunction with mechanized drilling & roof bolting system. However, use of Longwall technology, wherever geo-mining condition permits, will be continued as a mass production technology. So there will be a judicious mix of B&P with Continuous Miner, B&P with SDL/LHD combination, mechanized Longwall and special mining methods.

3.1.7 Alternative Energy Sources

As can be seen from the above production plan, the capacity to produce coal to meet the energy requirement of the country is limited and a part of the requirement is envisaged to be met from CBM & UCG initiatives. It is envisaged that about 25 million tonnes coal equivalent energy will be met from such initiative by 2024-25. Necessary actions have already been taken to achieve this goal.

Coal Bed Methane (CBM)

The CBM vision 2025 is to perceive Coal bed Methane and its subsets as a commercially viable alternate source of energy to bridge the gap between projected demand and supply of Natural Gas.

To achieve the vision following actions are envisaged by creation of coalfield-wise national database through well set norms of CBM exploration suited for Indian Coal and identifying possible area for development CMM/AMM from CIL command area. Demonstration project is under implementation in Moonidih & Sudamdih collieries of BCCL, which would give insight in recovery of methane from a working coal mine.

Underground Coal Gasification (UCG)

The **Underground Coal Gasification (UCG)** is a process by which coal is converted in situ to a combustible gas that can be used as a fuel or chemical feedstock. UCG offers a potential economic means of extracting energy from deep-seated deposits, which will not be amenable for conventional physical extraction economically at present. The medium Btu gas can be used for power generation and can as well be used as a feedstock in the manufacture of methanol/ gasoline etc. CIL's vision for 2025 is to perceive underground coal gasification as technologically and economically viable eco- friendly method of extraction of energy from isolated and uneconomic coal deposits to augment the energy need from coal sector.

Coal to Liquid (CTL) technology is another Greenfield area where coal blocks have been allotted in Mahanadi Coalfield area in Orissa to private entrepreneurs to produce alternate energy source from the coal.

3.1.8 GROWTH IN OIL & GAS SECTOR

Oil and Gas Sector has witnessed tremendous growth during last three decades. The production of oil in 1971 was 7.19 Million Tonnes and Gas only 720 MSCM which have increased to 14.70 Million Tonnes and 10419 MSCM in 2008. The growth in Oil sector has almost been two times whereas in Gas it is 14.50 time during the last four decades. Major breakthrough has been mostly in the Offshore areas and in Rajasthan and Gujarat Basin in the west to KG basin in the eastern cost sectors. More number of blocks both in On-land and Offshore areas have been offered for exploration and production both to Public and Private Sectors including MNCs.

3.1.9 EMPLOYMENT

With the growth of production, employment in the mineral industry has also grown phenomenally during the last few decades. The following table indicates the trends:

Average Daily Employment in Mines (in ('000)

Year	Coal	Oil	Copper Ore	Gold Ore	Iron Ore	Lime Stone	Mang. Ore	Mica	Stone	Others	Total Metals
1951	351.9	N.A.	3.7	21.7	20.2	16.0	55.5	52.2	5.1	22.7	197.1
1961	411.2	N.A.	4.2	21.7	54.5	54.7	47.0	29.6	8.5	39.5	259.7
1971	382.3	13.6	7.6	12.4	52.8	53.2	30.4	12.2	8.8	57.5	234.9
1981	513.4	14.5	13.4	12.3	44.9	49.8	26.5	6.7	7.7	60.6	221.9
1991	554.1	35.5	12.8	9.3	40.0	43.5	17.9	2.2	11.2	63.3	200.2
1992	552.0	35.7	12.7	9.4	42.0	43.0	18.4	1.6	8.9	67.2	203.2
1993	546.3	33.5	12.2	7.9	39.8	41.6	18.5	1.5	9.2	68.9	199.6
1994	523.7	34.3	11.2	7.4	38.5	39.8	18.2	1.7	9.4	65.2	191.4
1995	513.3	34.0	10.5	7.1	39.6	39.8	18.1	1.8	7.5	64.4	188.8
1996	506.4	33.4	9.9	6.9	39.2	35.7	18.1	1.2	5.2	60.1	176.3
1997	503.4	28.6	10.3	6.8	38.6	33.0	16.0	1.2	4.9	61.6	172.4
1998	491.3	29.5	8.7	6.1	37.3	31.2	15.9	1.1	5.3	59.3	164.9
1999	475.8	25.5	7.7	5.9	36.2	29.8	16.5	1.0	5.2	55.3	157.6
2000	458.4	23.4	6.9	5.3	35.3	31.1	16.1	1.0	6.4	54.8	156.9

2001	438.2	24.4	3.9	3.6	32.3	24.2	17.8	1.0	6.3	47.5	136.6
2002	422.6	22.3	3.3	3.3	33.6	25.1	13.7	1.0	7.8	49.2	137.0
2003	416.7	18.6	2.5	2.7	35.8	24.2	13.2	0.6	8.0	50.0	137.0
2004	405.2	19.1	2.0	2.7	38.6	24.8	14.6	0.6	7.9	52.2	143.5
2005	399.0	19.2	1.9	3.1	37.4	25.8	14.7	0.6	7.0	50.5	141.0
2006	385.7	13.9	2.0	3.1	41.6	25.6	13.2	0.6	6.5	50.8	143.4
2007	379.5	19.2	2.5	3.1	41.8	27.7	13.4	0.6	8.8	53.8	151.7
2008	369.4	23.6	2.6	3.1	44.8	27.7	13.5	0.7	7.0	57.5	156.9

It is anticipated that the direct average daily employment in the mineral industry at present is about 1(one) million. Though the trend reveals that there has been a gross reduction in employment potential in winning of gold ore, copper ore, manganese ore and mica in the recent past, the employment in the mineral industry has shown tremendous growth over the years. Again with the boom in economic activity and the tremendous growth in mineral industry, particularly in coal sector to meet the country's energy security, there is tremendous potential for employment generation. At the same time with the stupendous growth in the infrastructure sector, the demand for iron, manganese, limestone, etc. will be very high. As a result the mining industry will be the major employment provider of the country in the years to come.

Structural Changes in Employment

There is also a change in the ownership and management structure of the public sector, private sector, and joint sector of public & private companies including Multi-National Companies (MNCs) which are entering into mineral sector. There is a concept of transferring the operational responsibilities to the Developer and Operator other than the lessees and mine owners who simply outsourced their operations to Contractors and subcontractors on short and long term basis. This has brought in a mixed and overlapped sphere of duties and responsibilities resulting in to shifting of onus of responsibilities of unproductive liabilities to the contractors. Thus a class has been created in the labour sector called regular employee and temporary, casual or contractual worker with very wide gaps in salaries and facilities including the provisions of safety, health and welfare for such workers. This structural change in employment has resulted into exploitation and insecurity amongst the young workforces.

3.2 OCCUPATIONAL SAFETY AND HEALTH IN MINES AN OVERVIEW

MINING: A HAZARDOUS PROFESSION

It is accepted that mining is a hazardous profession. Just like in any other industrial accident, unsafe act and unsafe conditions of work lead to accidents in mines. Most of the accidents are preventable - they do not just happen, they are caused. Other than loss of lives or serious injuries due to mining accidents, the aspect of occupational health hazards in mining industry is critical and going to assume serious proportion with the increasing awareness. Hence it is pertinent to review the safety and occupational health status of the mining industry of this country to work out a road map for its effective mitigation.

3.2.1 STATUS OF SAFETY IN MINES

(A) ACCIDENT EXPERIENCE

Incidence of accidents being an important indicator of the status of safety, it may be pertinent to examine the accident scenario. The trend in fatal accidents and fatality rates per 1000 persons employed (Ten Year Average) basis since 1901 are as under:

Year	Trend in fatal accidents and fatality rates per 1000 persons employed (Ten yearly average)							
	COAL MINES				NON-COAL MINES			
	Av. No. of Acc.	Acc. rate	Av. No. of Fatal-ities	Fata-lity rate	Av. No. of Acc.	Acc. rate	Av. No. of Fatal-ities	Fatality rate
1901-10	74	0.76	92	0.93	16	0.47	23	0.67
1911-20	139	0.94	176	1.29	29	0.57	37	0.73
1921-30	174	0.99	219	1.24	43	0.54	50	0.66
1931-40	172	0.98	228	1.33	35	0.41	43	0.51
1941-50	226	0.87	273	1.01	26	0.24	31	0.29
1951-60	223	0.61	295	0.82	64	0.27	81	0.34
1961-70	202	0.49	259	0.62	72	0.28	85	0.33
1971-80	187	0.40	264	0.55	66	0.27	74	0.30
1981-90	162	0.30	185	0.34	65	0.27	73	0.31
1991-00	140	0.27	170	0.33	65	0.31	77	0.36
2001-10	86	0.21	107	0.27	55	0.33	65	0.39

Year	Trend in Incidence of Accidents in Mines								
	Coal			Metal			Oil		
	Number of accidents			Number of accidents			Number of accidents		
	Fatal	Serious	Total	Fatal	Serious	Total	Fatal	Serious	Total
2000	117	661	778	50	160	210	1	27	28
2001	105	667	772	62	178	240	9	21	30
2002	81	629	710	50	174	224	2	31	33
2003	83	563	646	51	147	198	1	21	22
2004	87	962	1049	55	150	205	2	38	40
2005	96	1106	1202	47	93	140	1	15	16
2006	78	861	939	54	63	117	4	15	19
2007	76	923	999	53	63	116	3	16	19
2008	80	686	766	49	63	112	5	20	25

2009	83	636	719	39	76	115	4	18	22
2010	97	478	575	58	46	104	4	16	20

N.B. Figures for the years 2009 & 2010 are provisional.

Trend in death rate per thousand persons employed

Year	Coal	Oil	Cu. Ore	Gold Ore	Iron Ore	Lime Stone	Mang Ore	Galena & Sphl.	Total Metals	All Mine-rals
2000	0.3	0.0	0.2	0.0	0.3	0.3	0.3	0.0	0.3	0.3
2001	0.3	0.4	0.3	0.3	0.4	0.5	0.1	0.0	0.5	0.4
2002	0.2	0.1	0.3	0.0	0.3	0.5	0.3	0.2	0.5	0.3
2003	0.3	0.1	0.0	0.0	0.4	0.3	0.1	0.0	0.5	0.3
2004	0.2	0.1	0.0	0.0	0.3	0.5	0.2	0.8	0.4	0.3
2005	0.3	0.1	0.0	0.0	0.4	0.3	0.0	0.3	0.4	0.3
2006	0.4	0.3	0.0	0.3	0.5	0.6	0.2	0.3	0.5	0.4
2007	0.2	0.2	0.0	0.3	0.3	0.5	0.1	0.3	0.4	0.3
2008	0.3	0.3	0.4	0.0	0.3	0.3	0.3	1.2	0.4	0.3
2009	0.3	0.2	0.4	0.3	0.2	0.1	0.1	0.0	0.3	0.3
2010	0.3	0.2	0.0	0.0	0.3	0.3	0.2	0.3	0.7	0.4

N.B. Rates for the years 2009 & 2010 are provisional.

From the accident statistics since 1950, the safety status of Indian Mines may be summarized as follows:

- In coal mines, there has been a sharp decrease in the ten-yearly average figure of 295 fatalities from 223 accidents in 1951-60 to 107 fatalities from 86 fatal accidents in 2001-2010.

- Ten yearly average of Death rate per 1000 persons employed has also come down from 0.82 to 0.27 from 1951- 60 to 2001-2010 in coal mines.

- Similarly in case of non-coal mines, there has been decrease in the ten yearly average figures of 81 fatalities from 64 fatal accidents in 1951-60 to 65 fatalities from 55 fatal accidents 2001-2010.

- The death rate per 1000 persons employed in non-coal mines has been marginally increased from 0.34 in 1951-60 to 0.39 in 2001-2010.

- Main factor behind this achievement is shift of mining technology from conventional underground to mechanized opencast in coal mines, whereas the marginal increase in non-coal sector may be due to increase in the no. of smaller mines being operated under unorganized sector, deploying more of contractual workforce.

- In coal mines, major concern is the occurrence of disasters at regular intervals, mostly in the underground mines. The frequency of disasters due to fires and explosions has been alarmingly increased in the recent past. Inundations and strata failures are common causes. This needs a focused effort from all the stake holders.

- For fatal accidents involving four or less fatalities per accident, roof fall continues to be the area of major concern followed by accidents caused by dumpers and trucks in coal mines, whereas, in non-coal mines, deaths due trucks / tippers are assuming serious proportion followed by fall of side, persons / fall of objects.

(B) STATUS OF OCCUPATIONAL HEALTH IN MINES

The persons employed in the mines are exposed to a number of hazards at work which adversely affect their health. Some of the important ones are dust, noise, heat, humidity, vibration etc. In recent times, there has been increasing awareness among mining industry and the workers about occupational diseases such as Coal Worker's Pneumoconiosis, Silicosis, Manganese Poisoning, Hearing Impairment etc. caused by exposure to health hazards at work. Almost all occupational diseases are known to cause permanent disablement and there is no effective treatment. However, most of the occupational diseases can be prevented by adopting proper occupational health measures and engineering control on airborne dust at workplace. The increasing importance of occupational health in mines was appreciated and consequently the 7th Conference on Safety in Mines recommended that each mining company should create Occupational Health Services of its own. The 8th and 9th Conferences on Safety in Mines further recommended medical surveillance of persons employed in the mines including training of medical officers in occupational health and use of ILO Classification.

In Xth Conference on Safety in Mines held in November 2007, special emphasis has been given on medical surveillance and periodical medical examinations of persons more than 45 years of age at three years interval instead of five years. Special initiatives have been recommended for close monitoring of workers exposed to specific health hazard due to their workplaces and minerals associated therewith. OSH issues including the duties and responsibilities of employers, contractors and contractual workers have been clearly specified which need to be introduced and followed up.

NOTIFIED DISEASES

Following diseases have been notified as the diseases connected with mining operations for the purpose of sub-section (1) of Section 25 of the Mines Act, 1952:

S.R.O. 1306 dated the 21st July, 1952

1. Silicosis
2. Pneumoconiosis

S.R.O. 3109, dated the 18th December, 1956

Manganese Poisoning - Nervous type

S.0. 2521 dated the 26th June, 1986

1. Asbestosis
2. Cancer of lung or the stomach or the pleura and peritoneum (i.e. mesothelioma)

S.O. 399(E) dated 21st February, 2011

1. Noise Induced Hearing Loss
2. Contact Dermatitis caused by direct contact with chemical.
3. Pathological manifestations due to radium or radioactive substances

DUSTBORNE DISEASES

Dustborne diseases still remain the main area of concern among mine workers. These diseases are still prevalent among miners all over the world and Indian mining industry is no exception. Cases of Silicosis, Coal Worker's Pneumoconiosis, Manganese poisoning, etc. have been reported from Indian mines. Other occupational diseases such as noise induced hearing impairment, etc. have also been reported. Although, many surveys and studies have been conducted, comprehensive data on prevalence of occupational diseases in Indian mines are not available. This is primarily due to lack of proper occupational health surveillance procedures and comprehensive occupational diseases surveillance programme. While traditional occupational diseases continue to be prevalent, introduction of newer technologies and heavy machinery have enhanced or introduced new health hazards such as Noise, Vibration, Diesel Fumes, etc. The table below shows the cases of notified diseases detected since 1994.

Year	Coal Worker's Pneumoconiosis	Silicosis
1994	7	0
1995	5	1
1996	16	5
1997	5	0
1998	2	2
1999	3	0
2000	6	58*
2001	0	1
2002	3	5
2003	5	5
2004	34	9
2005	8	33
2006	4	0
2007	8	0
2008	1	3
2009	0	0
2010	1	0
2011 upto 19.7.2011	3	1
Total	**111**	**123**

* including 55 cases reported from Desert Medical Research Centre, Jodhpur.

In comparisons to the cases of notified diseases reported to DGMS the global scenario for silicosis is quite different. In countries with improved notification and detection systems for occupational diseases far more cases of occupational diseases are reported.

Though the numbers of surveys conducted are not adequate to properly assess the status of Occupational Health in Indian Mines, the above mentioned surveys conducted by DGMS show that a significant number of persons employed in the mines may be suffering from occupational diseases including Silicosis, Coal Workers' Pneumoconiosis, Noise Induced Hearing Loss, etc. In most of the cases, they are not reported or notified. Because of the acute shortage of Occupational Health Inspectors, a complete picture of the occupational health status in Indian Mines is not available and there is a strong need to undertake occupational health surveillance in a big way and as per the International standards and guide lines. This will help in assessment of the situation and to identify the thrust areas in this regard.

Silicosis still remains an important occupational lung disease of persons employed in mines and other Industries where exposure to dust is an important health risk. Despite legislative provisions and statute a large number of cases of silicosis remain undetected, undiagnosed or misdiagnosed. It is no secret that the number of cases reported to the enforcement authorities reflects only a tip of iceberg. Number of studies conducted by various Institutions and Non Government Organization (NGOs) has shown high prevalence of silicosis in mines and other industries. Non Government Organization (NGOs) have brought to the notice a number of cases of silicosis detected in various areas i.e. Lankan in Delhi, Bundelkhand in M P, Jodhpur and Karauli in Rajasthan and many others. The Honorable Supreme Court of India and National Human Rights Commission have taken a serious view of occurrence of silicosis and the status of compensation and rehabilitation of workers affected. The ILO/WHO Global Programme on Elimination of Silicosis proposes to eliminate silicosis by 2030 as an occupational disease and has suggested that every country should have a national elimination programme.

In view of the directions from the Supreme Court and recommendations and monitoring by National Human Right Commission, it is necessary that a concerted effort in the form of a national programme for elimination of silicosis is formulated and implemented. It is also high time that the government take initiative in formulating a national plan for prevention and control of silicosis and asbestosis in India so that the objective of the WHO to eliminate silicosis by 2030 is achieved.

(C) Statutory Enforcement and Status of Compliance

The other yardsticks for safety status could be the contraventions of statutory provisions observed during the inspections and the action taken arising out of the inspection of the mines by the officers of DGMS. The table below will give a fair idea about the status of compliance of the statute by the mine management.

Year	No. of Inspections	No. of improvement Notices	No. of Prohibitory orders	No. of Prosecution launched
2001	8547	193	138	68
2002	8792	70	117	64
2003	9067	167	252	39
2004	8425	203	314	44
2005	8649	255	172	32
2006	7041	142	233	28
2007	6822	207	223	44
2008	7668	174	197	46
2009	7979	155	131	37
2010	7439	62	44	27

The violations observed during inspections are lack of ventilation & Support, absence of gas monitoring & dust control measures, proper bench formation, lighting, proper haul roads etc. These violations are repetitive in nature. Other than these serious violations like non-appointment of qualified supervisory personnel are also observed.

From the observations made above, it can be established that the traditional system of administration of Mines Act and the subordinate legislation made thereunder has reached its limit of effectiveness. Therefore time is now ripe to introduce new initiatives and stress upon areas of high risks in order to bring them down to acceptable risk levels.

3.3 EXISTING SET UP OF OCCUPATIONAL SAFETY AND HEALTH IN MINES – CHALLENGES AND CONSTRAINTS

3.3.1 (A) NATIONAL POLICY

National policy formulation is a key to successful implementation of measures for improvement of working conditions and environment at the national level. National policies would enable us to establish priorities regarding problems, programmes and policies; to avoid waste, inconsistency and duplication of efforts.

National Policy on Occupational Safety and Health at workplace has been framed by the Union Ministry of Labour and Employment, Government of India and all the aspects of OSH issues, programmes, implementations and monitoring have been clearly defined.

(B) OCCUPATIONAL SAFETY & HEALTH LEGISLATION

(i) CONSTITUTIONAL PROVISIONS

The salient features of the policy on occupational safety and health are derived from the Constitution of India. Article 24 of the Constitution prohibits employment of child below 14 years for work in any factory or mine or in any hazardous employment. The Directive Principles of State Policy which are in the nature of guidance for legislative and executive action provide safeguards to workers. Article 39 requires the State to direct its policy to ensure that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced for economic necessity to enter avocations unsuited to their age or strength. Article 42 directs the State to make provision for securing just and humane conditions of work and maternity relief. Thus under the Constitution it is imperative that measures should be taken to ensure that all the workers irrespective of their place of employment are assured of occupational safety and health.

The Seventh Schedule of the Constitution lists the jurisdiction of the Union and the States to legislate in particular subject matters. In terms of List I under this Schedule the Central Government is exclusively authorized to make laws and regulations of labour and safety in mines & oilfields (vide Item No.55 in the list). In the list on Concurrent Subjects welfare of labour including conditions of work (vide No.24 in the list) have been included. It is therefore necessary that the Central Government reviews the statutes of occupational safety and health and takes appropriate measures for improvement of working conditions.

(ii) ILO CONVENTIONS

The Govt. of India as one of the founder members of the International Labour Organisation (ILO) derives conclusive guidelines from the conventions, recommendations and codes of practices framed by ILO in this regard. The ILO has so far adopted 182 conventions and 190

recommendations on subjects of workers' fundamental rights, worker's protection, social security, labour welfare, occupational safety and health, women and child labour, migrant labour etc. The Govt. of India has so far ratified 39 conventions and the recommendations relating to these 39 conventions have so far been implemented to the extent possible. In the field of occupational safety and health and working environment, ILO has framed 13 conventions and equal number of recommendations out of which Govt. of India has so far ratified two conventions namely Radiation Protection Convention (No. 115) and Benzene Convention (No. 136).

Some of the recent conventions and recommendations have a strong bearing on emerging occupational and safety laws in the country. These conventions are discussed in the following Para.

Convention 155 requires every member state to formulate, implement and periodically review a coherent national policy in consultation with representative of employers and workers. The policy should aim at prevention of accident and injury at work place by minimizing the causes of hazards inherent in working environment and also identifies action at national and unit levels and inform the workers in matters connected with safety and health.

Convention 161 requires a national policy be framed on occupational health services with particular to be finalized on tripartite consensus.

Conventions 174, 176 and recommendation 181, requires that a national policy against the risk of major accidents framed after consulting the employers and workers, implemented and periodically reviewed which should promote the use of the best available safety technologies. The convention gives workers several important rights, to report accidents, dangerous occurrences and hazards to employer and inspectorate, to ask for inspection & investigation by the employer and inspectorate, to get information from their employer and the inspectorate, to refuse dangerous work and to elect safety representatives.

The convention imposes three key tasks upon governments:

- to develop a coherent policy on occupational safety & health in mines. The policy to be finalized on tripartism consensus.
- To pass laws to implement the convention's provisions
- To create an inspectorate to enforce the laws.

(iii) MINES ACT AND OTHER STATUTES APPLICABLE TO MINES

Since the inception of mining in modern times in 1774, when coal mining first started in Raniganj, the country had witnessed sea changes in the mining industry. But real concern for safety was expressed after few major disasters taking place at the end of nineteenth century and Bureau of Mines Inspection was set up in 1902 after introduction of the first piece of legislation as The Mines Act 1901 in 1901. Since then there had been many ups and downs in the mining industry. Occurrences of disasters were quite frequent It was superseded twice - first in 1923 and again in 1952 and has undergone major changes in 1959 and 1983. Concept of workers participation in Safety management was introduced through Safety Committee and workman's Inspector. Now the present safety management system consists of three basic components, viz. Mine Operators, Regulatory Authorities, and National level Tripartite Committees.

Under the Constitution of India, safety, welfare and health of persons employed in all mines - coal, oil and metalliferous - all over the country, are the concern of the Central Government.

The matter is regulated by the Mines Act, 1952 which is administered by the Directorate General of Mines Safety (DGMS for short), a Scientific and Technological Organisation under the Union Ministry of Labour. In so far as the oil mines are concerned, the jurisdiction of the Mines Act, 1952 extends upto the limits of territorial waters but does not extend to the continental shelf, exclusive economic zones and other maritime zones.

The Mines Act is an Act of Parliament. It is a structural frame of law containing the national objectives on the aspects of mines safety, health and welfare of persons employed in mines. The Act empowers the Central Government to make Regulations and Rules elaborating the objectives of the Act under various enabling provisions.

Subordinate legislation under the Mines Act:

i) To regulate technical operations in mines, separate codes of regulations have been framed in respect of coal, metalliferous and oil mines. The Codes of Regulations currently in force are -
   a) Coal Mines Regulations, 1957;
   b) Metalliferous Mines Regulations, 1961; and
   c) Oil Mines Regulations, 1984.

ii) In order to provide for rescue of work persons in the event of explosion, fire etc. the Mines Rescue Rules, 1985, have been framed. These apply to coal and metalliferous underground mines.

iii) To equip the mine workers, in all types of mines, to recognise and deal with hazards the Mines Vocational Training Rules, 1966, have been framed.

iv) Welfare, Health and Medical Surveillance, Worker's Participation in Safety Management in respect of coal, metalliferous and oil mines have been elaborated in the Mines Rules, 1955.

v) The Mines Creche Rules, 1966 and the Coal Mines Pit Head Bath Rules, 1959 have been framed to provide respectively for shelter to children of female employees in all mines and bathing facilities for workers employed in coal mines.

Besides the Mines Act, 1952 and the Rules and Regulations framed thereunder, the DGMS also enforces in mines, the Indian Electricity Act, 2003 and the Indian Electricity Rules, 1956, and the Land Acquisition (Mines) Act, 1885.

Mines Act, 1952 and the corresponding Coal Mines Regulations, 1957, Metalliferous Mines Regulations, 1961 and Oil Mines Regulations, 1984 are in the process of amendments, which are likely to be completed shortly .

3.3.2 EXISTING SET-UP OF OSH MANAGEMENT IN MINES

MINING OPERATIONS

For ensuring compliance of the statutory requirements and to maintain the desirable standard of OSH in mine, all the mines are placed under the control of a qualified Mine Managers assisted by numbers of qualified Assistant Managers, designated Safety Officer and Ventilation Officer, Welfare Officer, and front line supervisors like Overman/ Foreman, Mining Sirdar/Mate, Blaster/Shotfirer, Surveyors etc to look after the Safety, Health, Sanitation & Welfare of the work persons. They all operate in the mine level and ensures proper supervision and control in all the activities of mining to avoid any untoward incidents causing injury or harm or health hazards to workforce.

For coordinating the activities of mine level with corporate level, Agents are appointed with specific responsibilities. Owner of the mine is responsible for providing all facilities & assistances to mine level operators to ensure OSH standards at a desired level. In most of the organised sectors, Internal Safety Organisation (ISO) acts as a link between the corporate level and mine level operators exclusively on safety issues.

3.3.3 ENFORCEMENT AGENCY - DGMS

The provisions of Mines Act and Rules and Regulations framed thereunder are being enforced by the Directorate General of Mines Safety commonly known as DGMS under the Union Ministry of Labour & Employment.

The organisation has its headquarters at Dhanbad (Jharkhand) and is headed by the Director-General of Mines Safety. At the headquarter, the Director-General is assisted by specialist staff-officers in mining, electrical & mechanical engineering, occupational health, law, survey, statistics, administration and accounts disciplines. The headquarters has also a technical library and S&T laboratories as a back-up support to the organisation.

The field organisation has a two-tier network of field offices. The entire country is divided into eight zones, each under the charge of a Deputy Director-General of Mines Safety. 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 three such sub-regional offices, each under the charge of a Deputy Director of Mines Safety. Each Zone, besides having inspecting officers of mining disciplines has officers in electrical & mechanical engineering and occupational health disciplines.

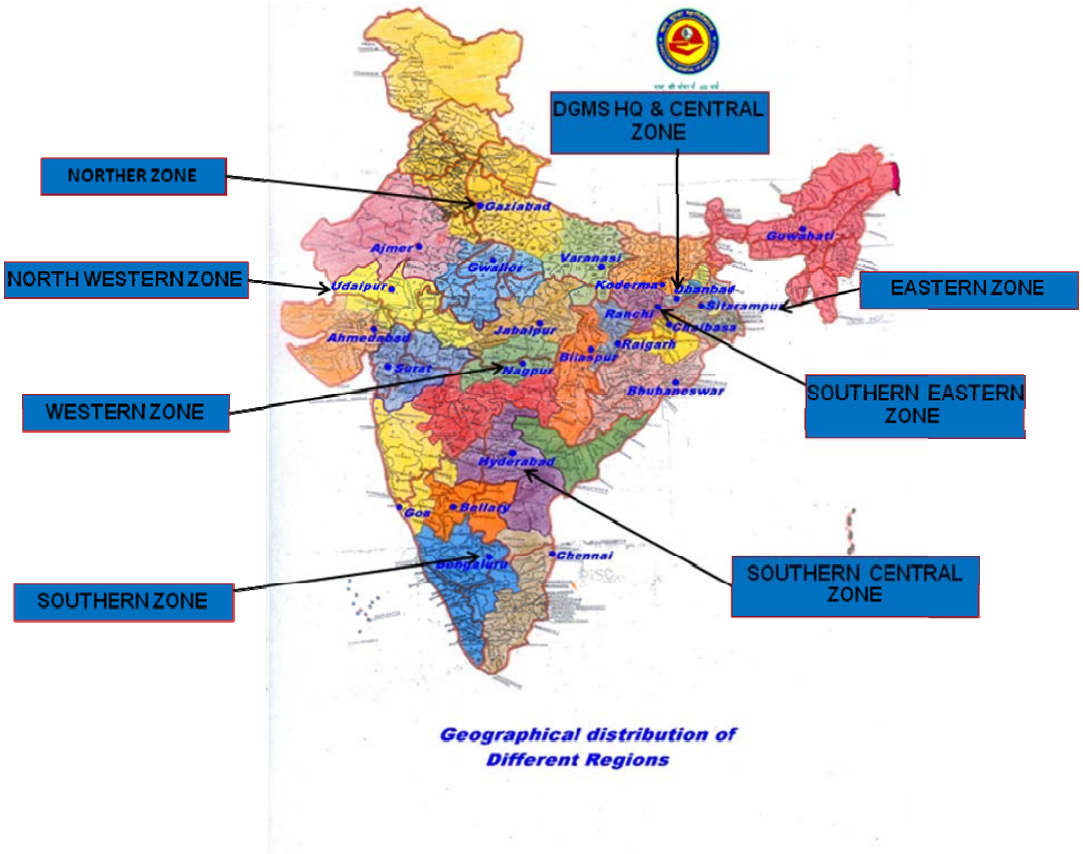
The offices of DGMS are spread all across length and breadth of the country that is shown below:

Zone	Region	Sub-Region
1. Central Zone, Dhanbad, Jharkhand	1. Dhanbad Region No. I 2. Dhanbad Region No. II 3. Dhanbad Region No. III 4. Koderma Region	
2. Eastern Zone, Sitarampur, West Bengal	1. Sitarampur Region No. I 2. Sitarampur Region No. II 3. Sitarampur Region No. III **4. Guahati Region**	
3. South Eastern Zone, Ranchi, Jharkhand	1. Ranchi Region 2. Bhubneswar Region 3. Chaibasa Region **4. Raigarh Region**	Ramgarh
4. Western Zone, Nagpur, Maharastra	1. Nagpur Region No. I 2. Nagpur Region No. II 3. Bilaspur Region 4. Jabalpur Region	Parasia
5. South Central Zone, Hyderabad, Andhra Pradesh	1. Hyderabad Region No. I 2. Hyderabad Region No. II 3. Goa Region	Nellore

6. Southern Zone, Bangaluru, Karnataka	**1. Bangaluru Region** 2. Chennai Region **3. Bellary Region**	
7. Northern Zone, Ghaziabad, U. P.	1. Ghaziabad Region 2. Ajmer Region **3. Varanasi Region** **4. Gwalior Region**	
8. North Western Zone, Udaipur, Rajasthan	1. Udaipur Region **2. Ahmedabad Region** 3. **Surat Region**	

Note: Names in colour are the newly opened Offices

Officers appointed to different technical posts in DGMS are selected by U.P.S.C. They are required to have Degree in Mining or Electrical or Mechanical Engineering and 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. Due to the nature of work performed by the officers of DGMS, the Govt. of India declared this organisation as "S&T Institution" on the recommendation of Science and Technology Department of Govt. of India, in November, 1987.



Geographical distribution of Different Regions

DGMS has a total sanctioned strength of 950 persons as on 1.1.2011 are indicated below:

CATEGORY	**SANCTIONED STRENGTH**
Group-A	279
Group-B (Gazetted)	38
Group-B (Non-Gazetted)	186
Group-C	222
Group-D	07
TOTAL	**732**
** To be filled up by outsourcing	**231

The table below shows the discipline-wise strength of the inspecting officers of DGMS (as on 1.1.2011)

Sl. No	**Designation**	**Discipline**							
		Mining		**Electrical**		**Mechanical**		**O.H.**	
		S	P	S	P	S	P	S	P
1.	Director-General	1	1	-	-	-	-	-	-
2.	Dy.Director-General	9	6	1	1	1	-	-	-
3.	Director	50	23	16	9	16	6	-	-
4.	Dy. Director	99	61	34	6	33	1	5	1
5.	Asstt. Director	-	-	-	-	-	-	Gr. I- 4	2
TOTAL		**159**	**91**	**51**	**16**	**50**	**07**	**9**	**3**

S - Sanctioned P - In position

ROLE AND FUNCTIONS OF DGMS

Mission of DGMS

The mission of DGMS is the reduction in risk of occupational diseases and casualty to persons employed in mines, by drafting appropriate legislation and setting standards, by overseeing compliance thereof and through a variety of promotional initiatives and awareness programmes creating an environment in which safety is given due priority.

Vision of DGMS

The vision of DGMS is "To ensure nationally acceptable and internationally competitive standards of health, safety and welfare for employees of the Indian mines."

Functions of DGMS

(A) Inspection of mines
(B) Investigations and Enquiries into:-
  (a) Accidents
  (b) Dangerous Occurrences
  (c) Complaints & other matters

(C) (a) Grant of:-
(i) Statutory Permissions, Exemptions & Relaxations
(ii) Approval of mine safety equipment, material & appliances
(b) Interactions for development of safety equipment, material and safe work practices through Workshop, Seminars, Discussions etc.
(c) Development of Safety Legislation & Standards
(d) Dissemination of Safety Information

(D) Conduct of Examinations for grant of Certificates of Competency.

(E) Safety Promotional Initiatives:-
(a) Organisation of -

- Conference on Safety in Mines
- National Safety Awards
- Safety Weeks & Campaigns

(b) Promoting:-
- safety education and awareness programmes
- workers' participation in safety management through -

- workmen's inspector
- safety committee
- tripartite reviews

System of Detection of Occupational Diseases in Mines

In order to detect occupational diseases the industry is required to conduct medical examinations and health surveillance of workers as per the provisions of Mines Act. The present efforts of mines management are concentrated on detection of silicosis, Coal Workers Pneumoconiosis and other notified diseases. Very little attention is paid to other occupational diseases. The essential features of health surveillance programme required to be carried out in mines are:

(a) Initial Medical Examination of persons to be employed in mines.
(b) Periodic Medical Examination once every five years. General physical examination, chest radiographs, lung function tests and audiometry.
(c) Classification of chest radiographs of workers as per ILO Classification.
(d) Medical examination within one year of superannuation.
(e) Evaluation of all cases of suspected pneumoconiosis by Pneumoconiosis Medical Board.
(f) Maintenance of medical records till the person is in service and 10 years thereafter.

The cases of silicosis detected during health surveillance programme are referred to Pneumoconiosis Medical Board of the mining companies for evaluation and certification. If certified, the case is notified to the enforcement authority and evaluated for disability and payment of compensation. Many cases of silicosis and other pneumoconiosis go undetected and a large number of cases of silicosis are misdiagnosed due to lack of training of medical professionals.

3.3.4 TRIPARTITE MECHANISM:

The third component of the safety management system is the Tripartite Committees involving all stake holders viz, mine management, regulatory organization and workers' representatives

at various level to oversee the compliance of OSH aspects in a broader perspective and for strengthening the existing safety management system. Evolving major policy decisions and identification of thrust areas are the main objectives of such tripartite bodies. These committees operate at local/area level, corporate level and national level.

Certain other promotional initiatives are also being taken, mainly by DGMS to enhance the standards of OSH in the country by organizing safety week, publicity of propaganda, National Safety Awards in mines etc.

Workers participation in safety management has been effected through safety committees and Workmen's Inspectors, where workers representatives are directly involved in safety management.

National Conference on Safety in Mines is another forum where all the stakeholders of the minerals industries assembles and recommends the need based actions to improve upon the status of OHS and welfare in mining industries.

3.3.5 CONSTRAINTS IN THE EXISTING SYSTEM

(A) AT OPERATOR LEVEL

Though there is a structured system and set up of safety management in the operator's level with specific responsibilities at various levels, the outcome in terms of OSH standards in mines in India is not upto the desired mark. Some of the areas, which need attention, are:

Authority of Mine Manager:

Though mine managers are the key person in safety management system, their authorities have been reduced to a great extent over the years particularly in the nationalized coal sector and in the existing system, managers are not capable of discharging their duties properly because of lack of power/ decision making authority. Today's managers depend largely on the corporate level at every step, thus lengthening the process of decision making and ultimately affecting the critical activities related to safety management.

Functioning of Safety Officer:

Though there is a designated safety officer in each mine, meant for assisting the managers exclusively in the areas of OSH, have become largely defunct because of lack of authority as well as structured organization or infrastructure under his control.

Effectiveness of Internal Safety Organisation (ISO):

The Internal Safety Organisation (ISO), a critical link between the corporate level and operators' level has failed to live upto the expectations in terms of their role in improving safety performance of the mining companies in organized sector, the main reason being the lack of commitment and authority. Little priority is given to the activity of ISO and they grossly suffer from lack of organization, infrastructure and authority. In organized sector, unless this organization is put in the line function, with certain authority and responsibility, with scope of career growth, their efficiency cannot be improved, as the members of this organisation do not feel any motivation in serving this organization.

Lack of infrastructure in Occupational Safety and Surveillance:

In most of the mines little priority is given to the safety and health departments compared to other production departments. The safety monitoring instruments or equipments are inadequate, old or not well maintained or even not calibrated. Similar is the status in terms of

rescue organizations and rescue apparatus. Though the mining industry is going for the state of the art technology for augmenting production, the technology adopted for safety is still far below the International standards.

Training:

In most of the mining industries training is not given the due priority and not considered as means of improving efficiency. Training need analysis (TNA) is seldom conducted to identify the training need. Most of the training centers provided under Mines Vocational Training Rules 1966 are lacking in infrastructure and competent trainers/ Instructors. Very little priority is given on training for skill up-gradation, safe work practices and safety management. The scenario in the unorganized sector is far below the expectation.

Lack of mechanization:

To improve the safety and health standards of the workforce, exposure of human being to hazardous areas need to be reduced. But still most of the mining activities are manual where huge work force is exposed to the hazardous and arduous work conditions of mining. Mechanisation of face operations should come in a big way to replace manual work. There is a strong need to introduce the service vehicles or mechanized transportation system in mines for carrying or shifting or installing heavy equipments or parts. Suitable man riding system may be introduced for transportation of work persons to and from the working places in case of below ground mines to reduce fatigue and undue stress.

R&D input for improving safety:

The scale of R&D activity in mines safety in the country is abysmally low. The existing set up for Mining Research are not adequate. The mining companies (orgainsed) must have their own R&D set up to improve the system of monitoring and control of hazardous operations in mining. The state of the art technology /equipment for monitoring safety (strata monitoring, environmental monitoring, surveying, monitoring of slope or dump stability) etc. needs to be introduced in a large scale.

(B) Constraints in the Existing Setup of DGMS

(a) Shortage of Manpower

Mining is a growing industry of the country. The output of most minerals has increased several folds in the last few decades and the projection for the 12^{th} plan and thereafter shows steep growth in output of most minerals. In order to meet the targeted growth, the major mineral industries are resorting to intensive mechanisation and extending workings to complex geo-mining locales which is bringing with it new problems of health and safety hazards which had hitherto remained largely benign. Mining activity of minor minerals has also increased by leaps and bounds to meet the growing demand by opening of new mines and by partial mechanisation, though most of the mines have remained largely manual. An increasingly large workforce consisting of men and women are being deployed in such operation with very little concern on matters connected with their occupational health and safety. There is therefore a need for stringent enforcement of the Mines Act so as to provide a protection against occupational hazards. The challenges posed by mechanisation and new technology need to be addressed through up-liftment of technical skill of inspectors and frequent inspections so that safety and health of work persons get its due priority.

Active role of an independent regulatory body for evaluating safety standards in mines is a prevalent global practice. In India, DGMS has been playing this positive role since its

inception in 1901. However since 1971 the growth of the organisation has been stunted in a scenario where mining activity increased by leaps and bounds. The result is, even though the organisation has been over stretched to its limit of performance, it could not fulfill the demands of the nation and reach the norms of inspection that have been evolved over the long existence of the organization. Further, being a statutory organization, most of the documents generated are statutory in nature where scope of simplification and rationalization is limited. Moreover small mines go un-inspected for years and many others cannot receive the attention they deserve. The coal mines, oil mines and mechanized metalliferous mines call for closer inspection because of their intrinsic hazards. Complete inspection of such mines is required once in a year by mining inspectors against which with the existing strength it is possible to make such inspection once in 4-5 years. Similarly electrical and mechanical inspectors are required to inspect such mines once in a quarter but with the existing strength it is hardly ever possible.

The Act requires all mines other than those working minor minerals with employment less than 50, small opencast mines employing less than 20 persons, with bench height less than 6 m. and explosives not being used should send returns to DGMS. However the mines submitting such returns are several folds less than the actual numbers, the main reason being acute shortage of the inspection machinery to book the erring mine management. These results in a large number of workforce being deprived of the protective cover of the Mines Act.

Mines Act, 1952 is in the process of amendment and the jurisdiction of its applicability is proposed to be extended up to 200 nautical miles in to the deep sea area thereby the offshore operations of oil and natural gas including seabed mining shall also come under the purview of the Mines Act.

Although 196 new posts have been created in DGMS after an SIU study from the Ministry of Finance, Government of India, but the Offshore aspects and the future scenario of the mining activities of the country were not taken into consideration while assessing the manpower requirements. Shortage of staffs and inspecting officers remained a major constraint in DGMS.

(b) Lack of Training facilities and exposure of DGMS Officers and Industry Key Personnel

The effectiveness of the safety professionals in the mining industry and the enforcement organization, i.e. DGMS is, to a great extent, dependent on the capability and competence of its front-line officers who come in frequent contact with various segments of the mining community. Amazing advancements have taken place in the Indian mining industry during the past few decades. Recourse has been taken to intensive mechanization to meet high targets of mineral production. Both, on account of the increased complexities of safety and tremendous expansion of mining activities, the responsibilities of DGMS in drafting/developing matching safety legislation, standards and codes of practice; in scrutinizing and approving working plans and granting permissions & exemptions; in analyzing the hazards associated with introduction of new machine or equipment; in monitoring and promoting compliance with safety provisions; in evolving and promoting a variety of safety promotional measures and in generally exercising the advisory/educational

influence, too have increased considerably. Problems that lie ahead are far more challenging because Indian mining industry is poised to take a quantum jump in the years to come.

Mines Act, 1952 is under amendment and the applicability of this Act has been proposed to be extended in to the Offshore area covering Exclusive Economic Zone and Maritime Zones of India, thereby all the Offshore operations of Oil & Gas Sector including the undersea mining of minerals would come under the purview of the Mines Act. This will be the new area where more infrastructure, manpower and trained and skilled officers and staffs would be needed.

Though the imperativeness of imparting structured training and retraining to the officers of DGMS has been emphasized, amongst others, by the National Conferences on Safety in Mines, Committee set up by the Government of India to review the role and functions of DGMS and the PIACT Mission (ILO).

Hence there is a strong need to revamp the whole system of HRD in the mining industry as well as in DGMS. Infrastructure facilities for imparting structured training to the officers of DGMS and other key personnel of the mining industry is required to be set up in the form of 'Mine Safety & Health Academy' as is done in USA, Australia and other countries. It has, therefore been proposed to establish MSHA centers/institutes at various places not only for on-land but also for Offshore operations.

The officers of DGMS are holders of degree in their respective disciplines. The officers in mining discipline additionally hold the First Class Mine Manager's Certificate of Competency. Therefore the level of training required to be given to them has necessarily to be 'super specialization'. The Directorate-General of Mines Safety being the only organisation in the country where rich and varied expertise of this level in the field of Mine Safety with stress on development, administration and practical means of implementation of safety provisions exist, is eminently suited to implement the proposed scheme. The only, alternative could be sending out the officers of DGMS to Academies like the National Mines Health and Safety Academy, USA, Australia, Germany, South Africa and many other countries for intensive training. DGMS officers should also be exposed to best practices in the field of Occupational Health and Safety in mines in developed countries as well as other Industries like Chemical, Aviation etc.

(c) Inadequate Infrastructure Facilities

DGMS is a specialized organization engaged in the area of Mines Safety spread all over the country. The main activity of the officers of DGMS includes enforcement of statute regarding safety in mines. The nature of work itself warrants high level of security need, compact residential areas where officers and staff can be mobilized very quickly during emergencies in mines, large volumes of documents, etc. need archival facilities, records pertaining to statutory examinations, etc. need high level of security and secrecy and above all provision of facilities like good communication, better residential accommodations, mobility of officers and staff with fast motor vehicles etc. would definitely give an edge to the organization for functioning in a much more concerted and effective manner.

DGMS is an emergency organization. The Officers of DGMS are required to respond instantly in case of any emergency like disaster/accident etc. in mines. In case of accidents in mines, the officers of DGMS have to immediately rush to the site and set up emergency

response activities. The mines work round the clock, so, the officers of DGMS have to be ready for emergencies at all times.

DGMS does not have its own office complexes at Hyderabad, Ranchi and many other places where Zonal and Regional Offices are located. Two New Zones one at Bangaluru and the other at Udaipur have recently been opened. Similarly eight new regional offices at Surat, Ahmedabad, Gwalior, Varanasi, Digboi, Raigarh, Bellary and Bangaluru have been opened. Office and residential complexes are to be constructed at such places.

In order to strengthen the Organization and to increase its' efficiency, it is necessary to provide proper inputs to the officers of DGMS by providing better infrastructure facilities like proper office and residential accommodation, modern office equipment and effective communication system, adequate numbers of vehicles, mobile vans with transit accommodation facilities, laboratories, transit accommodation at H.O. or Zonal Officers etc. It is difficult to discharge the statutory obligation and other special type of jobs, which the DGMS Officers are required to perform with the existing facility that are very old and outdated.

(d) Lack of Information System and Modern Communication Tools

Management of Information System is a key factor for success of any organisation. The process of decision making becomes easier if it is based on the past experience on similar events. Safety measures can be taken by both reactive and proactive methods. In reactive method, investigation in to any accidents or incidents yield some useful information for taking collective actions against similar situation. In proactive method, identification of hazards is done by critical analysis of the past and present condition and preventive measures are suggested. In both these methods lot of useful and critical information is generated to help in the process of decision making. The quantum of such information is huge and analysis of them manually is a Herculean task. Hence there is strong need for creating a computerized information system and some analytical tools for their analysis. The subjectivity of the decision making process can only be avoided by using computerized database and data mining tools. Computerization of such information system will enhance the speed of data collection, storage and retrieval, analysis etc. which is most essential in any information system. At the same time, effective communication between different stake holders as well as nodal agencies is also very critical. Establishment of structure and dedicated information network may be a key factor in the success of the management information system.

In DGMS, initiatives in the regard was first taken in the year 1975 through creation of a scheme named "Development of Mines Statistics". The achievement so far includes devising a system to collect pertinent mines safety information generated in course of its own statutory functions, information relating to operational aspects of the mine, accident and other dangerous occurrences, brief geo-mining characteristics of mines etc. Similar systems have been developed in CIL and its subsidiaries, other coal companies and major non-coal companies as well. Starting with manual paper-based system, these local systems have slowly shifted to codification and standardization of information. The research institutions, academic institutes and other R&D laboratories maintain their own information base, with results obtained from safety related investigations and experiments. Organizations like IBM, State Departments etc. also possess a vast reserve of processed data, as well as their own system of collecting and disseminating information relating to mines. Most of them have arrangement for analyzing data for their own decision making purpose.

Information Technology is a very powerful tool for any management system. But as on today there has been very little application of information technology in mines safety management system in India. There is need for creating a powerful database of mines safety information system to collect and preserve the huge safety information using customized software for quick and easy retrieval and also for effective data mining for taking proactive steps for improving the safety status of Indian mines. Various software may also be developed customizing the requirement of different core functions of DGMS so as to enable introduction of e-governance in the statutory and administrative functions of DGMS. It is also very much essential to establish electronic communication channel for quick transmission of information amongst the different zonal/regional offices and head office of DGMS as well as mining, S&T, Research and other organisation. This may be implemented by establishing local area network and wide area network between the offices.

(e) Constraints in the Existing Legal Set Up

The Mines Act has given two major weapons in the armory of DGMS for ensuring compliance with the provisions of the statute. These are: power to order work prohibition & power to prosecute.

The necessity of timely action against violations of law cannot be overemphasized. Laws are meant to be complied with, and managements must appreciate this basic tenet and respect the authority of the enforcement agency for this purpose. Every contravention must merit punishment. Further, for such punishment to have a salutary effect, it must be prompt & meted out to the concerned delinquent official, regardless of the position enjoyed by him in the hierarchy of management.

At present the inspecting officers of technical cadres who are not thoroughly trained and proficient in legal matters are preparing legal cases. Most of the criminal cases instituted by DGMS, particularly in Zones and Regions where a law officer is not posted are entrusted to outside lawyers. These lawyers have to be drawn from the panel approved by the Law Ministry for the different courts. Since formation of panel is a cumbersome and time consuming process, for most of the Courts panels do not often exist. DGMS faces difficulty in engaging outside lawyers because prior approval of Law Ministry is required in such cases and remuneration are not considered lucrative enough by the established practicing lawyers. Interest taken by most of the panel lawyers is less than satisfactory. Best of the practicing lawyers are generally engaged by the mine management. Under the present situation prosecutions have lost their effectiveness as a deterrent because these are long drawn affairs and the Directorate-General of Mines Safety is not in a position to follow up all the cases for shortage of officers in the legal cell.

Legal setup in DGMS should be suitably strengthened so that not only are the inspecting officer/field officer provided due and necessary help in framing charges for contravention of law but suitably qualified and educated manpower is also available to conduct the cases filed by DGMS in the Courts by putting things/matter in the right prospective.

(f) Shortcomings of Present System of Detection, Prevention and Control of Occupational Diseases

Detection, prevention and control of occupational diseases are the constitutional obligation of the government and employers. Some of the important shortcomings of the present system are;

- Inadequate manpower and infrastructure facilities in DGMS to enforce the statutory provisions.
- There is general lack of awareness among workers and employers about occupational diseases.
- The infrastructure facilities for diagnosis of occupational diseases are inadequate and awareness among medical practitioners is lacking.
- A number of cases of occupational diseases are misdiagnosed.
- Cases of silicosis are not notified to enforcement agencies.
- Proper health surveillance of workers is not carried out by the mining companies.

In view of the above, the whole set up of Occupational health surveillance needs to be restructured both in DGMS as well as in the mining industry and more thrust on OH is to be given by strengthening the machinery of enforcement of occupational health, creating suitable infrastructure for making regular survey and charting out the measures to control the menace of occupational diseases in mining sector.

(C) CHALLENGES & CONSTRAINTS IN SMALL AND UNORGANIZED SECTOR MINES

(i) Small mines represent a growing and important component of the mineral sector in the form of value of output, contribution to the economy and employment. It has been estimated that small mines contribute about one sixth of the value of the world's non-fuel minerals output. In many developing countries output is significantly higher than this figure. In India, for example, some 1,00,000 small mines account for about 50% of non-fuel mineral production. The employment effects of such activity are considerable, especially from lowest income segment of population in tribal and rural areas. An estimated work force of about one million is involved in this activity in India.

There is no valid definition of 'small mine' but there are different criteria to define this sector, such as quantity of ore produced, amount of revenue from sales, size of deposit/working and number of employees. For the purpose of understanding the generic term, "small mine", one may assign the following attributes:

- exploitation of surface or near surface deposits ;
- out-put less than 30,000 tonnes per year;
- aggregate employment of less than 50;
- predominantly worked by manual means or much less mechanization.
- Seasonal in operations; and
- Migratory Workforce

However, some of the mines are exempted from provisions of most of the Mines Act in certain cases. Section 3 of the Mines Act details conditions under which these exemptions would be effective.

While eighty nine minerals (including minor ones) are exploited in India, around seventy of them are extracted only by small scale mining. Bauxite, coal, copper ore, dolomite, gypsum, iron ore, lead-zinc ore, lignite, limestone & manganese ore are the exceptions. India is one of the top ten countries in productions of chromite, barites, mica, talc, sillimanite, kyanite and andalusite which are mined here only in small scale.

Some major areas of concern for small mines in India are,

- Irrational wages for workers.
- Unacceptable working conditions vis-à-vis human safety, health and protection of environment.
- Inappropriate technology and inadequate financial support,(small mine owners generally do not have the technical or financial capabilities for scientific exploration, development, extraction and processing of minerals).
- Unorganised wasteful exploitation for immediate benefit.
- Sociopolitical influences.

(ii) Operational Problems in Small Unorganised Sector Mines

Small scale mining operations are generally characterized by low capital investment, arduous working conditions, unsystematic exploitation, inadequate social security of workers, and inadequate financial backing. Because many small-scale mines operate on a shoestring budget, there is no question of spending scarce resources to improve safety & health practices, particularly since such expenditure will not bring any financial rewards in the short term. Also, unemployment in many mining regions is such that the mine workers have no alternative but to accept the working conditions they are faced with.

(iii) Enforcement of Statute in Small Unorganised Sector Mines

The major issues/ problems vis-à-vis enforcement of legislation in small unorganised sector mines are:
Establishment of ownership of small mines;
Identification of particular mine without recorded location & clearly demarcated boundaries;
Non-availability of documentary evidences/ records;
Negligible penalties in case of prosecutions, long time in disposal of cases if any in Courts of Law;
Inadequate number of Inspecting officers in DGMS;

Quarry licenses/leases are granted by concerned state government authority. Generally neither safety requirements are taken into consideration while granting such a license/lease nor any mention is made regarding such requirements in the license/lease order, resulting into complete ignorance of the licensees/lessees regarding safety requirements and related provisions of the statute.

There are no parameters to assess the financial solvency of the lessee/licensee to ensure that the lessee/licensee is economically sound to provide for basic infrastructure and resources to run a mine in safe and scientific manner.

Generally quarry licenses are granted for a maximum period three years. The mine operators normally avoid investing in safety and welfare measures for such a small period.

Very small size of the quarry licenses (upto 30 m x 60 m.) makes it almost impracticable to work the quarry safely with due consideration of safety legislation;

The workings are generally made by contractual workers i.e. they are paid based on the production of minerals. Since their earnings are dependent on production only, the hours of work in such mines is not fixed. The concept of weekly day of rest and working hours do not have much relevance for such workers.

Workers are mostly migratory, illiterate, unorganised, seasonal and change their employers quite frequently and therefore it is very difficult to keep a record of work history.

Lack of facilities for medical examination and training of workers prior to their employment in mine;

Due to economic reasons, mine workers often live in environment which is perhaps worse than their workplace including the air borne dust in the environment.

Mine Operators do not submit notice of opening of their mines to DGMS. Even accidents and diseases due to mining operations are not reported to DGMS.

3.4 SUGGESTIONS FOR IMPROVEMENT IN OCCUPATIONAL HEALTH AND SAFETY

3.4.1 CHANGING SCENARIO OF INDIAN MINING INDUSTRY – SOME CRITICAL ISSUES OF OSH IN MINES

With the liberalization of Indian economy, the whole industrial society is facing certain challenges and mining industry is no exception. The critical & emerging issues relevant to mine safety are as follows:

- **Quantum Jump in mineral production:**

As discussed in the previous chapter, the growth in the mining industry is envisaged to be manifolds. There will be increase in number of operating mines, size of the mines, deployment of manpower and fleet of machineries of various capacities and origin. This is going to create a more complex situation as far as mine safety and health issues are concerned. Subsequently this will call for qualitative and quantitative change in formulation as well as enforcement of mine safety management system. With the existing strength and structure of enforcement machinery it will be difficult to meet the challenges and total restructuring and strengthening of the legislative machinery needs to be accomplished.

- **Complex geo-mining conditions:**

The geo-mining conditions of certain mining areas are becoming more and more complex because of its age, increasing depth, not so easy to mine deposits, close proximity of deposits, deposits under fiery or water logged & exhausted or partly exhausted workings in upper horizon etc. Working such deposits safely and economically pose a great challenge to the mining engineers. With the increasing demand for minerals, mining activities in such difficult geo-mining conditions are envisaged to be increased posing real great challenge to all the stake holders to ensure safety of acceptable standards.

- **New Technology:**

There is a big gap between the demand and supply of certain minerals and there is increasing need for augmenting the production capacity of certain minerals. New Mass production technologies are being introduced in a large scale and alternative mining technologies like CBM, CMM, AMM or Underground coal gasification etc. are also coming up. In metalliferous mining sector Beach sand and Deep Sea Mining is also emerging as new field. The vast costal areas of Kerala, Tamil Nadu, Andhra Pradesh and Orissa has abundant deposits of rare earth minerals. In recent years state governments have proposed to offer

coastal areas for extraction of rare earth minerals to private parties. Thus there will be many mines in this category with new technology of dredge mining, which again requires constant attention of this directorate.

These new mining technologies are adding some newer dimensions of occupational safety and health problems in such mines. These are:

- Existing Legislative provisions do not match with the newer technology,
- Standard or safe operating procedures for the new methods or equipments are yet to be developed in certain cases, leading to unsafe operations,
- Work persons are not well educated, skilled or trained to adopt such new technologies, enhancing chances of more human error,
- The high capacity machines are producing lot of heat, noise or dust – making the working atmosphere vulnerable,
- Longer hours of work, fly-in and fly-out concept in some isolated areas, and
- The physiological and mental stress levels in operating such high capacity machines are also high.

The existing safety management system must address these issues well before and necessary restructuring or strengthening of existing machinery need to be accomplished so that the challenges of these new dimension of safety with introduction of new technologies are dealt effectively.

3.4.2 Privatisation and outsourcing – entry of multinational players:

Mining industry has been open to the private entrepreneurs and lot of mines are being opened and operated by private operators. Lot of multinational companies are also entering in to the Indian mining industry for extraction of mineral. Out sourcing of certain operations and equipment is also becoming quite common in the large Public Sector or Private mines. But this is also adding some new dimension to the health and safety aspects of mining industry. These are:

- Use of contractors brought into sharp focus the suitability and effectiveness of existing mine management structures to control the inter faces for health & safety matters.
- Big contractors award parts of the job to petty contractors not having adequate capacity or concern for safety.
- Employees are purely temporary or migratory in nature and not well conversant with mining activities or laws. In many cases, no formal or informal training is imparted, as required.
- Contractor’s workers are having more risk taking attitudes as earnings are directly connected with output.
- Sometimes safety is considered as a cost component only, ignoring the cost of lives or working / living condition.
- Contractors have very little commitment for ensuring safety and health conditions of the work persons.

Privatisation and outsourcing can not be overruled in today's context. But these issues need special attention at the initial stage so that it does not bounce back to the objective of the mining industry. A suitable well defined & structured interface is to be established between the principal employer and the contractor, defining the responsibility in terms of maintaining safety and occupational health of the contractor's workers.

3.4.3 Social Issues:

Mine Safety and Health issues are also being largely affected by the socio-economic and socio-political atmosphere prevailing in the mining field and these are:

- Rehabilitation & resettlement of mining affected persons
- Shrinkage of mining activity in older coalfields or mining fields leads to shrinkage of direct or indirect job opportunity affecting the socio-economic condition of the locality which is ultimately reflected in to social crimes, unrest,
- Increasing trend of incidents / accidents due to illegal mining in such areas is of serious concern,
- Protection of Environment in the mining fields is one of the major issues of concern, and
- Closure of mines in a systematic manner with due consideration to safety, environmental and social impact of the closed mines is of critical concern for the industry and the society.

3.4.4 STRATEGIES FOR ACTION

In view of the anticipated changes in the technology & work culture, some of the important changes in the strategy for management of OSH in the coming decades are outlined below:

Conceptual change:

Safety and health issues need to be given due priority in the organizational goals & objectives, where each and every stakeholder has responsibility.

The concept of self-regulation need to be introduced gradually through risk management, including reducing dependence on external supervision to self supervision.

Present system of External Supervision may need to be replaced by the concept of Self Supervision and necessary skill up gradation for work place supervision by all classes of work person has to be taken up by a proper mechanism of training and retraining. Further, the present system of surveillance of work place hazards solely by naked eye & experience may need to be supplemented by instrument aided continuous surveillance of work place hazards.

Development of Legislation:

- Development of a more flexible regulation with a simple and easy process for amendment will be required to keep the regulation updated and keep pace with the changing need of the industry. In this direction, a gradual shift from the highly prescriptive legislation of the present to a goal setting legislation with built in mechanism for risk assessment and formulation of Safety, Health and Environment Management Plan would serve the purpose better.

The concept of maintaining standard of safety and health in an operation should go beyond the minimum regulatory requirements.

The main OSH statutes in respect of mining sector are quite precise and specific. With the fast changes in the mining technology and changing socio-political and socio-economic environment in the country, safety legislation need to be upgraded at regular interval. Thrust may be given on development of guidelines, safe operating procedures and code of practices to bridge the gap between existing statutory provisions and emerging safety & health standards.

Exercise need to be carried out to identify and eliminate duplicity, inconsistency and redundancy in respect of OSH provisions under different statutes.

Enforcement machinery:

Recognising the important role of DGMS in improving the status of OSH in mines, more so under changed scenario, this organisation need to be strengthened urgently in terms of number of inspecting officers and improved infrastructure. Resource enhancement in DGMS through training and exposure to emerging technologies and practice should be carried out on regular basis.

In view of the increasing complexities in the field of enforcement of statute and demand for information, there is a strong need for development of mines safety information system with customized application software & hardware. This will help in the process of speedy decision making and handling of emergency situations.

Legal set up of DGMS should be suitably strengthened; special courts may be constituted to deal the cases under Mines Act. Suitable modalities to be developed for taking assistance from eminent lawyers for disposal of the cases.

Internal Safety Organisation (ISO) should be made effective by restructuring and providing better infrastructure.

In view of the expertise available and experience of more than 100 years in the field of OSH, DGMS may be established as an OSH Hub for the country for formulation of OSH and research policy not only for the mineral sector but for the other industrial sector. This expertise may also be extended to other developing countries in formulation of their OSH policies and statutes.

Planning & Technology:

Reducing exposure in high risk areas, including face operations in below ground mines, may be taken up on priority. This will include elimination of manual loading.

- Development and Extraction Plans have to be systematic with a long term objective keeping in mind the need for environment management and management of RRR (Reclamation, Rehabilitation & resettlement).
- Further, a detailed Mine Closure Plan has to be formulated before the mining process starts in order to ensure best use of the land resources once the mineral wealth is extracted and avoid potential hazard in future to environment, further mining and possible growth of habitation in that area.
- In the liberalized business environment, import of technology and equipment from different countries of origin, having different work culture and geo-technical background, would be unavoidable and under such condition the whole process of change has to be supported by a smart plan to adopt the technology to the Indian environment including the necessary training, maintenance and support services. The

user Industry should have a strong quality control system and where possible should establish their own testing facility.

- In the context of import of equipment and machineries preference shall be given to safe, user-friendly and environment-friendly designs having in-built fail-safe mechanism incorporated in the design in order to ensure safety to persons and environment under all sorts of operating conditions.
- In view of possible import of technology and equipments, development of testing facilities of international standard (for all types of equipments) will be required to be developed in the country to test the performance under Indian operating condition.

Thrust need to be given on application of IT, electronics and instrumentation, including GIS.

Change in Work Culture :

- Inculcating better system and work culture by adopting ISO certification schemes for quality, environment and OSH (viz.ISO 9000, 14000 & OSHAS 18000) for the total system from extraction to utilization.
- In a globalize business environment of the future, different operators having a heterogeneous work culture & skill level has to amicably co-exist in a system. A company may wish its core activities performed by a comparatively skilled & slim size of manpower whereas the associated peripheral activities off-loaded to Contractors (usually having comparatively inferior skill & work culture). Under such condition a proper system of sharing rights & responsibilities amongst all should be in place.
- A participatory role of all the stakeholders viz; Industry, Government Agencies, Professional Bodies, NGOs, Research Institutes and Educational Institutes engaged in the field of mineral technology and management would be highly solicited to prepare the future road map for the sustainable development of the mining industry in the country.

Emergency Response & Disaster management:

Emergency response system based on scenario planning, establishment of adequate infrastructure, training and motivation should be part of disaster management plan.

Occupational Health:

There is a strong need to improve occupational health standards through improved surveillance and greater awareness generation. This needs to be integrated with mine environment standards.

Human Resource Development:

Structured training and retraining at predetermined interval to upgrade the managerial and technical skills and OSH standards through better infrastructure, aggressive training programme, delivery and evaluation should be given due focus.

Competence of managers and key supervisors need to be up graded by strengthening the system for grant of competency certificates. This will call for review of curriculum of Degree/Diploma courses in mining. Special certificate courses in OSH need to be introduced for competent persons who do not require competency certificates.

Mines Safety & Health Academies may be established with modern training centres at strategic places, equipped with state of the art training aids for upgradation of knowledge base of DGMS officers and key personnel of the industry in the field of OSH.

R & D effort:

More attention will be needed on applied research by professional bodies in the field of occupational safety, health & environment and a national database on experience in the field of management of Safety, Health and Environment shall be formed for future reference. A suitable mechanism may be formulated for necessary funding for the same.

OSH issues in Un-organized Sector and Suggestions for Improvement

The Mines Act, 1952 is applicable to all the mines where any operation for the purpose of searching for or obtaining minerals is being carried out. However in term of Section 3 of the Act, open cast excavations where specified minerals are worked, are exempted from most of the provisions of the Act provided the depth does not exceed six meters, the number of persons employed on any day does not exceed fifty and explosives are not used. Even in these cases the provisions relating to the powers of the Inspectors of Mines to inspect these excavations, restriction on employment of women and prohibition of employment of the persons below the age of 18 years are applicable.

There are over 100,000 small open cast mines in unorganized sector which attract the provisions of the Mines Act. Most of these mines are metalliferous mines. The exact number of such mines at any point of time cannot be determined because some of these mines are worked intermittently and also because notice of opening, re-opening or closing are not being sent to the Directorate-General of Mines Safety by the Mines Managements.

The Metalliferous Mines Regulations, 1961 and the Rules framed under the Mines Act, 1952 are applicable to small and large mines alike. However, these two groups of mines have different types of safety and health problems. Large mines are normally mechanized, deep, extensive & use a large amount of explosives, while small mines are worked manually over a limited area using no explosives or small quantities of explosives. Financial and technical resources available in small mines are limited. These mines are generally managed by persons of the rank of foreman or mate while persons holding manager's certificates manage larger mines. The operators of such mines find difficulty in discerning the specific statutory provisions, which apply to their mines. There has accordingly been a long-standing demand from the operators of such small opencast mines for a separate code of safety legislation. Incidentally, Kumaramangalam Committee on Role & Functions of DGMS had recommended for simplification of safety legislation in respect of small mines.

Due to acute shortage of officers in the enforcement wing of DGMS, majority of the small mines remain un-inspected every year. Under the Mines Act, an Inspector prohibits employment of persons if the operations pose an immediate danger to their lives. Owing to shortage of officers in the enforcement wing of DGMS, it is often not possible to make frequent follow-up inspection to check whether the prohibitory order is being complied with. The Inspector therefore endorses a copy of the order to the district authorities to ensure compliance. If during a subsequent inspection it is detected that the mine operator has continued to work the mine in violation of the order, DGMS institutes a case in Courts of Law. Experience shows that it takes a long time for disposal of cases in the Courts of Law. Besides the penalty imposed by them are light and do not act as deterrent. In case of

recalcitrant mine operators, the matter is therefore brought to the notice of the State Govt. officials who might take steps to cancel the lease/permit. There is thus a need for coordinated initiatives from DGMS and State Govt. officials to bring about a positive change in safety scenario of such mines.

As regard occupational health, extent of the problem itself is yet not identified fully. However, stone crushers pose serious hazards to the health of the workers. Because of lack of financial resources and technical expertise, the mine operators are usually not in a position to institute dust control measures and carry out medical surveillance of such persons.

Mine Data Acquisition and Analysis for Unorganised Sector

The annual publication of the Statistics Division is based on the returns covered under the Mines Act 1952. While the coverage of the coal sector in terms of number of returns received vis-à-vis the number of mines in the mine master is satisfactory, the same cannot be said for the metalliferrous sector. In the metalliferrous sector, even though around 5000 mines featuring in the mine master are covered by the act and are required to report to DGMS, both quarterly and annually, in a specified format on some key characteristics of production like output, man-shifts worked, wages paid etc, the number of returns actually received in the Division is significantly lower. The DGMS data for this sector is, therefore, grossly underestimated and can hardly be said to represent the true picture of Statistics of Metalliferous Mines in the country. The position is not very different for the IBM which also faces similar problems in estimating the key characteristics of this sector because of incomplete coverage. It needs to be appreciated that any improvement in the quality of data of this sector will be possible either through better inputs from the mines with increased coverage or application of suitable statistical methodology to arrive at reasonably good estimates of the key characteristics of this sector. However a large number of minor minerals are in the unorganized sector and may not be having proper infrastructure to furnish returns as required by DGMS or even may not be aware of the existence of such a system.

This issue came up for discussions in the meeting of the reconciliation committee comprising of members from the office of the Coal Controller, the IBM and the DGMS, the three organizations responsible for collection and dissemination of mining statistics in the country, when it was found that none of the organisations have a total count of the number of mines in the country. Non availability of the sampling frame or the complete list of mines covered under the Mines Act is a serious impediment to the application of any statistical methodology to this sector.

The following measures can be taken up in this regard:

- In order to conduct census for survey of small mines, it would be appropriate to seek helps from concerned State Governments and assess the conditions of work, safety standards, and OH conditions by engaging external agencies or accredited qualified auditors.
- To follow up the case with the state agencies
- To suspend the transport of minerals during pendency of prohibitory orders and suspension of lease in case of continuance of working against prohibitory orders

Census may be conducted to identify the system of OSH in small mines in the unorganized sector. There will be a need to increase awareness and enhance skill of such mine operators and workers. External technical supports may be required for these mines.

The State Governments need to take cognizance of the serious / repetitive violations of Mines Act or the prohibitory orders issued under the Mines Act before renewal of leases for extraction of minerals.

3.4.5 CAPACITY BUILDING IN DGMS

Need for Growth and Development in DGMS

In view of the changing scenario of Indian mining industry in the next two decades and the subsequent challenges for safety & occupational health issues in mines, there is a strong need for growth and development in the existing enforcement machinery. DGMS will have to play a greater role of mine safety legislative enforcement agency as well as facilitator for introduction of newer concept of "self regulation". In addition to technically upgrading the existing machinery with respect to the state of the art technologies, DGMS has also to gear up itself for entering into new areas like offshore operations, mine environment, mine closure etc. and also to address the socio-economic and socio-cultural issues in and around the mining fields.

The challenges posed by mechanisation and new technology need to be addressed through upliftment of technical skill of inspectors and frequent inspections so that safety and health of work persons get it's due priority.

According to the ILO international instruments, the prime responsibility for the health and safety of workers in their employments rests with the employers. The employer should provide and maintain a safe and healthy working environment, ensure the provision of occupational safety and health services to workers, and give a high priority to health, safety and the work organization in general in order to reduce the incidence of occupational injuries and diseases. The employer plays an essential role in the performance of occupational health practice. To ensure its success, the employer should allocate the necessary resources, demonstrate his desire for workers to participate in the implementation of occupational health programme and be willing to accept suggestions from occupational health specialists on its successful implementation.

Under the scenario explained in the preceding paras, the role of Inspectorates (in present instance – DGMS) become ever more important. It is the Inspectorate who can bridge the gap between the Employer and the Employee and formulate adequate guidelines for a better and safer workplace. All over the world, this is the role played by the respective Inspectorates. In USA, Mines Safety & Health Administration (MSHA); in UK Health and Safety Executive (HSE); in Australia Departments of Minerals & Energy (DME); in South Africa the South African Inspectorate all play the same role. The situation is no different in any other country in the world whether developed or developing. In view of the role of Inspectorate and the existing expertise developed in this Directorate, the role of DGMS may further be extended as an OSH Hub of the country. DGMS being the sole regulator in the field of OSH in mineral sector has acquired vast experience and expertise over a period of more than 100 years in the past and has made significant contribution for improvement of OSH scenario across all the industries in this sector. The strengths so developed over the years can be gainfully utilised by making the organisation an OSH hub for Research and Policy formulation in the field of OSH not only for the mineral sector but also for other industrial sectors in the country.

It is obvious that with the slender manpower in DGMS, it will not be possible to do justice to the need of the mining industry in the field of OSH and more so in the increasing complexities of the issue. It is high time that the organisation be strengthened.

Strengthening of Human Resource Development in DGMS

As discussed in the previous chapter, there is a strong need for strengthening the HRD in DGMS with specific thrust on Upgradation of skill and knowledge base of DGMS officers and industry key personnel in the field of Occupational Health and Safety. This can be achieved by the following:

- Establishment of Mine Safety Health Academy with proper infrastructure and state of the art training centres along with training aids at different Zonal offices. New Centers is required to be opened in Oil and Gas sectors especially in Digboi, Goa, Mumbai, Ahmedabad and Surat.
- Designing suitable course modules in the field of OSH in consultation with national and international experts.
- Imparting training as per the modules by eminent personalities, national and international experts in the field of OSH.
- Orientation training programme of DGMS Officers and key personnel of industry at regular intervals.
- Regular and close interaction with experts of Mine Safety and Health Academy and Occupational Health & Safety Inspectorates of other developed countries.
- Exposure of DGMS Officers and key personnel of industry to best practices in OSH.
- Training in modern management techniques & managerial skills to the officers of DGMS at reputed National and international management institute.

Strengthening of Legal set up of DGMS

The core function of DGMS being enforcement of safety legislation, inspection of mines is the core activity of DGMS inspectors to assess the compliance of various legislations. These inspections produce lots of safety information based on which actions are taken. This is one of the logical culminations of such inspections is legal action as per statute. The other end product of such information may be dissemination of such information through issue of circulars or guidelines for safe operation.

The Mines Act has given two major weapons in the armory of DGMS for ensuring compliance with the provisions of the statute. These are: power to order work prohibition & power to prosecute. At present the inspecting officers of technical cadres who are not thoroughly trained and proficient in legal matters are preparing legal cases.

As mentioned in the previous chapter, there is a strong need for strengthening the legal set up of DGMS so that legal actions arising out of the inspections and enquiries are taken appropriately and timely.

Development of Mine Safety Legislation

Safety Management System in Indian mines is so far prescriptive in nature. It is being primarily implemented through enforcement of mine safety legislation. Hence, development of mine safety legislation and its updation from time to time is one of the core functions of this Directorate. It is obvious that the mining statute needs to be modified with the changes in the technological, socio-economic and socio-political changes of the country. Moreover,

technology change is very fast. Hence, there is always a requirement of amendment or modification of the statute at regular intervals. But as the process involved in such amendment is quite time consuming, the gap between technological development and consequent modification in legislation is bridged by issuing certain guidelines in the form of circulars, codes of practices etc. But again with the existing strength of manpower in the Safety Directorate, it is not being possible to take up this job timely. It is proposed that this important job may be undertaken by engaging eminent and experienced personnel in the field of OSH through the process of outsourcing. The following steps may be taken in this regard:

- A panel of experts with qualification and adequate experience in the field of OSH for the above purpose may be prepared.
- The gap in the existing statute vis-à-vis the prevailing mining technology may be identified.
- The emerging and upcoming issues related to OSH may be identified.
- Concurrent legislation in the developed countries may be studied.
- Required modification in the existing legislation may be suggested.
- Guidelines / Codes of practices for introduction of new technologies / equipment may be formulated.

Mines Act, 1952 and the Coal Mines Regulations, 1957, Metalliferous Mines Regulations, 1961 and the Oil Mines Regulations, 1984 are in the process of amendments. The other Rules are also proposed to be updated and amended during the next years.

Development of Mine Safety Information System

Indian mining industry in general and DGMS in particular to-day finds itself faced with the challenge of developing an e-Governance system that specifically addresses the specific needs and requirements of the Government as well as the industry. Unfortunately, despite the necessity of an integrated and workable computerized information system vis-à-vis mine safety in our country, efforts made so far is at the best isolated and compartmentalized. Safety professional need knowledge of many subjects because safety is an important component of everything around us. They must work with people in many different jobs and disciplines, and require sufficient knowledge to communicate effectively. In this context, it is essential for DGMS to create an e-Governance system in order to function effectively.

Information required for decision-making purposes by the safety professional working at mine operational level, company level, government level, and by researchers in the S&T Institutes, is essentially multi-disciplinary in nature. In the absence of a comprehensive electronic system, most of these agencies operate in an environment of inadequate information. Mines safety problems have a tendency to recur. Usually in order to supplement the incomplete information, experienced safety professional recall similar problems and solutions of the past, which might have worked or not, and influence the safety decisions, thus allowing for a lot of subjectivity to creep in. Lack of reliable and comprehensive information at the base, leaves the imprints of mediocrity in all such efforts. Through the plan scheme under consideration it is proposed to transform the style of safety management by placing its decision making process really technology-based.

Occupational Safety & Health – The R&D perspective

With the trade barriers disappearing rapidly and steadily across the world, it will not be out of place to visualize that the decades ahead will witness further accelerated rate of transformation in not only the business world but also in the life style and aspiration of the people. For achieving accelerated production and higher productivity, recourse is being taken to mechanisation and application of modern mining techniques. The introduction of new mechanised technology has introduced new health and safety hazards in mines. Moreover with the exhaustion of easily mineable ore reserves, mining activities are gradually extending to greater depths and to adverse geo-mining locales, thereby further adding to the complexities of health and safety problems in mines.

The need for strong application research in the field of mining cannot be overemphasized. The basic philosophy of any R&D activity in mines is to incorporate scientifically sound and technologically advanced best practices in the work scheme. Investigation, surveys and studies are in the form of R&D activities oriented towards identification of areas of major concern and wherever possible suggest corrective measures and perform scientific audits of various occupational health and Safety measures adopted by the mining industry. Evaluation and modification of existing standards, guidelines and code of practices is another important outcome of any R&D endeavor in the field of occupational safety & health in mines.

The identified thrust areas are:

- Application & legislative issues of new mechanized mining techniques
- Ground stability management issues in large open pit mines
- Improving blasting techniques in coal & non-coal mines
- High capacity resin reinforcement practices in coal and non-coal mines
- Mine environment management issues in deep & mechanized mines
- Strata management issues in deep & mechanized mines
- Testing of mining equipments for use in mines and development of Centralized Testing Laboratory & Approval System in DGMS
- Water pollution issues in extraction of Coal Bed Methane

Present day trend is to make the occupational safety & health legislation more and more ‘flexible’ by laying down only the ‘performance objectives’ in the statute and leaving the modalities of meeting the same to be evolved by the mine operators in the form of standing orders, codes of practice, manager’s scheme etc. The inferences drawn from the R&D initiatives mentioned above would facilitate the process of developing standards, guidelines and codes of practices by mine operators in an appropriate manner.

Improvement of the Emergency Response System and Efficient Disaster Management

In-spite of the best efforts for prevention of mine accidents or disasters, its occurrence cannot be ruled out practically. It is important to take all preventive measures against such evils. But what is more important is to respond to an emergency situation in a systematic manner without getting panicky so that further losses are avoided. It is most often found that people get lost in any emergency situation and fails to take desired steps timely to avoid further loss of human lives or property. In view of the above there is a strong need for development of a

structured and well defined emergency response system for effective mitigation of the challenges. In this regard the following measures are suggested:

- The Mines Rescue Rules, 1985, be amended to meet the need of the industry, covering detailed description of training gallery, training course, training of trainers and provision of rescue equipment/apparatus to meet every situation of mine disaster, after detailed deliberations among the mine management, research institutions, manufacturers/suppliers for rescue tools/equipment and the Directorate through number of workshop/seminars on mine rescue in different parts of the country;
- The best practices and the latest technology including equipments and instruments in the area of emergency response system and disaster management need to be studied and the Officers of this Directorate as well as the concerned persons of rescue system need to be exposed to the state of the art technology available in this field and also in other industries like Aviation, Navy, fire services etc.
- Creation of centralized rescue Data-base: Complete information on resources, expertise available with each rescue station/room need to be entered in a central server computer maintained by the Directorate & Mining Companies which can be available to all concerned through LAN, WAN or Web-page;
- Comparative and speedy testing facility for rescue apparatus/equipment need to be developed either at the Directorate or by the Directorate in collaboration with other expert agencies to allow more number of indigenous manufacturers of rescue apparatus/equipment and also from other countries;
- In-house training and seminar to be organised to improve awareness of the higher management and the officers of the Directorate regarding importance of Mine Emergency Plan, its mock rehearsal and need to amend the plan after rehearsal(s);
- Need to develop a suitable emergency response mechanism specific to the cases of inundation, fires, explosions and major collapse of workings / slides.

3.4.6 Occupational Health in Mines – suggestions for improvement

Emerging Areas of Occupational Diseases in Mines

From the reported figures and surveys conducted by DGMS and other organizations like NIOH etc. it is revealed that there have been some new trends in the occupational health scenario other than the conventional diseases like Silicosis, Pneumoconiosis, Asbestosis etc. Following areas of occupational diseases are emerging with the changes in the mining industry:

- Musculo-skeletal disorder
- Noise Induced Hearing Losses
- Health impact due to diesel particulates from emission of diesel operated vehicles and equipment
- Hand-arm vibration, whole-body vibration due to use of Drills, HEMM

Emerging Issues of Occupational Health in Mines

Considering the increasing importance and awareness of the subject of occupational health among workers as well as the employers, the extent of enforcement work and need to undertake epidemiological studies, the Occupational Health Division of DGMS needs to be strengthened. DGMS being both an enforcement and advisory body, the Occupational Health Division has an important role to play in prevention of occupational diseases in mining industry. It is envisaged that Occupational Health Division will be undertaking comprehensive occupational health studies during the 11th Five Year Plan on various aspects of occupational health hazards and prevalence of occupational diseases in mines and also improve enforcement of provisions of Mines Act, 1952.

Although there are numerous occupational health and hygiene issues in mines which need attention, following are some of the important areas which need to be addressed on priority basis;

1. Strengthening of Occupational Health Division of DGMS and capacities building.
2. Improving collection, processing and dissemination of data on occupational diseases in order to set priorities and devise plan of action.
3. Developing guidelines for effective medical screening and health surveillance of workers exposed to mineral dusts for the early detection of dust related diseases.
4. Training of medical officers of mining industry in the use of ILO International Classification of Radiographs of Pneumoconiosis.
5. Developing and implementing a comprehensive programme for elimination of silicosis and other pneumoconiosis in Indian mines.
6. Occupational health surveys to determine prevalence of Noise Induced Hearing Loss (NIHL) and in setting up standards for hearing conservation programme for mine workers.
7. Setting up standards for hand arm and whole body vibration and conducting studies on effect of vibrations on human body.
8. Comprehensive studies on factors contributing to death at work at mines due to natural causes.

Improvement in Occupational Health surveillance:

Keeping in view the DGMS perspectives on occupational health in mines the following steps may be adopted:

a. Strengthening of the infrastructure and upgradation of facilities in Occupational Health
b. Conduct of comprehensive epidemiological surveys for important occupational diseases
c. Upgradation and enhancement of technical skills of inspectors of occupational health cadre and medical officers in mining industry

3.4.7 Priority Areas

In order to fulfill its obligations and objectives following major thrust areas have been identified;

- Upgradation of facilities in occupational health laboratories
- Setting up of occupational health laboratories in zonal offices
- Formulation and implementation of long term and short term strategies for elimination of Pneumoconiosis in mines
- Comprehensive epidemiological studies on prevalence of occupational diseases
- Computerization and creation of data bases on Occupational Diseases in mines.
- Training of medical inspectors and medical officers on various occupational diseases.

3.4.8 Other Measures

Safety management through risk assessment

Existing safety management practices shall be supplemented by applying risk assessment techniques for hazard identification and corrective actions and also for monitoring it at regular interval. This approach will integrate safety with the primary objectives of the organisation. Risk Oberservatories and the Accident Analysis Models have been proposed to be developed and established for different sectors.

Increasing awareness in the field of OSH:

Awareness of the grass root level workers of the mining sector, particularly in the unorganized sector, need to be increased by publicity and propaganda. A suitable scheme may be designed to extend the awareness in the field of OSH beyond the mining sector also.

Enhancement of Managerial Skill of DGMS officers:

DGMS officers are required to tackle the emergencies during accidents, disasters, dangerous occurrences in mines. Some times the situation goes out of control and the rescue and recovery work is hampered. The officers of DGMS are thus required to be trained in managerial skills to tackle this type of situation in the mining. Hence the officers of DGMS should be exposed to training programmes in national and international management institutes of global repute.

Application of GIS in mining sector – the need for a pilot study

The use of Geographic Information System (GIS) as a powerful tool to analyze and display data is gathering momentum in the mining industry. The application of GIS in underground mining concentrates in four technical areas: land ownership and mineral claims, exploration management, production and mines safety. Though some progress has been made by the developed countries in the application of GIS in the mining sector, not much work has been

done in India to promote the use of this technology in enhancement of safety in underground mines. To achieve the objective of mines safety which is of paramount concern to the mining industry and is of special interest to DGMS, a pilot project to explore the feasibility of introduction of GIS in mines safety in collaboration with some of the premier technical institutes in the country having facilities to develop such applications will be considered in the Twelfth Five Year Plan.

Making Internal Safety Organisation (ISO) Effective

The internal safety organisation is existing in most of the organized mining sector. However, it is observed that the system of working of the organisation has not yielded the desired result. The common deficiencies found in the organisation are the lack of association and interest with the work assigned. Since no responsibility or any authority has been practically bestowed at every level of the organisation, its effectiveness is invisible. The responsibility of ISO need to be well defined and appropriate authority (administrative and financial) shall also be bestowed to make the organisation more effective. The selection criteria as well as the promotional procedures should be framed in such a way to make this cadre more attractive by bringing them under line of organizational structure. It is essential that the Internal Safety Organisations are suitably strengthened with adequate responsibility coupled with required authority. The persons working in ISO should invariably be exposed and trained on the subject for which he is deputed.

Dissemination of information:

The lessons learnt after all the accidents need to be disseminated to all the mines so that proactive measures can be taken to avoid recurrence of such accidents. In addition, any good practice or bad practice in any part of the industry also needs to be circulated to all.

Thrust on mechanization:

More thrust need to be paid on mechanization of face operations and other operations involving risk to reduce exposure to hazards as far as possible.

Role of State Government in implementation of OSH statute:

State Govts can play a significant role in implementation of OSH statutes for improving the standards, particularly in unorganized sector.

Safety Audit

Safety audits have proved to be a very effective tool for assessing and eventually for improving safety and health conditions in mines. Considering paucity of resources in the form of adequate manpower in DGMS, recourse could be taken to a system of Safety Audits by accredited mining experts.

Risk Management

Introduction of risk management as a tool for development of a good health and safety management system is a breakthrough in the traditional strategy. The system is an effective tool for improvement of health and safety scenario. This needs to be introduced at levels of operation, maintenance and other allied activities.

3.5 PLAN SCHEMES DURING 11TH FIVE YEAR PLAN (2007-2012)

In order to provide in-house technical support to field offices, DGMS is implementing following Plan Schemes during the 11th five year plan period namely:

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

3.5.1 MINE ACCIDENT ANALYSIS AND MODERNIZATION OF INFORMATION DATABASE (MAMID)

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

Objective of the Scheme:

(A) Mine Accident Analysis and Information Database

- ✓ To eliminate risk of disasters and accidents in mines through detailed analysis of accidents and dangerous occurrences using risk assessment and risk management techniques;
- ✓ Development of standard Safe Operating Procedures (SOPs) and Code of Safe Practices (COPs);
- ✓ Identification of mines having potential of accidents/disasters through detailed investigation into the operating systems and environment in the mine;
- ✓ Development of mine data acquisition system and analysis through computerized databases and processing system;
- ✓ Dissemination of mine information system through various reports, technical instructions/guidelines, circulars on electronic as well as other conventional media;
- ✓ Identification of mines having high accident potential and formulation of risk elimination/management plan;

(B) Computerized Mine Safety Information System

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

Financial Targets and Achievements during (2007-12)

Rupees in lakhs

11TH Plan approved outlay (2007-12)	Year	Budget Estimates	Actual Expenditure
1550.00	2007-08	183.00	153.36
	2008-09	218.40	179.35
	2009-10	150.00	179.35
	2010-11	400.00	294.91
	2011-12	500.00	15.60*
	Total (2007-12)	**1451.40**	**822.57**

***Expenditure upto June'2011**

3.5.2 STRENGTHENING OF CORE FUNCTIONS OF DGMS (SOCFOD)

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

Objectives of the Scheme:

The objectives of the scheme are:

- To render scientific and technological support to the enforcement wing of DGMS in proper fulfillment and discharge of its statutory duties, responsibilities and advisory role.
- To develop, improve and update need based rescue and emergency response services to the mining industry & to help field offices of DGMS in the form of technical support while taking up rescue and emergencies of specific nature.
- To establish Mine Safety & Health Academy with institutes at different offices of DGMS for imparting structured training to DGMS officers and key personnel of the mining industry.
- Strengthening of Machinery for Conduct of Statutory Examinations
- To develop a structured mechanism for Occupational Health Surveillance & Disease Control in Mining Industry.
- To establish a National Council for Mines Safety with a view to generate safety and health awareness among miners and address their training issues.
- To improve the efficiency of DGMS by providing better infrastructure facilities which include providing own office buildings and residential complexes to the officers and staff members, providing better communication facilities and office equipment and furnishing of offices.

Financial Targets and Achievements of plan scheme SOCFOD General during (2007-12)

Rupees in lakhs

11TH Plan approved outlay (2007-12) GENERAL	Year	Budget Estimates	Actual Expenditure
	2007-08	187.00	223.83
1660.00	2008-09	248.60	271.02
	2009-10	300.00	242.76
	2010-11	600.00	491.96
	2011-12	700.00	29.87
	Total (2007-12)	**2035.60**	**1259.44***

***Expenditure upto June'2011**

Financial Targets and Achievements of plan scheme SOCFOD CIVIL WORKS during (2007-12)

Rupees in lakhs

11TH Plan approved outlay (2007-12) CIVIL WORKS	Year	Budget Estimates	Actual Expenditure
	2007-08	417.00	347.00
1025.00	2008-09	405.00	405.00
	2009-10	200.00	200.00
	2010-11	800.00	705.12
	2011-12	1000.00	45.48*
	Total (2007-12)	**2822.00**	**1702.60**

***Expenditure upto June'2011**

3.6 PROPOSED PLAN SCHEMES IN DGMS DURING 12TH FIVE YEAR PLAN (2012-17)

There are two plan schemes operative in DGMS during the 11TH Five Year Plan (2007-2012) namely;

(i) **S**trengthening **o**f **C**ore **F**unctions **o**f **D**GMS (**SOCFOD**); and

(ii) **M**ine **A**ccident Analysis and **M**odernization of **I**nformation **D**atabase (MAMID)

(iii) e-Governance in DGMS (**e-DGMS**)

3.6.1 NEED FOR CONTINUANCE OF EXISTING PLAN SCHEMES

Growth in mining sector in terms of increase in number of mines, production, and employment, introduction of new technology and large scale mechanization in organised sector and exploration and exploitation of minerals in extended regimes of new geotechnical domains need further inputs and modernization of DGMS set up including skill development.

Under the DGMS expansion and reorganization initiatives, 196 new posts have been created part of which is in the process of recruitment and partly through departmental promotions. Two new Zones and eight new regional offices have been opened across the country. The Mines Act, 1952 is under amendment with extension of its jurisdiction from existing 12 Nautical miles to 200 Nautical miles into the sea up to exclusive economic zone and maritime zones of India thereby all the mining activities including oil & gas in Offshore would come within the purview of this Act.

In order to cope up with the increased activities in on-land and offshore areas, it would be more pertinent to carry forward the existing plan schemes in to 12th Fiver Year Plan (2012-17) and fulfill additional requirements on priority. The objectives and activities of the ongoing plan schemes have accordingly been modified keeping the future requirements in view.

3.6.2 Continuance of the existing plan scheme 12TH FIVE YEAR PLAN (2012-17)

It is proposed to continue the existing SOCFOD and MAMID Plan Schemes in modified form during the XIIth Five Year Plan also.

In addition, one new plan schemes namely e-Governance in DGMS (**e-DGMS**) has also been proposed to be started during the XIIth Five Year Plan (2012-17). The computerization activities especially the modernization of information database from MAMID and the Computerization of Examination and Certification System from the SOCFOD have been removed and integrated into the activities of the e-Governance scheme, newly proposed to accelerate the pace of completion of the scheme in line with National e-Governance Program (NeGP).

Brief objectives and activities of the above plan schemes proposed during the 12th Five Year Plan is described below:

1. NAME OF THE SCHEME

I. STRENGTHENING OF CORE FUNCTION OF DGMS (SOCFOD)

This is a continuing plan scheme. The scheme has 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) (2001)", (2) “Strengthening of Machinery for Conduct of Statutory Examinations (SSEX)(2000-01)” and (3) “Improving Efficiency by Providing Infra Structure Facilities in DGMS (PIF)(2000-01)" along with components like Occupational Safety and Health Surveillance, promotional initiatives and Emergency Response system.

II. YEAR OF COMMENCEMENT

(a) Continuing or new start**:** Continuing modified scheme
(b) Date of Start of the Scheme: April, 2012

III. OBJECTIVE

- To render scientific and technological support to the enforcement wing of DGMS.
- To develop, improve and update need based rescue and emergency response services to the mining industry.
- 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.
- 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 provide infrastructure facilities i. e. office buildings and residential complexes, communication facilities and office equipment and furnishing of offices.
- To conduct Occupational Safety, Health and Welfare Survey in mines of unorganized sectors
- To Identify the reasons of non compliance and non-provisions of basic facilities and amenities for the Workers
- To Undertake Compliance Measure Programmes
- To Rehabilitate the Workers affected by Accidents and Occupational Diseases
- Prepare and Implement Sustainable Development Programme

IV. SCOPE:

The activities proposed to be undertaken in the SOCFOD plan Scheme are to render R&D supports to the DGMS Officer and the mining industry in the field of latest technology in coal mining, metalliferous mining, opencast mining and deep mining conditions. Special Cell shall be developed for offshore mining. Mine mechanization, approval and certification centres and the standards for testing shall be developed under this scheme in addition to the activities remained incomplete during the XIth Plan Period.

V. JUSTIFICATION FOR CONTINUANCE OF THE SCHEME

Present day trend is to make the safety legislation more and more 'flexible' by laying down only the 'performance objectives' in the statute and leaving the modalities of meeting the same to be evolved by the mine operators in the form of standing orders, codes of practice, manager's scheme etc. All these have to be vetted by DGMS. To assist the field officers in arriving at correct decisions, detailed technical guide-lines and model codes have to be evolved and supplied by Technical Support Services.

Another important function of DGMS is to advise and assist the Govt. in discharge of its regulatory function. DGMS prepares the draft of proposed amendment with necessary

justification. Before proposing the amendment, DGMS has to carry out considerable literature survey, consultations with experts from mining industry, academicians and research scientists, followed by the process of conceptualization.

In the era of liberalization, mine mechanization is on the increase to meet the needs of increased output of minerals. A variety of machinery and equipment are being deployed in coal, Metalliferous and oil mines. Hazards associated with introduction of new and sophisticated machines have to be analyzed and suitable guidelines / model codes of practice need to be evolved. In respect of critical safety equipment requiring DGMS approval, standards, specification & approval criteria have to be evolved & performance of the same during trial periods as also during normal use monitored.

With rapid expansion of surface mining activities and underground mining extending to deeper levels, ground control problems of diverse nature are going to be a reality in diverse geo-mining domains. The need of the hour would be to study the problem by the S&T Support personnel in order to help deriving safe operating procedures.

Blasting is an integral part of extraction by opencast and underground methods. Ground vibrations from blasting constitute an undesirable side effect of the use of explosives. Mining near habitations is a socially sensitive issue, and blast vibrations need to be continuously monitored to ascertain compliance of acceptable vibration standards. An independent confirmation by S&T Personnel in this regard, is required to resolve disputes and complaints. Facilities for monitoring parameters like convergence, stress, strain, subsidence, load etc. in mines have been developed in S&T Division of DGMS. Permissions for extraction of coal and other minerals are granted by DGMS. At times, certain experimental permissions granted require careful watch over ground movement / stress in the vicinity of the area off extraction. Ground Control Unit provided assistance in monitoring these parameters.

Mine fires is a national problem & results in loss of coal reserves, add to the cost of production and cause environmental pollution by emission of steam, smoke & noxious gases. Mine fires have serious safety implication for miners. Subsidence resulting from mine fires, also pose a problem of stability of the surface / features. Therefore, it is essential that steps are taken to prevent mine fires and should a fire occur, to control it at the earliest so that it does not assume a magnitude when it will go out of control. Facilities need to be developed under S&T programme to determine proneness of different coal seams to spontaneous heating and to monitor the condition of mine fires and develop efficient fire control measures.

Occurrence of Mine disasters at regular intervals in Indian coal mines has emerged as a principal area of concern for mine operators and safety enforcement officials. Therefore, it is necessary to establish an Emergency Preparedness and Response Systems in every coal mine and have a well-knit network of Mine Rescue stations equipped with the most modern tools and techniques. A centre be established in DGMS to be the nodal point for guidance and co-ordination for Mine Disaster control in emergencies.

The persons employed in the mines are exposed to a number of hazards at work which adversely affect their health. Some of the important ones are dust, noise, toxic metals, heat, humidity vibration etc. In recent times there has been increasing awareness among mining industry and the workers about occupational diseases such as Coal Worker's Pneumoconiosis, Silicosis, Manganese Poisoning, Hearing Impairment etc. caused by

exposure to health hazards at work. Almost all occupational disease are known to cause permanent disablement and there is no effective treatment. However, most occupational diseases can be prevented by adopting proper occupational health measures and control of hazards at work place. The increasing importance of occupational health in mines was appreciated and consequently the 7th Conference on Safety in Mines recommended that each mining company should create Occupational Health Services of its own. The 8th and 9th Conferences on Safety in Mines further recommended medical surveillance of persons employed in the mines including training of medical officers in occupational health and use of ILO Classification.

The need for imparting structured training and retraining to the officers of DGMS has been emphasized by the National Conferences on Safety in Mines, the Committee set up by the Government of India to review the role and functions of DGMS and the PIACT Mission (ILO). The importance of keeping the Inspectors abreast with the latest developments has been well recognized internationally. Article 7 of the ratified ILO Convention No. 81 (Labour Inspection Convention, 1947) also casts clear responsibility upon every member state for the Inspectors to be adequately trained for the performance of their duties.

Previously, there were no infrastructure facilities available in the country for imparting structured training to the officers of DGMS. The matter was discussed in the Working Group on "Safety, Health & Welfare of Employees in Mines, Factories & Docks, etc." for 8th Five Years Plan set up by the Planning Commission which recommended that a Mine Safety and Health Academy should be set up in DGMS under a new plan scheme entitled "Human Resource Development for improving Health & Safety Standards in Mines" to enable the officers of DGMS to play their regulatory, enforce mental and advisory roles effectively. The plan scheme was accordingly started on the 1st April, 1990. It was proposed to create 52 posts for running the scheme. Due to various reasons the envisaged posts could not be created, as a result of which the programme could not be implemented fully. However, during the eleventh plan period it is envisaged to outsource the activities like development of training modules, conduct of courses, etc. under this programme. Under the present set-up the scheme will run as a module of the larger plan scheme "S&T". The Government needs also to consider making the 'HRD' activity of DGMS under an autonomous body. The HRD academy could be made into an autonomous body, which could charge the users for generation of adequate revenue so that eventually this institute may run on its own.

For the mining industry and the Government, more than ever before it has become essential to bring together the world of science and the realm of technology within the total scheme of operations. Under the circumstances, the role of the S&T plan scheme of DGMS has to be that of a pathfinder in terms of technology, management practices, safety audits, assessment of risks of different operations in mines, evaluation and modification of existing standards, appropriate training for DGMS officers, development of training modules, evolution of a effective mine emergency response system, etc. The scientific research and development and application that maximize the overall benefits for the organisation, the Government and the mining industry. In view of this, the scheme "S&T Support" is not only a 'need' but also has become a 'necessity'.

VI. PHYSICAL ACTIVITIES & QUANTIFIABLE DELIVERABLES

The following physical activities and jobs will be undertaken during the plan period:

SL. NO.	ACTIVITIES/JOBS	QUANTITY
1.	Strata Control Studies: Coal Mines Non-Coal Mines	 20 Mines 05 Mine
2.	Mine Ventilation Studies: Coal Mines Non-Coal Mines Oil & gas Mines	 20 Mines 15 Mines 05 Mines
3.	Mines Environment Studies: Coal Mines Non-Coal Mines Oil & Gas Mines	 20 Mines 30 Mines 10 Mines
4.	Development of Standards: Coal Mines Non-Coal Mines Oil & Gas Mines	 15 Nos. 15 Nos. 15 Nos.
5.	R & D Studies: Coal Mines Non-Coal Mines Oil & Gas Mines	 03 Projects 03 Projects 03 Projects
6.	Development Of Disaster Management Modules: Coal Mines Non-Coal Mines Oil & Gas Mines	 05 05 05
7.	Establishment of Mines Safety & Health Academy (MSHA) at:- ➢ Offshore Institute at Goa ➢ MSHA Oil & Gas Centre at Guahati, Mumbai, Ahmedabad ➢ MSHA Centre at Nagpur, Bangaluru, Hyderabad.	To be completed within plan period
8.	Development of National Archives and OSH Resource Centre at Dhanbad	-do-
9.	National & International Visits and Training:- ➢ Offshore and On-land ➢ Coal Mining, CBM, CTL, UGC and Other New Technology	 30 Visits 25 Visits 25 Visits

	➢ Non-Coal Sector ➢ Silicosis & Pneumoconiosis ➢ Disaster Control & Management	25 Visits 25 Visits
10.	National & International Workshops and Seminars	10 Numbers
11.	Training of Personnel from Industry at MSHA	500 Persons
12.	International Collaboration on OSH issues with USA, Australia, South Africa, Germany, Russia, Ukraine, and other countries	To be completed within plan period
13.	Civil Works: Construction of Office and Residential Complexes at Balagaluru, Ahmedanabd, Hyderabad, Guahati, Surat, Gwalior, Varanasi, Ranchi, Raigarh, Mumbai & Goa	-do
13.1	Civil Works: Repairs and Renovations of Old Buildings, Water and Electricity Lines at Dhanbad, Sitarampur, Koderma, Nellore, Bellary, Chaibasa, and Other Regional Offices.	-do-
13.2	Completion of Library cum Auditorium Building and Associated Work at Dhanbad	-do-

VII. ESTIMATED EXPENDITURE & MANPOWER REQUIREMENT:

(A) Financial Outlay: Rs. 200 crores (Civil Works Rs. 100 Crores)

(B) Manpower Requirement:

SN	POST	NUMBERS	REMARKS
1	Deputy Director General Of Mines Safety	01	Overall In-Charge Of Scheme
2	Deputy Director General Of Mines Safety (Mining)	01	In-Charge HRD And International Collaboration
3	Deputy Director General Of Mines Safety (Mining)	01	Offshore Operations
4	Director Of Mines Safety (Mining)	06	Two Under Each Sector Mentioned Above
5	Director Of Mines Safety (Electrical)	03	One Under Each Sector

6	Director Of Mines Safety (Mechanical)	03	One Under Each Sector
7	Director (OH)	01	Overall Incharge
8	Director (OH)	07	One in Each Zone
9	Director (OH & IH)	16	One each in OH & IH under a dir.
10	Dy. Director of Mines Safety (Mining)	12	One in Each Sector
11	Dy. Director of Mines Safety (OH)	03	One in Each Sector
12	Dy. Director of Mines Safety (IH)	03	DO
13	Asst. Director (OH & IH)	16	Two in Each Zone
14	Scientific Asst. & Technicians	20	2 in Each Zone and 4 at HQ
15	Associated Staffs & Computer Personnel	140	50% Technical & 50% Computer Trained Staff in Each Sector
	TOTAL:	**233**	

At least 233 persons including technical officers and staff would be required. An estimated expenditure of Rs.200 Crores (Rs.100 Crores Non-Civil and Rs. 100 Crores Civil Works) would be required during the Plan Period.

2. SCHEME 2:

I. 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)"

II. YEAR OF COMMENCEMENT

(a) Continuing or new start **:** Continuing modified scheme
(b) Date of Start of the Scheme : April, 2012

III. OBJECTIVE

- 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 through various reports, technical instructions/guidelines, circulars on electronic as well as other conventional media.

IV. SCOPE

The following activities will be undertaken in the scheme during 12th plan period:

- Development of Accident Analysis Model for each cause group separately for coal, Non-Coal, Oil and Gas Sector;
- Development of Accident Analysis Model for Offshore Operations;
- Conduct Risk Assessment and Risk management programmes for coal, Non-Coal, Oil and Gas Sectors (Both on Land & Offshore);
- Preparation of Safety Audit Forms and Formats for Independent Safety Auditing of Mines; and
- Preparation and dissemination of Safety Alerts on selected subjects

V. JUSTIFICATION FOR CONTINUATION OF THE SCHEME

The mining industry makes a major contribution to the National economy and to the well being of the society as a whole. For continuing viability of the industry, it is important that full advantage is taken of the advances in mining methods and procedures, design of mining machinery and equipment, and advances in approaches to management of all mining activities including health and safety.

Because of the inherent hazards of mining as an activity, and the complexity of mining machinery and equipment and the associated systems, procedures and methods, it is not possible to be inherently safe. Regardless of how well the machinery and methods are designed, there will always be the potential for serious accidents. It is therefore not possible for any external agency to ensure safety of an organisation such as a mining company, nor of the machinery or methods it uses. The principal responsibility for the safety of workers employed in mines rests with the management of that mine.

It is now widely accepted world over that the various techniques of risk assessment and risk management contribute greatly toward improvements in the safety of mining operations. Considering the accident scenario in India, it has now become essential that risk assessment be undertaken of all hazardous operations, equipment and machinery, taking account of the procedures used, maintenance, supervision and management.

Introduction of risk management as a tool for development of good health and safety management system is a breakthrough in the traditional strategy as it differs from the existing one by a necessity of the entire staff being involved in the realization of safety improvement programme with responsibility and accountability sharing proportionate to the decisions making authority. The system is sure to be an effective tool for improvement of health and safety scenario in our mining industry. Risk assessment process will identify hazards existing in the work environment and in all operations, assessment of risk levels of these hazards,

determination and prioritization of necessary preventive action ensuring safer and better workplace.

Further, the monitoring and auditing at regular interval recommended as a part of the system would ensure that safe operating procedures are followed, evaluated, corrected, standardized and documented, training procedures for workers and executives are in place and are carried out regularly, and commitment to health and safety is demonstrated at all levels of the organizations. On implementation of the system, an appropriate safety level in each stage of operation may be obtained by a systematic and documented management system with well-defined responsibility and accountability for safety among the mine employees.

Necessity for collection, compilation, processing and dissemination of important mine statistics cannot be overemphasized. This activity must continue, so that modern concepts like networking, on-line availability of data, etc. can become a reality.

Under the plan scheme "MAMID", the Government in general and DGMS in particular could take the lead in the areas mentioned in the preceding paras during the 12th plan period.

In view of what have been stated, and considering the fact that the activities of MAMID is a critical success factor for the success of the inspection activities of DGMS and mining activities in the country, it is essential that the scheme continues into the 12th plan.

VI. PHYSICAL ACTIVITIES & QUANTIFIABLE DELIVERABLES

The following physical activities and jobs will be undertaken during the plan period:

SL N	ACTIVITIES/JOBS	QUANTITY	REMARKS
1.	Risk Assessment to Identify Mines Having Risks of Disaster Due to: Coal mines: Explosion Fire Inundation Strata failure Non-Coal Mines: Strata Failure Oil & Gas Mines Fires & Explosions Blowouts	 10 Mines 10 Mines 10 Mines 10 Mines 20 Mines 5 Mines 5 Mines	To Be Completed During the Plan Period
1.1	Development of Risk Management Plan for Such Identified Mines	All the Mines Identified Above	do
2.0	Development of Accident Analysis Model for:- Coal Mines: (A) Roof fall accidents (B) Fires (C) Explosions (D) Inundation (E) Wheeled & Trackless	Implement Such Model in- 25 Coal Mines 25 Coal Mines 25 Coal Mines 25 Coal Mines 25 Coal Mines	do

	Machinery (F) Surface Transport Non-Coal Mines: Side Falls Oil & Gas Mines: On-Land Offshore	 25 Coal Mines 50 Mines 5 Mines 5 Mines	
3.0	Development of Safety Audit Form:- Coal Mines Non-Coal Mines Oil & Gas Mines On-Land Offshore Audit Format:	 5 Forms 5 Forms 5 Forms 5 Forms One Each for Above Forms	 Separate Form for Classified Mines
4.0	Conduct Of Risk Assessment And Preparation Of Risk Management Plan	25 coal mines 25 non-coal mines 25 oil & gas mines	
5.0	Conduct Of National Workshop For:- Coal Mines Non-Coal Mines Oil & Gas Mines On-Land Mines Offshore Mines	 05 05 02 03	
6.0	Reports & Circulars	Reports- 5 Circulars- 15	Numbers are Minimum Fixed.
7.0	National & International Training and Visits	15 Visits & Training	Coal, Non-Coal & Offshore Areas
8.0	Construction Of Risk Observatory & Labs (Civil Work)	09	8 Zone & One HQ.

VII. ESTIMATED EXPENDITURE & MANPOWER REQUIREMENT:

(A) Financial Outlay: Rs. 100.00 crores (Civil Works Rs. 25 Crores)

(B) Manpower Requirements

S N	POST	NUMBERS	REMARKS
1	Deputy Director General Of Mines Safety	01	Overall In-Charge
2	Director Of Mines Safety (Mining)	08	One In Each Zone

3	Director Of Mines Safety (Mechanical)	03	One For Two Zone/Sector
4	Director Of Mines Safety (Electrical)	03	do
5	Dy. Director Of Mines Safety (mining)	08	One In Each Zone
6	Dy. Director Of Mines Safety (Mechanical)	03	One Under Each Dir.
7	Dy. Director of Mines Safety (Electrical)	03	do
8	Associated Staffs & Computer Personnel	42	50% -Technical And 50% Supporting Staff
	TOTAL:	**71**	

In order to undertake the aforesaid activities, some additional manpower would be required due to the reason that numbers of mines and projects are increasing, areas of operations is extending in Offshore and the increased number of offices across the country. At least 71 persons including technical officers and staff would be required. An estimated expenditure of Rs. 100 Crores (Rs. 75 Crores Non-Civil and 25 Crores Civil Works) would be required during the Plan Period.

3. SCHEME 3

I. e-GOVERNANCE IN DIRECTORATE GENERAL OF MINES SAFETY- (e-DGMS) SCHEME

II. BACKGROUND

Information Technology (IT) has emerged as a key driver in improving efficiency in the Government Processes resulting in faster service delivery to citizens and stakeholders, increased effectiveness and transparency in the system. With these objectives in view, Government of India has initiated to lay the foundation and provide impetus for long term growth of e-Governance in the country. National e-Governance Programme (NeGP) has been formulated and is under implementation both at central and state level projects in various Ministries and Departments. Within the Framework of the NeGP, Ministry of Labour & Employment has also taken initiatives in all its Offices and Departments to start e-Governance.

Directorate General of Mines Safety (DGMS) which is dealing with the safety, health and welfare aspects of the persons working in mines and oilfields under the Mines Act, Rules and Regulations made thereunder, has also undertaken certain initiatives to use Information and Communication Technology (ICT) in its domain of operations.

It is, therefore proposed to start a new plan scheme called the e-Governance in DGMS (e-DGMS) in line with the National e-Governance Plan (NeGP) to achieve the IT vision of the country.

III. YEAR OF COMMENCEMENT

(a) Continuing or new start **:** This a New scheme
(b) Date of Start of the Scheme : April, 2012

IV. OBJECTIVE of THE 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 Network.

V. 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, Enquiries and Compliance Tracking system
- Permissions, Approvals, Standards& Testing System
- Mines Statistical Information & Analysis System
- National Archives of OSH in Mines and Disaster Control & Management
- Budget and Finance Management System
- Other Associated Systems

VI. PHYSICAL ACTIVITIES & QUANTIFIABLE DELIVERABLES

The following physical activities and jobs will be undertaken during the plan period:

SN	ACTIVITIES/JOBS	QUANTITY
1.	Preparation Of DPR	1
2	Establishment Of Dedicated LAN & WAN in DGMS Offices	To Be Completed
3	Procurement and Installation of System Software and Security System at Server Center	-Do-

	and Disaster Recovery Centre	
3.0	Development and Testing of Application Modules and Launching on WEB On-Line	-Do-
4.0	Launching of the Examination System On-Line	-Do-
5.0	Launching of the Approval, Certification, Permission and Exemption System On Line	-Do-
6.0	Launching of WEB Based Interactive Public Complaints and Query System	-Do-
7.0	Development and Launching of the National Data Centre of OSH in Mining Sector	-Do-
8.0	Training and Development of E-Manpower	-Do-
9.0	Review and Revisions	-Do-
10.0	Future Plan Report On e-Governance In DGMS	-Do-

VII. ESTIMATED EXPENDITURE & MANPOWER REQUIREMENT:

(A) Financial Outlay: Rs. 35.00 Crores

(B) Manpower:

S N	Post	Nos	Remarks
1	Deputy Director General of Mines Safety	01	Overall In-Charge
2	Director of Mines Safety (Mining) - System	03	One in Each Zone
3	Director of Mines Safety (Mechanical)	01	At HQ
4	Director of Mines Safety (Electrical)	01	At HQ
5	Dy. Director of Mines Safety (Mining)	02	For Zones
6	Dy. Director of Mines Safety (Mechanical)	02	do
7	Dy. Director of Mines Safety (Electrical)	02	do
8	Director (System)	05	HQ & Zones
9	Deputy Director (Network)	10	Do
10	System Analyst	10	Do
11	e-Assistant	10	Do
12	e-Archive Officers	10	Do
13	Data Entry Operators	30	Do
14	Other Supporting Staff	63*	Do
	TOTAL	**150**	

* to be outsourced.

VII. HR Management and Financial Outlay

Initially the scheme will be designed, developed and implemented in phased manner based on priority levels set by the Core Committee on e-Governance through outsourcing but subsequently a group of e-manpower would be required to operate and maintain the programme. 150 technical, and computer trained manpower would be required to manage the whole system at all the offices of DGMS. Total Plan Outlay of Rs. 35 Crores (Rs. 20.00 Crores non-recurring and Rs.15 Crores recurring) is proposed during the 12th Five Year Plan Period. A steering committee in addition to the Core Committee shall monitor the whole

scheme and shall ensure that the project is implemented, tested and used within the timeline set for the scheme.

CHAPTER 4

MANUFACTURING AND PORT SECTOR

CHAPTER 4

MANUFACTURING AND PORT SECTOR

4. EXISTING SET-UP OF OCCUPATIONAL SAFETY AND HEALTH IN THE WORKPLACE & SUGGESTIONS FOR IMPROVEMENT

4.1 Ministry of Labour and Employment

The occupational safety and health is one of the subjects allotted to Ministry of Labour and Employment under the Government of India allocation of Business Rules. The Ministry of Labour and Employment, Government of India and Labour Departments of the State and Union Territories are responsible for the safety and health of workers. As most of the legislation on safety and health are Central Government legislations, the Ministry performs the important function of piloting the Bills through Parliament after inter-ministerial consultations and consultation with the State Governments and other organizations of employers and employees. Liaison with the International Labour Organisation and other countries is carried out by the Ministry. Co-ordination at the national level is undertaken by the Ministry by periodically convening the State Labour Ministers Conference and the State Labour Secretaries Conference, in which policy matters and issues on uniformity in Labour laws are discussed. Directorate General of Factory Advice Service & Labour Institutes (DGFASLI) assist the Ministry in the technical aspects of occupational safety and health in industries and ports in India.

4.2 Directorate General of Factory Advice Service & Labour Institutes (DGFASLI)

The Directorate General of Factory Advice Service & Labour Institutes, (DGFASLI) being the technical organization of the Ministry, liaises with the State Factory Inspectorates and advises them on the administration of the Factories Act, 1948, the infrastructural facilities required for the purpose and issuance of Rules under the Act. Amendments to the Act are dealt with by discussing those issues in the Conferences of Chief Inspectors of Factories belonging to the State and Union Territories, and their recommendations are communicated to the State Governments through the Ministry for follow-up action by them. Besides, the DGFASLI, on behalf of the Ministry, carries out important functions of providing training for Factory Inspectors and co-ordinates their training outside the country. Considering the number of industries in the country and the fact that the State Governments have the major responsibility for enforcement, training in safety and health for personnel from industries is carried out by the five Labour Institutes of the DGFASLI. The Central Labour Institute at Mumbai and Regional Labour Institutes at Chennai, Kanpur, and Kolkata are having professionals from various disciplines such as Engineering, Management, Hygiene, Occupational Health, Industrial Physiology, Ergonomics, Industrial Psychology, etc. These institutes have facilities for conducting research and consultancy studies in various areas of safety and health in an integrated manner and arrive at practical solutions to the problems. A new Regional Labour Institute at Faridabad was set up during the 11th Five Year Plan and has become functional from the year 2009-10 with a nominal manpower and created and put in position.

The Director General, DGFASLI is also Chief Inspector of Dock Safety under the Dock Workers (Safety, Health and Welfare) Act, 1986 in respect of major ports. Dock Safety

Inspectorates are established in all major ports. The Dock Safety Division at the headquarters coordinates with the Dock Safety Inspectorates regarding enforcement activities and also for bringing about amendments in statutes concerning dock work.

DGFASLI assists the Ministry of Labour & Employment, Government of India in the operation of National Safety Awards, Vishwakarma Rashtriya Puraskar and Prime Ministers' Shram Awards.

DGFASLI as a coordinating agency with the State Governments, the Ministry of Labour and as agency having interaction with the international bodies such as ILO, UNDP, WHO, etc. on the matters connected with the occupational safety and health in the manufacturing sector and the port sector has a very important role to play. In addition to the regular activities, the organization also undertakes developmental activities as identified in various Plan Schemes formulated and approved by the Ministry of Labour.

4.3. State Factory Inspectorates

The provisions under the Factories Act, 1948 and the State Factories Rules notified there under are enforced by the Department of Labour of respective State governments. For this purpose, in every State Inspectorate of Factories is established which enforces the State Factories Rules and other Labour related statutes such as the Child Labour (Prohibition and Regulation) Act, 1986; the Maternity Benefit Act, 1961; The Workmen's Compensation Act, 1923 etc. as relating to factories. Factory Inspectors are appointed at local and district levels for enforcing the provisions of these statutes.

The Inspectorates of Factories are also staffed with specialists in the field of occupational health and industrial hygiene at headquarter to extend support to field inspectors.

4.4 National Level Autonomous Bodies/Organizations connected with Occupational Safety & Health.

There are many national level autonomous bodies, institutes and non Governmental Organizations engaged in OSH activities. Three such autonomous organizations of national repute are National Safety Council, Central Board of Workers Education and National Institute of Occupational Health.

4.4.1 National Safety Council (NSC)

The National Safety Council was set up in 1966 with the objective to generate, develop and sustain a voluntary movement of Safety, Health & Environment at the national level. The NSC carries out the following activities for industries, trade unions and other safety professionals by carrying out specialized training programmes, conferences, seminars, workshops, safety audits, safety awareness, survey and other consultancy services. The Council also brings out various publications on OSH such as periodicals, industrial safety chronicles, technical manuals/booklets, etc

4.4.2 National Institute of Occupational Health (NIOH)

The National Institute of Occupational Health was set up with the objective to provide safe, healthy and comfortable environment for work and living, through multidisciplinary approach. The Institute has been functioning with the objective to carry out research in the field of epidemiological and environmental monitoring and corollary toxicological studies in hazardous occupations for recognition and evaluation of risk factors; development of tools for early detection of health impairment and design of appropriate intervention measures for the prevention of hazards at work places. They also carry out education through university and orientation courses.

4.4.3 Central Board of Workers Education (CBWE)

CBWE is an autonomous body under the Ministry of Labour & Employment, Government of India. It is registered under the Societies Registration Act, 1860. Started in 1958, the Workers Education Scheme in India has been playing a very significant role in our national development; creating an enlightened and disciplined work force and bringing about desirable behavioral changes in our workforce in the organized, unorganized and rural sectors. It gets grants-in-aid from the Ministry of Labour & Employment to operate its activities. The Scheme of Workers Education aims at achieving the objectives of creating and increasing awareness and educating the workforce for their effective participation in the socio-economic development of the country. To achieve these objectives, various training programmes are conducted by the Board for the workers of formal and informal sectors at national, regional and unit levels through a network of 49 Regional and 09 Sub-Regional Directorates spread all over the country and an apex Training Institute viz. Indian Institute of Workers Education (IIWE) at Mumbai.

4.4.4 Employer and Employee Organisations

Some of the important Employer and Employee Organisations associated with the improvement of Occupational Safety and Health in the Manufacturing and Port Sector are Confederation of Indian Industry (CII), All India Manufacturers Organisation (AIMO), Confederation of Indian Employers (CIE), FICCI, ASSOCHAM, Laghu Udyog Bharati (LUB), etc. representing the Employers and Bharatiya Mazdoor Sangh (BMS), Indian National Trade Union Congress (INTUC), All India Trade Union Congress (AITUC), Hind Mazdoor Sangh (HMS), Centre of Indian Trade Union (CITU), etc. representing the Employees These organistions and federations are actively involved in the various activities of DGFASLI such as in the conduct of various seminars, workshops, training programmes, studies and surveys, finalistion of national Safety awards, working group meetings, tripartite consultations etc in areas of Safety and Health in the Manufacturing and Port Sectors. These initiatives by these organistions can ensure improving Safety and Health of the Workers in these Sectors. These organizations can also be actively involved in the implementation of the National Policy on Safety, health and Environment of Workplace

4.5 Status of OSH In Factories

Two important statistical measures for injuries are (i) Frequency Rate and (ii) Incidence Rate. The Frequency Rate is calculated by dividing the total number of injuries by corresponding number of mandays worked in lakhs. The incidence rate is calculated by dividing the injuries by average daily employment in thousands. The statistics are based on injuries reported in the annual returns submitted by States/ UTs.

Number and frequency rates and incidence rates of fatal and total injuries in factories during the years 1980 to 2007 are given in Table below:

Industrial Injuries from 1980 – 2007(P)

Year	Fatal Injuries	Total Injuries	Frequency Rate (FR)		Incidence Rate (IR)	
			Fatal Injuries	Total Injuries	Fatal Injuries	Total Injuries
1980	774	333883	0.05	22.02	0.15	65.59
1981	762	355535	0.06	25.3	0.15	71.75
1982	549	296027	0.04	22.02	0.13	69.1
1983	456	213160	0.04	19.58	0.13	55.63
1984	824	302726	0.04	12.87	0.1	36.72
1985	687	238529	0.05	18.44	0.15	53.16
1986	924	276416	0.05	16.35	0.14	49.31
1987	895	236598	0.05	14.25	0.14	49.31
1988	694	200258	0.05	13.99	0.15	41.68
1989	706	162037	0.05	10.63	0.16	35.11
1990	663	128117	0.04	7.03	0.21	33.11
1991	690	76925	0.04	4.05	0.18	20.2
1992	661	83926	0.05	6.34	0.19	23.12
1993	910	93897	0.05	5.85	0.18	21.85
1994	696	75556	0.06	6.46	0.2	21.83
1995	892	73961	0.07	5.79	0.2	16.2
1996	907	61235	0.06	3.93	0.2	13.84
1997	901	54161	0.06	3.37	0.19	11.32
1998	862	58651	0.04	2.87	0.16	11.27
1999	911	47389	0.02	2.9	0.17	10.23
2000	486	23976	0.07	3.6	0.22	10.93
2001	627	28364	0.07	3.24	0.19	8.67
2002	540	20453	0.13	4.88	0.16	6.14
2003	525	16432	0.08	2.50	0.11	3.33
2004	562	15020	0.05	1.33	0.08	2.21
2005	613	14776	0.05	1.27	0.09	2.06
2006	1068	19912	0.08	1.42	0.13	2.41
2007(P)	821	15290	0.09	1.73	0.10	1.91

Source : Labour Bureau, Shimla. The coverage remains limited and varies from year to year because all the states/UTs are not submitting annual returns regularly.
P: Provisional

Latest available analysis of injury statistics published by Labour Bureau, Govt. of India, shows (refer Table-given below) a decline in total **Incidence Rate (IR)** for Industrial injuries from 65.59 in 1980 to 1.91 in the year 2007 (P) (Ref: Indian Labour Statistics 2004. Shimla: Labour Bureau: Govt. of India, 2007). Similarly, in respect of the **Frequency Rate (FR)** of industrial injuries in factories also shows a decline from 22.02 in 1980 to 1.73 in the year 2007 (P). The state-wise number of Inspectors of Factories and Certifying Surgeons for the year 2004 (P) is shown in Table 2 and 3.

The tables 4 and 5 in the Annexure show the trend of State wise frequency rates and Incidence rates of total and fatal injuries from 2003 to 2007 (Provisional) as per the data received from Labour Bureau Shimla. The Incidence Rate of total injuries per 1000 workers has gradually declined by 43% and Frequency Rate of total injuries per one lakh mandays worked has declined by 31%. Hence there is a marked decrease in the total number of injuries. However, the rates of fatal injuries has been more or less remained the same,

4.3.6 Status of OSH in Docks

The detailed statistics on reportable accidents and cargo handled in major port for the past 10 years are given in Tables 8 and 9. The reportable accidents are showing a decreasing trend from180 in the year 2001 to 156 in the year 2010 at the same time the fatalities also showed a declining trend of 30 fatalities in the year 2001 to 24 in the year 2010. However it can be seen that the trend of volume of cargo handled in the major port during the last 3 years shows an increasing trend.

4.4 CONSTRAINTS IN THE EXISTING SET UP

4.4.1 Implementation of the National Policy on Occupational Safety, Health & Environment

The National Policy on Safety, Health and Environment at work place was declared by the Hon'ble Finance Ministry Shri Pranab Mukherjee on 20-02-2009. The fundamental purpose of the National Policy is not only to the eliminate the incidence of the work related injuries diseases, fatalities, disaster and loss of national assets and ensuring achievement of high level occupational safety and health through proactive approaches but also to enhance the well-being of the employee and society at large this National Policy needs to be implemented by all stake holders in a time bound Action Programme.

4.4.2 Need for Setting up of an Apex Body on Occupational Safety & Health

At present there is no agency or department of the Govt. of India exclusively dealing with matters of Occupational Safety & Health. DGFASLI is dealing with safety and health issues of workers employed in factories and ports, DGMS deals with various issues of OSH mines and other departments under the Ministry of Labour deals with OSH issues in different sectors such as Chief Labour Commissioner (CLC) for construction sector. There is no agency to cover the safety and health of workers in unorganized sectors. Therefore, there is a need for an apex body at national level to deal with matters connected with safety and health of workers in all sectors of economy. This body may be designated as National Commission on Occupational Safety & Health which will assist the Govt. of India in the implementation of the National Policy on Occupational Safety & Health. The apex body would also coordinate with all the departments of the government, dealing with matters connected to Occupational Safety & Health in the implementation of National Policy.

4.4.3 Need for Strengthening of Enforcement Authorities and DGFASLI officials.

Rapid liberalization in the industrial sector and newer technological advancement has created a need for adequate and competent enforcement officials to ensure compliance with the

requirements under the various OSH legislations. To achieve this, adequate manpower would be required at the State Factories Directorates/ Inspectorates and DGFASLI. Further, the capacity building of these officials is essential by imparting training in National and International Institutes to keep themselves abreast with the latest developments in the filled of OSH and to effectively discharge their enforcement and other advisory functions. DGFASLI and the State Factories Directorates also need to be equipped with the latest infrastructure facilities to carry-out qualitative services in OSH matters. The infrastructure facilities of DGFASLI and CLI and RLIs need to be renovated as these buildings were set-up in the early 1960s and upgraded with latest equipment to ensure that the various laboratories and facilities are in line with the compliance with the requirements of the relevant BIS Standards.

4.4.4 Need for Enhancement of OSH skills of Key Personnel in Industry

To ensure and maintain a high level of OSH at industry level, it is necessary that the various key personnel such as Safety Officers, Competent Supervisors, Factory Medical Officers, Occupational Health Nurses, Fire Personnel, Industrial Hygienists, Members of Emergency Response Group, Safety Committee Members, Union Representatives, etc. need to be updated periodically on the latest developments of OSH to create a positive safety culture in the industry.

4.4.5 Need for National Data Base on OSH

It is evident from the injury statistics published at the national level by the Labour Bureau that there is a need for speedier publication of the latest statistics with complete details from all the states and union territories and there is a back log of nearly five years. For over the years if not decades it is found that injury statistics from eight to nine states and few of the union territories remain missing every year. During 2003 -2007 injury statistics like Frequency Rate and Incidence rate for 18 states and Union Territories did not figure in the national statistics. These states and Union Territories are Arunachal Pradesh, Chattisgarh, Damman and Diu, National Capital of Delhi, Gujarat, Himachal Pradesh, Jammu and Kashmir, Kerala Lakshadeep, Uttar Pradesh, Manipur and Meghalaya, Mizoram, Nagaland, Pondicherry, Punjab, Sikkim, Tamil Nadu, and Uttarakhand.

All these are indicative of the fact that an enormous amount of relevant data having significant bearing upon injury statistics does not figure in the national database published by Government of India. At present the data on OSH from many State Governments are not being received in time and at times are not being received with all the requisite information leading to problems in compiling OSH data at the state and national levels.

The entire scenario of national data base calls for urgent need to identify the problems in obtaining injury data from the states and speeding up the process of transfer and processing of injury data at the State, Union Territory and national level. Hence, there is an urgent need for having an on-line data transfer facility for national data-base with standardized OSH data system in line with the National Policy on Safety Health and Environment at Workplace .

4.4.6 Need for OSH Management Systems in Industry

The rapid succession technological advancements are bringing in quick changes in working conditions, work processes and systems in the organisation. Legislation is essential but

insufficient on its own to address theses changes or to keep pace with new hazards and risks. Therefore, there is a need to enhance the capability of organizations to sustain under such conditions to tackle occupational safety and health challenges continuously and to build effective responses into dynamic management strategies. This can be attained by formulating and initiating an OSH Management System within the organisation.

ILO has developed voluntary guidelines on OSH Management Systems which reflects ILO values and instruments relevant to the protection of worker's safety and health. The ILO-OSH-MS 2001 Guidelines with its eighteen parameters provide the strength, flexibility and appropriate basis for development of sustainable safety culture in the organisation.

To attain such sustainability, there is a need for integration of Occupational Health and Safety Management System based on ILO Occupational Safety and Health Management System (OSH-MS) 2001 Guidelines with IS:1801:2000 at the industry level in order to reduce work-related injuries or illnesses of the workers and enhance their safety and well-being at the workplace.

4.5 SUGGESTIONS TO IMPROVE THE EXISTING SET UP OF OSH IN THE WORKPLACE

A multi disciplinary approach needs to be adopted with the active involvement of all stakeholders and measures are required to be implemented in order to improve the prevailing occupational safety and health in the country as the status of Safety and Health of the workers needs to be strengthened through various approaches.

4.5.1. LEGISLATION RELATED SUGGESTIONS

4.5.1.1 Implementation of National Policy on Occupational Safety, Health & Environment

During the 12th five year plan DGFASLI to effectively implement the National Policy in the manufacturing and port sector proposes to implement the same through the active involvement of the various stakeholders in the following major activities

Providing an effective enforcement machinery, amending expeditiously existing laws relating to safety and health and environment and bringing them in line with the relevant international instruments.

Developing appropriate standards, codes of practice manuals on safety and health and environment consist with international standards and implementation by the stake holders.

Developing suitable accreditation machinery to recognise institutions, professionals and services relating to safety, health and environment at workplace for uniformity and greater coverage as also authenticating safe management system;

Creating awareness on safety and health and environment at workplace through appropriate means such as Video films, posters, pamphlets and reading materials by the involvement of the various stakeholders in its effective implementation,

Developing a National Safety and Health Profile and Occupational Disease profile with the involvement of research institutes, National Safety council (NSC), National Institute of occupational health (NIOH) and medical professional bodies such as AIIMS,, ITRC, other medical and other specialists in the field of OSH etc.

Developing research in the field of safety and health and environment at workplace by innovative methods including computer based risk assessment tools

Incorporating Suitable teaching inputs on safety, health and environment at work place in schools, technical, medical, professional and vocational courses and distance education programme;

By providing specialized training programme to enhance competence of personnel engaged in the field of OSH.

Developing a national network system on Occupational Safety and Health relating to safety, health and environment at work places, prioritizing key issues for action, conducting national studies or surveys or projects through governmental and non-governmental organisations

4.5.1.2 Need for Amendment of the Factories Act, 1948

The Factories Act, 1948 was last amended in the year 1987. Thereafter, the DGFASLI on its own and based on the deliberations with the Chief Inspectors of Factories from all the States of India in the Annual Conference of the Chief Inspectors of Factories, had proposed a number of additional provisions to be made in the Act in the context of the changing industrial, technological and socio-economic scenario. The enactment of the proposed provisions would result in the improvement of the status of occupational safety and health in the factories across the country. In view of some of the provisions being obsolete in the light of present day context, the Factories Act, 1948 and the Rules made thereunder a need is felt for amending the present Factories Act and revision of the Model Factories rules prepared by DGFASLI for consideration and adoption of the state government in their State Factories Rules.

4.5.1.3 Setting up of a Setting up of the suitable Accreditation Mechanism to recognize institutions, professionals and services relating to Safety & Health.

The National Policy on Safety Health and Environment at Workplace - Under clause 4.3.8 requires that a suitable Accreditation Mechanism to recongise institutions, professionals and services relating to Safety, Health and Environment at Workplace for uniformity and greater coverage. It is proposed that the during the XIIth five year plan a suitable mechanism would be put in place with active consultation with professional bodies such as Quality Council of India (QCI), Bureau of India Standards (BIS) etc. The mechanism once develop will ensure that quality service by various institutes, firms or individual consultants offering certain OSH related services to industries in meeting the statutory, obligatory, recommendatory requirements. The organizations or consultants would provide quality service only after duly getting accreditation or certification.

4.5.1.4 Need to carry out research project to identify, control and eliminate the prevalence of silicosis and asbestoses

Consequent to the writ petitions filed by a number of NGO's and subsequent judgments of the Honorable Supreme Court of India a number of directions were issued for actions to be initiated by the key stake holders, specially to the Ship breaking and Micro, Small and Medium Scale Enterprises were the asbestos handling is significant. There is an increasing pressure from all the concerned stakeholders for urgent action for protecting the workers and the general population against primary and secondary exposure to Chrysotile form of Asbestos fibres. Greater concerns on the central government are whether or not to ban the mining and use of chrysotile asbestos in India. Besides this a similar concern is felt through International community bringing pressure on the government for immediate action on the control measures and its elimination.

The problem of silicosis is much more severe in the unorganized sector of industries like slate pencil cutting, stone cutting and agate industry. The flaw here is that most industries belonging to the unorganized sector do not fall under the purview of the statutory tools such as the Factories Act aimed to protect the health and safety of the working population. Moreover, the employers lack the will to provide safe working environment for the workers. It is probably economic compulsions that the workers choose to work in hazardous environments and are subjected to exploitation.

Around 15 cases concerning Silicosis disease alone have been filed against State governments such as that of Gujarat, Delhi, MP, Jharkhand and Rajasthan. Consequent to the writ petitions filed by a number of NGO's and subsequent judgments of the honorable supreme court of India giving a number of directions for actions to the key stake holders specially concerning high incidence of Silicosis in these small and medium scale enterprises as it has emerged as a potential occupational health hazards warranting immediate coordinated action by the Centre for dealing with the emerging situation. There is an increasing pressure from all the corners on the part of central government for urgent action for protecting the workers and the general population against primary and secondary exposure to SILICA DUST.

Consequent to Supreme Court of India's direction and the initiatives taken by the National Human rights Commission (NHRC) for protecting the human right of unorganized sector workers affected with silicosis has brought the status of these categories of workers to limelight which is alarming. According to the pilot survey carried out by NHRC and NGO's the number of silicosis victims especially those belonging to the states of Gujarat, Rajasthan, Madhya Pradesh and Jharkhand who deceased young is quite large. The numbers of silicosis affected victims who are on the rolls of compensation claims are also considerable. "The problem is worse for workers who are employed in the unorganized sector and have no option to get compensation."

Silicosis being a widespread disease an urgent action is required. Government has recognized the existence of this debilitating occupational diseases and the need for inter sectoral cooperation and public private partnership to tackle the dual problems of Silicosis and Silico-tuberculosis in the country. Honorable Supreme Court of India directed the National Human Rights Commission (NHRC) to provide for compensation to those who had died due to Silicosis through the concerned authorities and to provide immediate medical relief to victims

of Silicosis. The apex court has also directed the Ministry of Health and Ministry of Labour and Employment and Union of India to extend all further assistance to the NHRC for further action in this regard.

Whereas the NHRC and the NGO's are making their all efforts to provide rehabilitation to the victims of silicosis, the emerging situation demands an urgent action by the government to evolve appropriate strategy and action plan to contain the dreaded disease and protect and promote the safety and health standards of these neglected working groups who play vital role in national economy and productivity.

4.5.1.5 Organised National wide yearly campaigns on various OSH issues

To implement the National Policy on Safety, Health and Environment at Workplace DGFASLI proposes to Organize yearly campaigns such as Respiratory Diseases, Musko Skeleto Disorders, Central Nervous System (CNS), Dermatitis, Noise and Vibration through various awareness programs. These Awareness programmes will be through development of Video Films, Posters, Pamphlets, Reading Materials and distributed to all concerned

4.5.1.6 To set up Risk Observatory Mechanisms with involvement of researchers, academicians employer and employee representative.

It is proposed to set up Risk Observatory Cells in DGFASLI and Regional Labour Institutes with appropriate hardware and software. These Observatory Cells would be developed with the active involvement of researchers, academician's employer and employee representative. During the Year 2011-12 a seminar is proposed to be held at RLI Chennai to discuss and finalise the strategy for setting up the mechanism.

4.5.1.7 Organizing and conducting specialised Seminars/Workshops / Training Programs

DGFASLI through the Central Labour Institutes and Regional Labour Institutes with the involvement of employer and employee representatives and other stake holders plan to organize seminars, workshops and specialized training programmes on various issues of OSH aimed at improved OSH performance in the Manufacturing and Port Sector thereby ensuring reduction in the incidence of accidents, injuries, diseases and disasters.

4.5.1.8 Development of Regional Labour Institute Faridabad, as Centre of Excellence in MSME and Chemical Process Units

The Regional Labour Institute at Faridabad has been established during the X Five Year Plan. The main purpose of this Institute is to meet the OSH needs of the industries as well as Micro Small and Medium Enterprises in the country. To make this Institute fully functional, it is to be equipped with infrastructure facilities and manpower. This Institute will cater to the needs of the northern states namely, Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, and National Capital Territory of Delhi. This Institute will also function as a centre of excellence in the field of Chemical Process Safety & Risk Analysis.

The activities proposed to be taken up in this institutes relate to development of specialized training cum exhibition centers for the workers, owners, managers of MSME and for providing door step facilities to impart knowledge, skills and awareness amongst the workers and owners would also prepared and print publicity materials such as pamphlets, posters, video films on OSH.

It is also proposed to set up a personal protective testing laboratories (Non respiratory and Non-respiratory) to carry out testing of PPEs the testing of these equipments would ensured quality PPEs are used by the workers to reduce the incidence of injuries and accidents and reduce the exposure of the workers to the harmful work environment as per the various the relevant statutes

4.5.1.9 Amendment to Dock Workers (SHW) Act, 1986

The inland container depots (ICDs) are established all over the country wherein stuffing and destuffing of imported as well as cargo meant for export are being carried out. At present the provisions of Dock Workers (Safety, Health and Welfare) Act 1986 are not applicable to these ICDs. For ensuring safety health and welfare of workers employed in these units, suitable amendments or a separate set of Regulation may be prepared.

4.5.1.10 Notification of Dock Workers (SHW) Regulations by State Governments

The Dock Workers (Safety, Health & welfare) Act 1986 is applicable to all ports in the country. The appropriate Governments i.e., Central Government in respect of major ports and State Governments in respect of non-major ports are empowered to frame Rules and Regulations. The Ministry of Labour & Employment has notified the Dock Workers (Safety, Health & Welfare) Regulation 1990 applicable to 12 major ports in the country. However the State Governments are yet to notify the Rules/ Regulations. There is a need to prepare a time-bound action plan for extending the coverage of the Act to all the non-major ports in the country through notification by respective states.

4.5.1.11 Providing statutory backing for OSH Management Systems in Industry

Rapid technological changes in the industry are leading to changes in the working conditions, work processes and organisation. In such situation, process of legislation is essential but it may not keep pace with the changes and accompanying hazards and risks. To make organizations self sustainable to deal with occupational safety and health challenges continuously an effective management response system is needed to be created. For this an OSH management system need to support such system.

Moreover, to create a national data base on OSH, there is a need for uniformity in implementing some of the Occupational Safety and Health systems in industries. For this, integration of occupational safety and health management systems (OSH-MS) with other manufacturing systems at the organization level based on ILO-OSH 2001 guidelines will help to reduce work related injuries or illness to the workers at work place. There is a need to give statutory backing to such guideline which will go long way in reducing occupational injuries and promoting health and well-being of the working population.

4.5.2 INFRASTRUCTURE-RELATED SUGGESTIONS

4.5.2.1 Strengthening of Enforcement System

Strengthening of the enforcement system at the factory, State or national level may be done by creating a qualitatively better data base which is reliable, faster and ensures quicker data retrieval. On a priority basis on line data transfer facility needs to be introduced for the dissemination of information between the CIFs and its subordinate offices within the State and between CIFs and DGFASLI at the national level. The existing paucity of manpower could be compensated to a great extent through intelligent use of the transfer of data between factories and the CIFs. To get the best out of the Information Technology, it would be necessary to rethink the nature of safety, health and environment data needed from the factories and States in the context of uniformity, quality, and utility of the data as well as the time needed to process those data for meaningful use. In fact, such a data base would facilitate implementation of enforcement policy, monitoring and to judiciously decide the inspection priorities.

The State Factories Directorate also needs to be strengthened with Infrastructure as well as enhance the capabilities of the enforcement officials. This could be achieved by equipping the Factories Directorate with latest equipment for carrying out their enforcement functions and Laboratory Equipment for annalysing the samples collected through their inspections. During the 12th Five Year Plan it is proposed to Strengthening of Enforcement Systems in Factories through an Establishment of Industrial Safety, Occupational Health and Work Environment Centre in the State Factory Directorate by Centrally Sponsored Scheme. The scheme would finalised based on the inputs from the State Factories Directorates and categorization of the states based on the number of registered factories.

Standardisation of the OSH data: Introduction of the system of online transfer of data mentioned above would make way for meeting a long felt need for Standardisation of the OSH data at the National and State level and for creating an excellent database in setting up a national level inventory on OSH activities.

4.5.2.2 Competence enhancement of DGFASLI officials and State Factories Directorates

Education and Training for competence enhancement: In the context of liberalization, there is a much greater need today than ever before, to continuously develop competence of DGFASLI and State Government enforcement officials in factories and ports and re-engineer their function as friend, philosopher and guide as envisaged in ILO Conventions. The growing emphasis on such an approach by the These Officials would go a long way in achieving the dual goal of improvements in the OSH standards in workplace and at the same time, not be open to undue criticism for excessive interference thereby resulting the status of Safety and Health of the Workers working in the Manufacturing and Port Sectors. To achieve this, it is proposed to enhance their competence by training in leading National and International Institutes.

4.5.2.3 Competence Enhancement of Key Personnel in the Industry

Senior managers, HRD personnel, safety officers, factory medical officers, industrial hygienist, competent supervisors, key personnel of MAH installations, OSH trainers, OSH auditors, safety committee members, union representatives, key personnel for emergency planning, etc., need updated specific technical inputs for improving OSH knowledge and skills as well as appropriate training for creating positive occupational safety and health culture in the organisation.

4.5.2.4. OSH Management System in Industries

To create a national data base there is a need for uniformity in implementing some of the Occupational Safety and Health systems in industries. For this integration of occupational safety and health management systems (OSH-MS) with other manufacturing systems (namely IS 18001:2000) at the orgranisation level based on ILO-OSH 2001 guidelines will help to reduce work-related injuries or illness to the workers at work place. Adoption of the system by the industries will go a long way in reducing occupational injuries and promo9ting health and well-being of the working population at work.

4.5.2.4 In-depth Multidisciplinary OSH Study in Ship-breaking

Legislative measures have been taken to ensure safety and protect the health of the workers in highly Labour intensive and hazardous ship-breaking industry. Considering the socio-economic background, literacy level, living conditions as well as working conditions of the employees (of both genders) in this sector, there is an urgent need to study the safety and health behaviour of the employees and formulate necessary intervention to empower them and promote their safety and health at the place of work. Training programmes for various target groups will be conducted to increase the level of awareness on Occupational Safety & Health and thereby contributing to prevention of occupational injuries and diseases.

4.5.2.5 Suggestions for the Improvement of the Functioning of DGFASLI

Shortage of technical manpower due to non-filling up of the posts (43.8% of Group A posts is lying vacant) or abolition of posts is one of the major constraints in performing various activities both qualitatively and quantitatively. In the present manpower situation it is practically impossible to launch national studies. Either manpower situation is to improve by a) filling up vacant positions speedily, b) creating new posts and c) outsourcing personnel for data collection and data analysis for projects.

To restore its past glory as an institute of excellence in India in the area of occupational safety and health, its manpower strength and infrastructural facilities available with DGFASLI need to be upgraded urgently. Its various laboratories namely, Industrial Hygiene, Industrial Medicine, Environmental Engineering, Industrial Ergonomics, Industrial Psychology, Testing of Personal Protective Equipment and Safety Exhibition Centre need to be made better or at least at par with other institutions or industries, with acquisition of sophisticated and state-of-art equipment and instruments for carrying out national & consultancy studies on OSH. Majority of the instruments and equipment available in different laboratories have become obsolete and defunct. Hence, there is an urgent need to reequip the laboratories and other facilities of DGFASLI to cope with that of International standards.

The new RLI set up in Faridabad needs manpower as well as necessary infrastructural support to make it fully functional. The capability and competence of DGFASLI officers should be strengthened by periodically sending them for training in advanced countries to study the latest development in the field of Occupational Safety and Health. This will help in rendering quality services to industries/ports and docks. This needs to be urgently taken up to avoid the knowledge obsolescence which might be setting-in.

4.4.2.6 Stating up of testing facilities for personal protective equipment (PPE) in Regional Labour Institutes Chennai, Kolkatta, Kanpur and Faridabad

During the 12th Five year Plan it is proposed to set up testing facilities for personal protective equipment (PPE) in Regional Labour Institutes Chennai, Kolkatta, Kanpur and Faridabad to carry testing of the various PPEs such as Helmets, ear plugs and ear muffs, Safety goggles, face masks, hand gloves, safety belts and Safety Harness and Safety Shoes as per the relevant BIS standards. This will ensure that Quality and tested PPEs would be available for the workers to use which would improve the safety and health of the workers. At present only such facility is present in CLI, Mumbai which at times become difficult for the manufacturers and industry to get the PPEs tested and certified.

4.5.2.7 The Efficacy of the Institution of 'Factory Inspector in Ensuring Occupational Safety and Health to the Workers in the Factories

The efficacy of the administrative machinery to ensure occupational safety and health of the workers in the factories has to be revamped to suit the existing needs in the light of the globalisation, privatisation and liberalisation. To be globally competent, the Government is proposing to initiate legislation relating to setting up of Mega Chemical and Petrochemical Industries, etc. Thus, advancement in technology would necessarily occupy a paramount significance in various diversified manufacturing process in the years to come. It is, therefore, an absolute necessity to upgrade the competence of inspecting authorities in relation to modern techniques employed and risks associated with them. The Inspectorates of Factories would, therefore, be required to be re-engineered to play an advisory role besides their enforcement functions.

To improve the efficacy of the inspections, it is essential that adequate and qualified inspecting officials are in position to carry out their enforcement functions effectively and efficiently. Guidelines to the inspectors for carrying out inspections through well-formulated checklists need to be prepared and supplied to States for uniformity in inspection procedures.

Further, the data on investigations carried out by the Inspectors in respect of fatal, serious bodily injury incidents and typical near-miss incidents or dangerous occurrences need to be compiled and disseminated to all the States / UTs for reference and further necessary action.

4.6 12th FIVE YEAR PLAN SCHEMES

During the 12th Five Year Plan Period (2012 – 2017), DGFASLI proposes to operate the following seven Plan Schemes.

1. Strengthening of DGFASLI Organisation and OSH in Factories - Rs. 94 Crores (Civil Works – Rs. 70 Crores)
2. Strengthening of Enforcement System in Ports and Docks - Rs 14 Crores
3. Development of Regional Labour Institute, Faridabad as Centre of Excellence in Safety Systems in MSME & Chemical Process Units - Rs 15 Crores
4. Effective Implementation of Occupational Safety, Health and Environment Systems at Work place in Manufacturing and Port Sector - Rs 25 Crores
5. Identification, Elimination and Control of Silicosis in India - Rs 24 Crores
6. Identification, Elimination and Control of Asbestosis in India - Rs 20 Crores
7. Strengthening of Enforcement Systems in Factories - Establishment of Industrial Safety, Occupational Health and Work Environment Centre in the State Factory Directorate - Centrally Sponsored Scheme - Rs 25 Crores

4.6.1 PLAN SCHEME 1

I. NAME OF THE SCHEME: Strengthening of DGFASLI Organisation and OSH in Factories - Rs. 94 Crores (Civil Works – Rs. 70 Crores)

II. YEAR OF COMMENCEMENT

a) Continuing or new start : Continuing modified scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVE:

To strengthen the infrastructure Facilities of DGFASLI for improving occupational safety and health in factories throughout the country thereby contributing in prevention and control of occupational injuries and diseases, setting up of accreditation mechanism, implementing e-governance, enhancing skill and capability of DGFASLI officials.

The following physical activities are proposed to be conducted under the scheme:-

- Upgradation of different laboratories of CLI & RLIs by acquisition of high precision and state-of –the art instruments and equipments to act as National Referral Laboratories on occupational safety and health.
- Monitoring of Occupational Safety, Health and Work environment in manufacturing industries.
- Establishment of a system for collection and dissemination of information on OSH.
- Enhancement of technical capabilities of officials of DGFASLI.
- Development of Standards & Guidelines on Occupational Safety and Health for the factories by conducting studies/surveys.
- Creating awareness on occupational safety and health in various sectors of the economy through conducting of training programme, Seminars, workshops etc.

IV. SCOPE:

The proposed scheme will have the following components:

- Development of occupational safety and health national inventory and connectivity between State Factory Inspectorate and DGFASLI. The inventory will cover information pertaining to manufacturing activities covered under the Factories Act 1948, occupational injuries and diseases in the sector, management of OSH at unit and state level.
- Creation of occupational safety and health information action resource centers at four Labour institutes by providing them with computer hardware and software facilities and also by involving other organisations specialised in the field of safety, health and environment to participate in the project.
- Professional Development of officials in the field of OSH by training them abroad in advanced countries.
- Dissemination of information through electronic media using the latest information technology for creating public awareness about safety, health and environment.

- Dissemination of information through conventional media to reach the large workforce including decision makers not having access to the information technology. This will include publication of newsletter and technical reports, safety cards etc.
- By acquiring latest IT facilities, e-governance will also get boost as same infrastructure can be used for achieving the objectives.
- To establish a system for the provision and regulation of quality and professional standards and quantity of technical experts in the country, to carry out expert services such as safety audit, risk assessment, hazard and operability study, environment impact assessment, testing and certification of pressure vessels, firefighting equipment, safety of hoists and lifts, safety in confined space, assessment of effectiveness of ventilation systems and illumination systems, safeguarding of dangerous operations, etc. and eventually to accredit manufacturers facilities for manufacturing safety related equipment and devices, plant and machineries, storage vessels involving hazardous materials such as pressure vessels, cryogenic vessels, etc.
- Formation of a National Accreditation under National Board on Occupational Safety and Health body to give accreditation to safety auditors, competent persons, industrial hygiene / medical officers, etc.
- To carry out such other activities and to take such decisions that is necessary to achieve the objectives of the Board

V. PROPOSED FINANCIAL OUTLAY 94 Crores (Civil Works 70 Cr.)

VI PHYSICAL TARGETS.

Sr. No.	Activities
1.	Purchase of equipment and upgradation of training facilities for Conference Rooms, Auditorium with State of Art, Audio-visual Facilities at 4 Institutes
2.	Implementation of e-governance in DGFASLI Organisation
3.	Risk Observatory Activities – Collaboration with NIOH, IAOH, IIT, AIIMS, etc.
4.	National Occupational Diseases Profile
5.	National OSH Profile through sample survey and Analysis by collaboration – NIOH, IAOH, NSC, ORG-MARG
6.	Mobile Testing Van – One each for 4 Institutes
7.	Setting up of Personal Protective Equipment Testing Facilities at RLIs, Chennai, Kolkata & Kanpur

B. CIVIL WORKS

Sr. No.	Activity
1.	New Hostel at CLI, Central Labour Institute, Mumbai
2.	New Building for diagnostic and Research Centre at Central Labour Institute, Mumbai.
3.	New Annex Building in Regional Labour Institutes, Chennai, Kolkata & Kanpur for R&D Centre for OSH
4.	Civil works Setting up of Testing Facilities for approval of Flame-proof Equipment at Central Labour Institute, Mumbai.

VII. JUSTIFICATION FOR CONTINUATION OF THE SCHEME:

The Scheme is aimed at meeting specific requirements prescribed under the Factories (Amendment) Act 1987 and meeting the safety and health standards in the factories by helping State Governments in effective enforcement of the provisions under the statutes. The video films, leaflets, booklets, posters, etc. produced will be used for educating various personnel from the factories and ports. The ultimate aim of the scheme is to promote safety, health and welfare of workers in manufacturing sectors. The benefits to be derived from the above Scheme has already yielded substantial results in the form of (i) greater awareness about safety, health among workmen in Manufacturing Sector (ii) better standards of enforcement and (iii) availability of material / information required for training in safety and health. In view of its encouraging achievements during XI Plan this scheme is being continued in XII Plan.

Directorate General Factory Advice Service & Labour Institutes (DGFASLI) is the apex body for occupational safety and health protection of industrial workers in the country. To achieve this objective and discharge its national responsibility, it carries out consultancy, research, training/education, advisory, enforcement of statutes etc. through its specialized divisions. Central Labour Institute along with Regional Labour Institutes are engaged in twofold strategy to attain the objective of occupational safety and health protection of workers in industries and also to take necessary measures to prevent the occupational diseases. On training/education side tailor made trainings are undertaken to update the knowledge and the skills of the safety and health professionals so that they become more effective in controlling and preventing the occupationally related safety and health problems in their industry. Awareness programmes are conducted for workers, supervisors, trade unions and management personnel. Under-graduate, post-graduate engineering and medical students who are pursuing their studies are also included to the awareness training programmes.

Long term strategy includes the national projects, which aim at conducting the research so that studies if needed, policy and standards on occupational safety and health can be revised accordingly.

The Labour Institutes under the DGFASLI the technical arm to the Ministry in matters of occupational safety and health- function as socio-economic laboratory for the benefit of the workforce.

Over the years, DGFASLI has been concentrating on creation/augmenting facilities, audio-visual production for effective promotion of OSH in industries, through the plan scheme Reorganization and Strengthening of the DGFASLI Organization and Establishment of Special Cells. These efforts carried from the 7th plan period have been quite fruitful and needs to be continued in the 12th plan period also..

Under this scheme to create the above awareness and to improve productivity, production of video films on Safety and Health, Publications, Safety Posters and other promotional material are very much essential and needs to be undertaken on a continual and regular basis.

Hence the Various activities undertaken during the earlier Plan periods are to be continued during 12th Plan as per the targets for the promotion of safety & health in factories. Posts available under this plan scheme would be required to be continued in the 12th plan period also.

No. of Posts created during 7th plan, continued through 8th , 9th , 10th, 11th Plan and proposed to be continued in the 12th Plan.

Sr. No.	**Name of the Post**	**Pay Scale**	**Number of Posts**	**Location**
1	Dy. Director General	PB-4	1 Post	DGFASLI
2	Director (IH)	PB-3/-	1 Post	-do-
3	Director (I.Psy)	PB-3	1 Post	-do-
4	Director (IM)	PB-3	1 Post	-do-
5	Senior Scientific Assistant	PB-2	3Posts	-do-
6	Head Clerk (Prog.)	PB-2	4 Posts	-do-
7	Stenographer Grade II	PB-2	1 Post	-do-
8	Audio- Visual Asstt.	PB-1	1Post.	-do-
9	Sr. Lab. Attendant	PB-1	1 Post	-do-
	Total		14 Posts	

1.	Deputy Director General	1. Advice and Coordination with the Chief Inspectors of Factories (CIFs) on the administration of the Factories Act, 1948 and the rules framed there under and the interactions with Regional Labour Institutes (RLIs) in this regard. 2. Coordination with the Labour Institutes under DGFASLI for effective implementation of programmes of Government of India. 3. Dealing with matters relating to Parliament Questions and examining the briefs sent to Ministry concerning Parliament Questions and other references. 4. Assisting the Director General in Policy planning on Occupational Safety, Health Working Conditions and Work Environment and related matters. 5. Coordination of all activities relating to the National Safety Awards and Vishwakarma Rashtriya Puraskar Schemes of Ministry of Labour. 6. Coordinating, collecting and processing information/ data on Occupational Safety and Health including the statistics of accidents, etc. from the Chief Inspectors of Factories, RLIs, etc. 7. Offering Comments on the ILO Conventions, recommendations, codes, practices, etc. 8. Looking after all work connected with foreign fellowships 9. Training of foreign officials in India under various Schemes.

		10. Looking after all matters related to Construction Safety. 11. Guidance in the preparation of Standard Reference Note 12. Guidance in the framing of Rules under Factories Act. Retention of this post is very much essential for better coordination with CIFs, smoother functioning of the Factory Advice Service Division and Awards Cell and better processing of data on Occupational Safety and Health and matters relating to Parliament Questions.
2	Director (IH)	The officer in this position is incharge of both the divisions of the testing laboratory. His main responsibilities involve supervising the testing operations going on in the laboratories, developments and maintenance of the testing equipment, keeping in touch with the practices being followed in other parts of the world and changes in specifications of the protective equipments. The divisions are also involved in training of the personal from industries in selection of proper protective equipments and proper use of the equipments for best results. As and when required some research and developmental work is also carried out in the laboratories under the guidance and supervision of the Director.
3	Director (Medical):	The Medical Division of CLI and RLI's conduct studies, surveys and research on Occupational diseases and its remedies. This work is an important activity of this Organisation and the health of the workers are equally important as their safety. . He would also be responsible for the establishment of POISON INFORMATION AND CONTROL CENTRE (PICC) at CLI Mumbai and offer advisory service to the industries including dissemination of information on various industrial poisons, availability of antidotes and standard treatment guidelines. In addition he would be responsible for up gradation of industrial medicine laboratories at 3 regional centers for providing consultancy services for monitoring of the health conditions of workers employed in hazardous process industries. Such services would also be made available for the workers at the request of chief inspector of factories and statutory authority in addition to the factories.
3	Director (Ind. Psychology)	Industrial Psychology being an integral part of ergonomic research, there is a need of psychological input that has to be incorporated unavoidably in research activity as well as training courses in the field of ergonomics. In view of this the post of Director Industrial Psychology should be continued in the near future as long as the endeavour continuous.
4	Senior Scientific Assistant	For research in the areas of ergonomics, assistant where simultaneous monitoring of (Physiology) different

		physiological parameters and also recording of production figure are involved, more technical personnel, particularly in the assisting staff, are needed. Hence services of a Senior Scientific Assistant as mentioned above is essential and the post is required to be continued during the current plan period.
5	Head Clerk Program	To carry out / continue the activities pertaining to Training Program and workshop in the area of Ergonomics and allied fields, the role of Head Clerk Program is of para-amount importance. Hence, four Head Clerk Program would be unavoidably essential for the said Plan scheme.
6	Audio Visual Assistant .	Training is one of the important activities envisaged under the scheme. Workshops and Seminars on selected topics in different areas of ergonomics are also envisaged. Lots of training materials and aids in the areas of Anthropometry and biomechanics, work physiology land environmental physiology and experimental psychology need to be developed. In order to effectively carry out such activities, an Audio Visual Assistant and a Programme Assistant would be necessary to be continued.
7	Sr. Lab. Attendant	To look after the up keeping and maintenance of the scientific equipment and of the laboratories, it is essential to continue the post of Senior Laboratory Attendant. His job also would be to help the officers and staff of scientific studies, training programmes, seminars, workshops, etc.
8.	Stenographer Grade II	To look after the secretarial work of Dy. Director General and also of the Director (I.H.), who are entitled to Senior Stenographer (Gr. II) the services would be required to be continued.

4.6.2 PLAN SCHEME 2

I. NAME OF THE SCHEME: Strengthening of Enforcement System in Ports and Docks – Rs. 14 Crores

II. YEAR OF COMMENCEMENT

a) Continuing or new start : New Scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVES OF THE SCHEME

- To update knowledge and competence of Inspectors to cope up with the recent developments in the Maritime trade.
- To develop the capability of the DGFASLI officers in the field of OSH, authorised persons, responsible persons, competent persons, etc. and other specialised category of personnel in the area of handling of containers and dangerous goods.

- To fulfill the statutory obligations of the Central Government through DGFASLI, under the Dock Workers (Safety, Health and Welfare) Act,1986 and Rules and Regulations framed hereunder at the major ports including their private terminals.
- To develop guidelines on activities connected with dock work, keeping in view the introduction of new technologies and their hazards in ports including bringing the Inland Container Depots outside the port boundary under its purview.
- To develop a data base containing information on handling of containers and dangerous goods, hazardous installations, inland container depots, minor and intermediate ports, competent persons, panel of medical doctors for various major ports etc. for the benefit of the port users.
- To help the state governments in framing of Rules and regulations under the Dock Workers (Safety, Health and Welfare) Act 1986, specifically for the private ports.
- To generate awareness amongst all concerned through development of training manual, audio visual aids, publications etc.
- To develop standards, checklists, Leaflet etc. on various port operations and procedures.

IV. BACKGROUND

The component on strengthening of enforcement for safety and health of dock workers was included in the plan scheme "Strengthening of DGFASLI Organisation" during the 11th five year. However, in the present scenario, the trade through ports is on the rise and the major ports are expanding their operations through privatization. The storage facilities in the ports for storing hazardous chemicals are increasing. The burden on the Inspectorate in different aspects of enforcement of provisions on safety and health due to the increasing containerisation of cargo, handling & storage of dangerous goods, introduction of new technology for cargo handling and other developments leading to the increase in volume of traffic have contributed to the complexity of the problems and therefore the need to formulate a new scheme to strengthen the system of enforcement.

It is anticipated that the cargo traffic would steadily grow, side by side, with increased port capacities and induction of high tech equipment. Handling and Storage of Dangerous Goods in large quantities would follow with the expansion of the industrial factors, which would place additional burden on enforcement officials specially Manufacture, Storage and Import of Hazardous Chemicals Rules.

Further the Inspectors under the act have to deal with senior officers of the Port Trust and other agencies and also represent the department in court of law. Hence, it is necessary that the three important ports viz. Mumbai, Kolkata and Chennai should be headed by an officer of Director level and IDS offices at other ports are headed by Dy. Director level officers and assisted by Assistant Directors. The ports are expanding in their operations, hence the strengthening of Inspectorates is to be augmented by providing additional technical manpower with administrative staff. Prosecutions are launched under the statutes for violations of various provisions, however as the inspectors do not have any legal background and find it difficult to present the case in the court of law. As such it is suggested that a post of Legal Expert may be created to guide and advise the inspectors in the prosecution cases.

V. JUSTIFICATION

All the Inspectorates of Dock Safety located at the major ports have been carrying out ship inspections ever since their inception but to a limited extent. The Inspectorates are in a position to carry out only an average 10% of ship inspections every year against the general norms of atleast 50% of the ships called at the ports. The Manufacture Storage and Import of Hazardous Chemical Rules 1989 notified under Environment (Protection) Act 1986 and its amendments in 1994 have fixed time bound responsibilities on the Chief Inspector of Dock Safety and his subordinate officials of Inspectorates Dock Safety.
In order to achieve the general norms of at least 50 per cent inspection of the ships called at the ports and carry out the other statutory inspections, advisory and promotional activities in all the major ports, the Dock Safety Division, DGFASLI and its Inspectorates need to be strengthened by providing additional manpower with necessary infrastructural and transport facilities.

With advancement in technology, use of new generation ships, handling of hazardous goods etc. the competence building of the inspecting officials have become essential to enable them to function effectively. Preparation of inspection manual, inspection guidelines and checklists etc. for use of inspectors for effective enforcement would also be essential. More so all employers, Port Users etc. have to fulfill their statutory obligations for which development of technical standard, checklist, technical leaflet would serve as a better tool.

The recent mishaps in Inland Container Depots just outside the port premises require that these should be covered under the Dock Workers' Safety, Health & Welfare Act, 1986. To achieve this, the Inspectorates of Dock Safety are required to be strengthened by providing manpower with necessary tools and equipments and vehicles. Besides these, another important aspect is the office space for Inspectorate of Dock Safety in Major Ports. At present , The IDS have to depend on the Port Trust for Office Accommodation and are required to pay at market rent which is quiet high. Efforts are required to be made to have Independent Offices constructed under the plan scheme near the ports, for which a civil component has been included in the scheme.

VI. ACTIVITIES

- A central committee will be formed to co-ordinate with the state governments for administration of the act in the minor and private ports.
- A committee will be formed at the headquarters level including the regional heads of the dock safety division to assess the quality of the inspection being carried out by each inspectorates and this committee shall visit all the ports for evaluation purposes. The deficiencies noted down / observed may be taken up with the core committee of the dock safety division for remedial measures and for further strengthening of inspection systems.
- Streamlining of documentation system in all the inspectorate shall be taken up at the headquarters in order to maintain uniformity in reporting system and also, easy accessibility of the statistical data for evaluation purpose.
- Officers may be deputed abroad for enhancing their knowledge and to develop their skills for further strengthening of inspection systems.

- Independent IDS offices building will be constructed near ports .
- Inspection tools and equipments will be provided to the Inspectorates to help them carry out their functions more effectively and efficiently.
- Inspection vans will be provided to the inspectorates to enable reach far locations in the ports, specially MAH installations and isolated storages to keep a vigil on them.
- National seminars and Programmes will be under taken to increase OSH awareness amongst all stake holders in the ports sector.
- All the IDS offices will be Wi-Fi connected to online data transmission. They will also be connected to the individual port trust to access information about ships calling at that particular port.
- Necessary amendment to the Dock Workers (Safety, Health & Welfare) Act 1986 and Regulation 1990.

VII. PROPOSED FINANCIAL OUTLAY: Rs. 14 Crores

Additional Manpower Proposed:

Sr. No.	Name of the Post	Pay Scale	Number of Posts	Location
1	Dy. Director General	PB-4	1	At HQs DGFASLI
2	Director (S)	PB-3	4	1 at Hqs and 1 each at IDS Chennai, Mumbai and Kolkatta
4	Dy. Director (S	PB-3	9	1 at Hqs and 1 each at all IDS except Chennai, Mumbai and Kolkatta
5	Asst. Director (S)	PB-3	18	2 at Hqs and 1 each IDS Chennai, Mumbai and Kolkatta at 2 each in the remaining IDSs
6	Addl. Asst. Director (S)	PB-3	22	2 each at all IDSs
7	Legal Adviser	PB-3	1	At HQs DGFASLI
	Total		55	

Inspection Tools and Equipment to be Procured:

- Lux Meter
- Dosi meter/ Nose meter
- Oxygen analyzer
- Hazardous chemical detection kit
- Laptop with net connectivity
- Ultra - sonic Thickness gauging instrument.
- Digital Camera

VIII. JUSTIFICATION OF THE POSTS:

POST	PAY BAND	NATURE OF DUTIES

Head Quarters		
Director (Safety)	PB 3	Planning and Monitoring of enforcement of the statutes like the Dock Workers (Safety, Health & Welfare) Act, 1986; Rules and Regulation framed thereunder and also the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 in major ports. Investigation of accidents, prosecution cases, granting and renewal of competency to technical personnel (competent persons); empanelment of medical practitioners, issue of safety performance reports to stevedores etc. Drafting amendments to the statutes and preparing replies to the parliament questions and assurances. Organising national studies, surveys, seminars and workshops in the field of dock safety and initiating follow up actions on the recommendations.
Deputy Director (Safety)	PB 3	Collection and compilation of information on status of compliance with the provisions of the statutes in all major ports Processing of proposals for issue of safety performance reports for employers of Dock Workers and also processing of proposals for prosecution cases, granting and renewal of competency to technical personnel (competent persons); empanelment of medical practitioners, etc. Scrutiny of accident reports and initiating actions thereon Holding annual conference of Dock Safety Inspectors. Holding meetings of Dock Safety Advisory Committee.
Assistant Director (Safety)	PB 3	Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with Collection and compilation of information on status of compliance with the provisions of the statutes in all major ports Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with Processing of proposals for issue of safety performance reports for employers of Dock Workers and also assisting in processing of proposals for prosecution cases, granting and renewal of competency to technical personnel (competent persons); empanelment of medical practitioners, etc. Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with Scrutiny of accident reports and initiating actions thereon Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with Holding annual conference of Dock Safety Inspectors. Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with Holding meetings of Dock Safety Advisory Committee
Legal Advisor	PB 3	To provide the legal advices as and when required in the matter related to the enforcement of the provisions under the Dock Workers (Safety, Health and Welfare) Act, 1986 and the Regulations framed thereunder. And the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 also. To provide the legal advices while drafting the amendments to the statutes and preparing replies to the parliament questions and

		assurances also for other matter related to the administrative / establishment etc. as and when required by the Department.
Inspectorate Dock Safety		
Director (Safety)	PB 3	Planning /Coordination for enforcement of the provisions under the Dock Workers (Safety, Health and Welfare) Act, 1986 and the Regulations framed thereunder. Planning / Coordination for enforcement of the directives and procedures under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 also. Inspection of ships and port premises, lifting machinery and the process of loading and unloading of cargo. Investigation of accidents and inspection of the infrastructure of the competent persons and panel of doctors. Conducting and guiding research /project studies in the field of safety with special reference to Dock / Port working. Attending to court cases and complaints, if any filed by the dock workers or their union. Attending safety committee meetings and safety day /week celebrations.
Deputy Director (Safety)	PB 3	Enforcement of the provisions under the Dock Workers (Safety, Health and Welfare) Act, 1986 and the Regulations framed thereunder. Enforces the directives and procedures under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 also. Inspection of ships and port premises, lifting machinery and the process of loading and unloading of cargo on ships and port premises. Investigation of accidents and inspection of the infrastructure of the competent persons and panel of doctors. Conducting and guiding research /project studies in the field of safety with special reference to Dock / Port working. Attending to court cases and complaints, if any filed by the dock workers or their union. Attending safety committee meetings and safety day /week celebrations.
Assistant Director (Safety)	PB 3	Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with enforcement of the provisions under the Dock Workers (Safety, Health and Welfare) Act, 1986 and the Regulations framed thereunder. Assisting the Dy. Director (Safety) / Director(Safety), for the work in connection with enforcement of the directives and procedures under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 also. Inspection of ships and port premises, lifting machinery and the process of loading and unloading of cargo on ships and port premises. Investigation of accidents in ports and docks. Attending to court cases and complaints, if any filed by the dock workers or their union. Conducting and guiding research /project studies in the field of safety with special reference to Dock / Port working.

		Attending safety committee meetings and safety day /week celebrations. Any other work assigned by the senior Officers.
Additional Assistant Director (Safety)	PB 3	Providing the technical assistance / support to the Asstt. Director (Safety) / Dy. Director(Safety) / Director(Safety), for the work in connection with enforcement of the provisions under the Dock Workers (Safety, Health and Welfare) Act, 1986 and the Regulations framed thereunder. And the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 also. Inspect port premises, ships, lifting machinery. Inspect the process of loading and unloading of cargo from and into ships, in connection with the administration of Dock Workers (Safety, Health and Welfare) Act, 1986. Investigate accidents and dangerous occurrences. Render technical advice when he goes for the inspection work or any other work in connection with the administration of the Act. Any other work assigned by the senior Officers.

4.5.2.3 PLAN SCHEME. 3

I. NAME OF THE SCHEME: Development Of Regional Labour Institute, Faridabad as Centre of Excellence in Safety Systems in MSME and Chemical Process Units - Rs. 15 crore

II. YEAR OF COMMENCEMENT

a) Continuing or new start : Continuing modified scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVES:

- To develop Regional Labour Institute, Faridabad as National Center of Excellence in the area of Occupational Safety and Health to meet the specialized needs of MSMEs and Chemical Process Industry.
- Development of National Training Center, National Research Center and National Awareness Center for carrying out the Technical activities of the Center of Excellence.
- To develop wide spectrum Door-step Facility to impart knowledge, skills and develop awareness among the work-force and owner-managers of MSMEs.

IV. BACKGROUND:

The Regional Labour Institute, Faridabad was inaugurated on 10th of February, 2009 and is being conceived as 'National Centre of Excellence' in the area of Occupational Safety and Health in MSMEs and Chemical Process Industries. During the plan period 2007-12, construction of buildings viz., Institute block, Hostel block, Auditorium and other support service areas have been developed.

As per EFC Memorandum of the plan scheme in total 50 posts (Group- A, B, and C) are approved and Group-D posts are to be out sourced. During the 11th five year plan a total of 18 posts have been created so far under the Group-A, B, and C. Presently, the institute has started functioning as regional center like other regional Labour institutes (under DGFASLI) located at Chennai, Kanpur and Kolkata. The institute caters to the needs of the northern States /UTs viz. Delhi (NCR), Punjab, Haryana, Chandigarh, J&K and Himachal Pradesh.

During the 12th five year plan (2012-17) the Regional Labour Institute, Faridabad is to be developed and made functional as 'National Centre of Excellence' in the area of Occupational Safety and Health in MSMEs and Chemical Process Industries.

V. PROPOSED ACTIVITIES

- Development of Emergency Response Center for providing technical support in the event of chemical disasters in industries.
- Creation of Technical Data Bank and Analysis Center for Chemical Process Industries.
- Development of specialized Awareness Center for the work-force engaged in Chemical Process Industries.
- Procurement of Field Laboratory Van for collection of samples and analysis.
- Development of specialized Training cum Exhibition Center for the Workers, Owner-Managers of MSME sector.
- Procurement of Training cum Awareness Van for providing the 'Door-step Facility' to impart knowledge, skills and develop awareness among the workers and owner-managers of MSMEs.
- Conducting of specialised Educational Courses, Long-duration Training Programmes, Seminars, Workshops, etc.
- Conducting Risk Assessment Studies in Chemical Process Industries.
- Preparation and Printing of publicity material (Pamphlets, Posters), training manuals, safe work practices, on OSH.
- Establishment of 3-D Studio and Video Conferencing facility with the state of art equipments for development and screening of video films (Motivational /Informative /Technical), technical deliberations on OSH.
- Development of Personal Protective Equipment Testing Labs (Non-Respiratory & Respiratory).
- Testing of Personal Protective Equipment (Non-respiratory & Respiratory).

Creation of Posts:

S.No.	Post	Pay-Band	No. of Posts proposed
1.	Deputy Director General	PB-4, GP-8,700/-	1
2.	Director (Ind. Hyg.)	PB-3, GP-7,600/-	1
3.	Deputy Director (Safety)	PB-3, GP-6,600/-	1
4.	Deputy Director (Ind. Hyg.)	PB-3, GP-6,600/-	1
5.	Asstt. Director (Safety)	PB-3, GP-5,400/-	1
6.	Asstt. Director (Ind. Hyg.)	PB-3, GP-5,400/-	1

7.	Asstt. Director (Ind. Phy.)	PB-3, GP-5,400/-	1
8.	Asstt. Director (Ind. Psy.)	PB-3, GP-5,400/-	1
9.	Addl. Asstt. Director (Safety)	PB-2, GP-4,600/-	1
10.	Technical Asstt.	PB-2, GP-4,200/-	1
11.	Senior Scientific Asstt.	PB-2, GP-4,200/-	1
12.	Junior Scientific Asstt.	PB-1, GP-2,800/-	2
13.	Lab. Asstt. Gr-I	PB-1, GP-2,400/-	2
		TOTAL	**15**

S. No.	**Post**	**Justification**
1.	Deputy Director General (One Post)	The Regional Labour Institute (RLI), Faridabad has been conceived as 'National Centre of Excellence' in the area of Occupational Safety and Health with special emphasis on Micro, Small and Medium Enterprises (MSME) sector and chemical process industry. As per EFC memorandum of the plan scheme "Establishment of New RLI at Faridabad" the proposed Policy Plan Cell will act as nodal center for framing and implanting the national policy by maintaining continuous liaison with Ministry of Labour & Employment, ILO, and other Ministries. To attend the various administrative and technical meetings held at Min. of Labour and Employment, ILO and other ministries, offices and organizations in addition to effectively functioning of the OSH activities in line with the National Policy on Safety, Health and Environment at Workplace in the Northern and north Eastern States Coordination of awards schemes such as National Safety Awards and Vishwakarma Rashtriya Puraskar Schemes of Ministry of Labour. Technical committee to evaluate applications of the PMSA Award scheme,
2	Director (Ind. Hyg.) (One Post)	To supervise the work of Centre for Chemical Process Safety and Risk Analysis which will focus on studies /surveys, training programmes, workshops, seminars /symposium etc. in the field of Chemical Process Safety and Risk Analysis. There are a large number of Chemical process industries in Northern Region of the country. To supervise the work of Emergency Response Centre which will function as a nodal centre for co-ordinating with various agencies in the event of a chemical emergency. To supervise the work of Industrial Hygiene Division and Respiratory and Non -Respiratory PPE Testing Laboratory equipped with modern and sophisticated analytical instruments such as GC, HPLC, AAS, UV-VIS, Phase contrast Microscope, Polarized Microscope etc. To supervise and carryout studies/ surveys, training programmes /workshops, seminars /symposium etc in the field of Chemical Process Safety and Risk Analysis.
3	Dy. Director	To work for Chemical Process Safety and Risk Analysis which will

	(Ind. Hyg.) (One Post)	focus on studies /surveys, training programmes, workshops, seminars /symposium etc. in the field of Chemical Process Safety, Risk Analysis and Emergency planning. To work for Emergency Response Centre which can function as a nodal centre for co-ordinating with various agencies in the event of a chemical emergency. To assist the Director (Industrial Hygiene) in planning and organizing the technical activities of the Division. To supervise the work of Respiratory and Non -Respiratory PPE Testing Laboratories Planning and organizing the technical activities of the laboratory and coordinate the activities
4	Dy. Director (Safety) (One Post)	To supervise the work of development /establishment of Centre for Micro, Small and Medium Enterprises (MSME) Sector To carrying out day to day technical activities such as conducting in-house and in-plant training programmes, taking classes /technical sections in the programmes for MSME units To prepare specialized work manuals and plan for publicity material such as short duration films, display models for guiding the owner-managers for developing better place to work
5	Asstt. Director (Ind. Hyg.) (One Post)	To assist the Director and Deputy Director (Industrial Hygiene) in planning and organizing the technical activities of the Division. To assist in carrying out research and consultancy studies in the areas of chemical Process Safety To carryout the activities and supervise functions of the Respiratory and Non -Respiratory PPE Testing Laboratories. To look after the procurement and maintenance of laboratory equipment etc. and coordinate the activities of the staff under his control
6	Asstt. Director (Safety) (One Post)	To Assist Dy. Director (Safety) in the work of Centre for Micro, Small and Medium Enterprises (MSME) Sector. To carry out day to day technical activities such as conducting in-house and in-plant training programmes, taking classes /technical sections in the programmes for MSME units. To assist in preparation of specialized work manuals and publicity material such as short duration films, display models for guiding the owner-managers for developing better place to work.
7	Asstt. Director (Ind. Psychology) (One Post)	To carry out the work of 'Center for Human Behaviour & Ergonomics'. To carry out research and consultancy studies in the areas of workload assessment, rest pauses, assessment and management of occupational stress, and quality of work life, psychometric testing for selection, job rotation and optimal man-machine coordination. To conduct Training courses relating to attitudinal and behavioral changes among workers, supervisors and senior managers in the areas related to safety, health and welfare at workplace. To associate with other officers in carrying out the multi-disciplinary studies

8	Asstt. Director (Ind. Phy.) One Post	To carry out the work of 'Center for Human Behaviour & Ergonomics'. To carry out research and consultancy studies in the areas of workload assessment, rest pauses, assessment and management of occupational stress, Physiology/Ergonomics. To conduct Training courses for workers, supervisors and senior managers in the areas of Physiology/Ergonomics at workplace
9	Addl. Assistant Director (Safety) (One Post)	To assist senior officers in establishing the MSME Centre and work for it. To assist the Deputy Director (Safety) in carrying out day to day technical activities such as conducting in-house and in-plant training programmes for MSME Sector. To assist senior officers in establishing the MSME Centre and also organize the visit of workers, supervises and other groups of people coming from different MSME industrial units and technical organizations to the Institute
10	Technical Assistant (One Post)	To assist senior officers in establishing the MSME Centre To assist the officers in carrying out day to day technical activities such as conducting in-house and in-plant training programmes for MSME Sector. To organize the visit of workers, supervises and other groups of people coming from different MSME industrial units and technical organizations to the Institute Procurement, upkeep and routine maintenance of machinery and equipment To maintain the records of the Division and furnish return time to time
11	Senior Scientific Assistant (One Post)	To assist the officers of Industrial Hygiene Division in carrying out day to day technical activities such as field and Laboratory work pertaining to studies/ surveys, conducting in-house and in-plant training programmes conducting laboratory demonstration and organize the visit of workers/ supervises and other groups of people coming from different industrial and technical organizations to this Institute. Procurement, upkeep and routine maintenance of machinery and equipment To look after the routine maintenance of the Laboratories/equipment and maintain the equipment and analysis records
12	Junior Scientific Assistant (Two Posts)	To assist the officers of Industrial Hygiene Division in carrying out day to day technical activities such as Laboratory analytical work, conducting in-house and in-plant training programmes To assist in conducting laboratory demonstration exercises and organize the visit of workers/ supervises and other groups of people coming from different industrial and technical organizations to this Institute To look after the routine maintenance of the Laboratory.
13	Laboratory Assistant	To assist the officers and senior staff such as JSA and SSA of Industrial Hygiene Division in carrying out day to day technical

	Grade-I: (Two Posts)	activities such as Laboratory analytical work, To assist in conducting laboratory exercises for the students of Post Diploma in Industrial Safety (PDIS) and organize the visit of workers/ supervises and other groups of people coming from different industrial and technical organizations to this Institute To look after the routine maintenance and upkeep of the Laboratory

VI. PROPOSED FINANCIAL OUTLAY: Rs. 15 Crores

4.5.2.4 PLAN SCHEME. 4

I. NAME OF THE SCHEME: Effective Implementation of Occupational Safety, Health and Environment Systems at Work Place in Manufacturing and Port Sector. - Rs 25 Crores

II. YEAR OF COMMENCEMENT:

a) Continuing or new start : New Scheme
b) Date of start of the scheme : April, 2012

III OBJECTIVE

- To effectively implement the National Policy on Safety, Health and Environment at work place with special emphasis on the Manufacturing and Port Sector.
- To effectively implement e-Governance in DGFASLI organisation to improve the functioning and effectiveness of the organisation.
- Development of occupational safety and health information system for factories and ports
- Creation of occupational safety and health information action resource centers at five Labour institutes by providing them with computer hardware and software, and video conferencing facilities.
- Creation of databases containing information on handling of containers and dangerous goods, hazardous installations, inland container depots, minor and intermediate ports, competent persons, panel of doctors in ports etc. Dock Safety division will participate by way of providing raw data collected from the field.
- The delivery mechanism and application programmes can be developed by out sourcing
- By acquiring latest IT facilities, e-governance will also get boost as same infrastructure can be used for achieving both objectives.

IV. JUSTIFICATION

The National Policy on Safety, Health and Environment at work place was declared by the Govt. of India on 20-02-2009 by the Hon'ble Finance Ministry Shri Pranab Mukherjee. The fundamental purpose of the National Policy is not only to the eliminate the incidence of the work related injuries diseases, fatalities, disaster and loss of national assets and ensuring

achievement of high level occupational safety and health through proactive approaches but also to enhance the wellbeing of the employee and society at large.

The goal of the policy is to provide a statutory frame work on occupational safety and health in respect of all sectors of industrial activity including designing suitable control system of compliance, enforcement, incentives, developing research, capabilities etc.

For the purpose of achieving the above goals an action programme is necessary with time bound actions need to be initiated.

The action programme includes providing an effective enforcement machinery, amending expeditiously existing loss relating to safety and health and environment and bringing them in line with the relevant international instruments.

Developing appropriate standards codes of practice manuals on safety and health and environment consist with international standards and implementation by the stake holders.

Developing suitable accreditation machinery to recognise institutions, professionals and services relating to safety, health and environment at workplace for uniformity and greater coverage as also authenticating safe management system;

Creating awareness on safety and health and environment at workplace through appropriate means such as Video films, posters, pamphlets and reading materials,

Developing a National Safety and Health Profile and Disease profile with the involvement of research institutes, National Safety council (NSC), National Institute of occupational health (NIOH), Indian Association of Occupational Health (IAOH) etc.

Developing research in the field of safety and health and environment at workplace by innovative methods including computer based risk assessment tools

Suitably incorporating teaching inputs on safety, health and environment at work place in schools, technical, medical, professional and vocational courses and distance education programme;

Developing a national network system on Occupational Safety and Health relating to safety, health and environment at work places, prioritizing key issues for action, conducting national studies or surveys or projects through governmental and non-governmental organisations

Developing and Implementation of e-governance in the entire DGFASLI Organisation to improve the functioning of the organisation in line with the Information Technology Action Programme (ITAP) of the Govt. of India

V. ACTIVITIES

- **Implementation of e-governance in DGFASLI Organisation through**

- The existing IT facilities will be updated. The Servers and computers systems at DGFASLI, CLI and RLIs will be updated.
- Web enabled delivery mechanism and packages will be developed for dissemination of OSH information through out sourcing.
- System of exchange of OSH information between the CIF offices and IDS Offices will be developed.
- Soft wares useful for developing web enabled packages and other applications will be procured.

- **Implementation of National Policy on Safety Health and Environment at Workplace:-**

  - National Yearly Campaigns in 5 specialised areas such as Respiratory Diseases, Musko Skeleto Disorders, Central Nervous System (CNS), Dermatitis, Noise and Vibration,
  - Capacity Building (National and International Training) of DGFASLI Officials and Officials of State Factories Directorates
  - Research and Developmental Activities in the field of OSH
  - Setting up of National Accreditation System for OSH
  - Risk Observatory Activities – Collaboration with NIOH, IAOH, IITs, AIIMS, Leading Technical Institutions etc
  - National Occupational Diseases Profile through sample Survey and analysis by Collaboration – NIOH, IAOH, NSC, ITRC, etc.
  - National OSH Profile through sample Survey and analysis by Collaboration – NIOH, IAOH, NSC, ORG –MARG, etc.
  - Risk Assessment Tools – Hardware and Software for CLI and all RLIs and 12 Inspectorates Dock Safety
  - Development of Educational Modules for ITIs and Vocational Courses
  - Conduction of National Seminars/Workshops/studies/training programmes/ Conferences etc.

VI PROPOSED FINANCIAL OUTLAY - Rs. 25 Cr.

4.5.2.5 PLAN SCHEME. 5

I. NAME OF THE SCHEME: Identification, Elimination and Control of Silicosis in India - Rs. 24 Crores

II. YEAR OF COMMENCEMENT

a) Continuing or new start : New Scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVE AND SCOPE OF THE SCHEME:

- To assess the prevalence of SILICOSIS AND SILICOTUBERCULOSIS in small and medium scale units processing Silica based raw materials and employing migratory population and falling outside the statutory and social security limits.
- To develop a system of creating up to date data base on mortality and morbidity due to Silica exposure in these categories of workers and use it for performance monitoring of the State Government and other social partners.
- To sensitize the stakeholders including the state health service departments for adoption of the necessary diagnostic facilities of international standards which is conspicuous by their absence at present especially at District Tuberculosis Control Centres?
- To develop suitable deliverables for raising the general awareness of key stake holders for raising the safety and health standards of these sectors employing such categories of workers.
- To sensitize and extend the Associate Fellow of Industrial Health (AFIH) courses to the medical institutions for creating and maintenance of supply chain of qualified Factory Medical Officers as prescribed under the Factory Act and to facilitate adoption of best practices through establishment of Occupational Health Services
- Extending support to the state government for effective enforcement of the health provisions stipulated under section 41F of the Factory Act by equipping them with work environment monitoring technologies.
- To sensitize the state health authority for integration of Silicosis control through national tuberculosis control program by providing incentives in the form of equipments and technical support services.
- To suggest appropriate and low cost preventive and control measures for the control and elimination of disease in the country and improving the work life of potentially vulnerable groups.
- To generate a momentum for responsible care by the key stake holders through public-private partnership and continual improvement in the control technology as envisaged under the National Policy.

III. JUSTIFICATION OF THE SCHEME:

- It is estimated that 10 million workers employed in various occupations are exposed to crystalline silica dust In the country. Many young workers in unorganized sectors such as stone quarries, Slate pencil, quartz grinding and agate industries in poorly ventilated working areas have had silicosis at very high rates in certain studies over 50% of workers. These workers have no social security cover nor do families get any compensation if the breadwinner deceases due to silicosis.
- So far as the large scale Silica based factories are concerned, the prevalence of silicosis disease is known (161/1000 exposed Workmen). Effective control measures to contain the levels of silica dust in the work environment of such units have been not only adequately addressed under the Factory Act but also have been effectively enforced.
- However, No structured data is available regarding the prevalence of Silicosis in small and medium scale enterprises using silica. Lack of such data has been an issue of great concerns of the stakeholders and the central government.
- Current regulatory frameworks do not address this unorganized sector. There is general lack of awareness among workers and employers about occurrence of

silicosis. There is lack of infrastructure facilities for diagnosis of silicosis and Silico-tuberculosis at district level and PHC level health care centres. Even the Awareness of Silicosis disease among medical practitioners posted at District Tuberculosis Control centres is deficient.

The two worst aspects of Silicosis are:

- Very fine invisible particles reaching the deeper surface of the lungs, ordinarily not noticed by the exposed persons are maximally harmful and
- Disease renders the lungs vulnerable for bacterial infections leading to its diagnosis as TB or other bacterial infections. This is how the disease exists in abundance, without getting reported.

Silicosis is an age-old occupational disease and remains a major occupational health problem in India. It is responsible for high morbidity and mortality in industrial workers. Since there is no specific therapy for this progressive and irreversible disease, most of the affected workers die young..

The problem of silicosis is much more severe in the unorganized sector of industries like slate pencil cutting, stone cutting and agate industry. The flaw here is that most industries belonging to the unorganized sector do not fall under the purview of the statutory tools such as the Factories Act aimed to protect the health and safety of the working population. Moreover, the employers lack the will to provide safe working environment for the workers. It is probably economic compulsions that the workers choose to work in hazardous environments and are subjected to exploitation.

Around 15 cases concerning Silicosis disease alone have been filed against State governments such as that of Gujarat, Delhi, MP, Jharkhand and Rajasthan. Consequent to the writ petitions filed by a number of NGO's and subsequent judgments of the honorable supreme court of India giving a number of directions for actions to the key stake holders specially concerning high incidence of Silicosis in these small and medium scale enterprises as it has emerged as a potential occupational health hazards warranting immediate coordinated action by the Centre for dealing with the emerging situation. There is an increasing pressure from all the corners on the part of central government for urgent action for protecting the workers and the general population against primary and secondary exposure to SILICA DUST. Greater concerns on the central government are to address the issue of the exploited lot of the migratory workers affected with the dreaded disease as the enterprises employing them fall outside the umbrella of the statutes and social security.
Consequent to Supreme Court of India's direction the initiatives taken by the National Human rights Commission (NHRC) for protecting the human right of unorganized sector workers affected with silicosis has brought the status of these categories of workers to limelight which is alarming. According to the pilot survey carried out by NHRC and NGO's the number of silicosis victims especially those belonging to the states of Gujarat, Rajasthan, Madhya Pradesh and Jharkhand who deceased young is quite large. The numbers of silicosis affected victims who are on the rolls of compensation claims are also considerable. "The problem is worse for workers who are employed in the unorganized sector and have no option to get compensation."

Silicosis being a widespread disease an urgent action is required. Government has recognized the existence of this debilitating occupational diseases and the need for inter sectoral cooperation and public private partnership to tackle the dual problems of Silicosis and Silico-tuberculosis in the country. Honorable Supreme Court of India directed the National Human Rights Commission (NHRC) to provide for compensation to those who had died due to Silicosis through the concerned authorities and to provide immediate medical relief to victims of Silicosis. The apex court has also directed the Ministry of Health and Ministry of Labour, Union of India to extend all further assistance to the NHRC for further action in this regard. Also, on the agenda were status report on the recommended survey for silicosis victims, payment of compensation to families of those who had died due to silicosis and finalizing a rehabilitation programme for those suffering from silicosis.

Whereas the NHRC and the NGO's are making their all efforts to provide rehabilitation to the victims of silicosis, the emerging situation demands an urgent action by the government to evolve appropriate strategy and action plan to contain the dreaded disease and protect and promote the safety and health standards of these neglected working groups who play vital role in national economy and productivity.

The National Policy on Safety, Health and Environment of the country also emphasizes priority for safety and health concerns of the migrating workers of the weaker sections of the society who are especially engaged in medium and small enterprises for economic and social reasons and are afflicted with silicosis and die young. In the absence of specific therapy for silicosis, there is a need for planning a national strategy for the prevention and control of silicosis. . It was then decided that a national programme on elimination of silicosis in all occupations as envisaged in the national policy should be prepared and implemented. Accordingly, initiation has been taken by the Ministry of Labour & Employment by proposing this plan scheme.

V. OUTCOME OF THE SCHEME:

- National level database for policy planning for the safety and health protection and promotion of migrating workers employed in Silica based small and medium scale enterprises would be generated. The data will also be used for performance assessment of Silicosis control program integrated through National Tuberculosis Control Program.
- Sensitization of stake holders to adopt National Policy on Safety Health and Environment in letter and spirit to ensure safety and health protection of weaker sections of society especially the migrant workers engaged in unorganized silica based units.
- Technical assistance to state health department to set up diagnostic centres of international standards and evolve a system of periodic health surveillance of such workers on a regular basis and at par with that made available to workers in large scale industry.
- District tuberculosis control centres would be provided the necessary diagnostic technology to tackle the triple problems of silicosis, Tuberculosis and Silico-tuberculosis. Performance monitoring tools and the data will also be generated.
- Generate adequate numbers of AFIH qualified doctors through increasing the number accreditation of medical colleges to start AFIH courses to maintain the supply chain

of qualified medical officers competent to tackle the problems of silicosis and Silico-tuberculosis.

VI. PHYSICAL ACTIVITIES AND TARGETS

Sr. No	Physical Activity	Number
1.	Creation of posts (Common to 5 &6)	11
2.	Procurement of Equipments	(As per list annex- for 20 states)
3.	Experts involvement for Identification and Control of Silicosis	covering 20 States and Union territories 5 Projects
4.	Monitoring of Work Environment through Dust Surveys in States having concentration of Units processing Silica based raw materials	5 Projects
5.	National Level Awareness campaigns on Silicosis hazards	5
6.	Demonstration /Training of Workers on Engineering control measures	5
7.	Collaborative research studies for developing low cost protective gears/ equipments	
8.	Detection Equipments including ILO Radiographs to State Factory Directorates and District Tuberculosis control centres	20 States
9.	Competence building of Master trainers for Silicosis hazard control by providing the training through International Experts (ILO/WHO)	5 programs
10	Special Training in ILO radiography on Pneumoconiosis for Medical doctors of ESIC/PHC /Charitable Hospitals./DTC centres	10 Programs
11	National level Seminar and workshops on silicosis	5 Programs
12	Preparation /Publication of Status report, Standards Guidelines , Code of practices , Booklets, Posters etc	1 each

VII. PROPOSED FINANCIAL OUTLAY: Rs. 24 Crores:

VIII. JUSTIFICATION FOR CREATION OF MANPOWER.

Sr. No.	Name of the Post	Pay Band	Number of Posts	Location
1.	Director (Medical)	P-3	1	CLI
2.	Dy. Director (Ind. Hygiene)	P-3	1	-do-
3.	Dy. Director (Safety)	P-3	1	-do-
4.	Sr. Scientific Assistant	P-2	1	-do-
5.	Progamme Assistant	P-2	1	-do-
6.	Jr. Scientific Assistant	P-2	1	-do-

7.	Laboratory Asst. Gr.I	P2	1	-do-
8.	Stenographer Gr.III	P-2	2	-do-
9..	Data-Entry-Operator	P-2	1	-do-
10.	Laboratory Attendants	P-1	1	-do-
		Total:	**1 1 Posts**	

JUSTIFICATION POST-WISE

Sr. No.	Name of the Post	Justification for Creation of Post
1.	Director (Medical)	The Director (Medical) would be responsible for the up gradation of existing medical and Industrial hygiene laboratory for proper implementation of the Activities envisaged under the plan scheme He would also be responsible for coordination with the Key stake holders of the Asbestos and Silica based industries including the State government and the union territories as well as other research institutions including medical colleges and the known experts concerned with the scheme. He would also be responsible for Planning, designing and coordinating with the envisaged agencies under the plan document for the conduct of the physical activities envisaged under the plan document. He would provide all technical support to the State government for identification of Silicosis, Asbestosis and Asbestos related disorders such as establishment of Diagnostic facilities of international standard. He would Organize specialized training programs on the use of ILO radiographs of Pneumoconiosis for medical doctors drawn from Medical colleges, ESIC, PHC and Charitable institutions so as to equip them with the technical competence required for diagnosis of Silicosis and Asbestosis. He would also generate the deliverables envisaged under the scheme and provide the same to the stake holders for raising awareness as well as safety and health standards of workers engaged in asbestos processing units. and Silica based units He would generate national level database on the prevalence of Silicosis, Asbestosis and related disorders in migrating population employed in targeted asbestos units He would prepare the Status Report on the basis of data generated and provide the same for exchange of information with various agencies and to the government for wider national planning.
2.	Dy. Director (Ind. Hygiene)	The Deputy Director (IH) would be responsible for planning, designing and coordinating the environmental monitoring component of the plan scheme. He would also equip the existing Industrial hygiene laboratory with the modern equipment of international standard for

		counting the asbestos fibers and analysis of silica from environmental samples. He would also be responsible for providing technical support to the state government for equipping their environmental hygiene laboratory and provide necessary training and guidance for assessment of airborne asbestos fibres and silica dust. He would also extend the services of testing the personal protective equipment especially the respiratory protective equipments. He would also provide assistance to Director (medical) for developing low cost protective gears through public private partnership. He would make the Environmental data available to the government for wider national planning.
3.	Dy. Director (Safety)	The Deputy Director (Safety) would be responsible for carrying out the survey in industries using Asbestos and silica from the point of view of assessment of the existing dust control measures. He will also check the efficiency of existing dust control devices and suggest necessary engineering controls to contain the environmental levels of the pollutants. He will also provide technical support to the stake holders especially the Factory inspectors of the states and the factory managements and advocate effective engineering control measures to contain the airborne pollutants. He would also provide assistance to Director (medical) for developing low cost protective gears through public private partnership
4.	Sr. Scientific Assistant	The Senior Scientific Assistant is the key person involved in carrying out the field work especially the monitoring of environment especially the dust level surveys. He would also supervise the sample collection, sample analysis and computation of data. He is also required to maintain the analytical laboratory in working order through periodic calibrations and maintenance of equipments
5.	Progamme Assistant	Program Assistant will provide support services in conducting the various Training programs envisaged under the scheme. He would provide hour to hour coordination during the conduct of training programmes both institutional and in plant programs. He also provides assistance to the Director (medical) in the conduct of seminar, workshop and AFIH courses.
6.	Jr. Scientific Assistant	He would be responsible for maintenance and upkeep of the Industrial medicine laboratory.

		He would keep the medical equipments in working order through periodic calibrations and maintenance services. He would also carry out necessary medical tests such as lung function test during the field work. He would also analyze the data and assist in the preparation of medical reports. He would also demonstrate the function and use of medical equipments to the trainees.
7.	Laboratory Asst. Gr.I	He would be assisting the SSA in carrying out the tasks assigned to him. He will also supervise the activities of Laboratory attendant and ensure availability of required lab equipments and reagents. He will also procure the necessary laboratory tools, glass wares and reagents. He will also ensure safe storage of the reagents and make them available for analytical work. He will also assist the SSA in sample collection during field work and during equipment demonstration to the trainees.
8.	Stenographer Gr.III	He would be providing the secretarial assistance to meet the requirements of the plan scheme activities namely, training, studies and surveys. He will also be required to prepare the deliverables including status reports.
9..	Data-Entry-Operator	He would be solely responsible for feeding the data collected from the field and make it ready for computation and analysis.
10.	Laboratory Attendants	Laboratory attendant is essentially required to maintain and keep the laboratory neat and clean. He will carry out washing, cleaning, drying and safe storage of analytical tools especially the glassware's after the analytical work is over. He will attend to various tasks during sample collection and analysis. He will keep the laboratory tables and instruments clean and in usable condition. He will prepare distilled water and assist his superiors in collection of biological samples.

4.5.2.6 PLAN SCHEME. 6

I. NAME OF THE SCHEME: Identification, Elimination and Control of Asbestosis in India - Rs. 20 Crores

II. YEAR OF COMMENCEMENT

a) Continuing or new start : New Scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVE OF THE SCHEME:

- To assess the prevalence of Asbestosis and Asbestos related disorders in small and medium scale units processing Chrysotile asbestos fibres and employing migratory population large in numbers.
- To develop a system of creating up to date data base on mortality and morbidity due to asbestos exposure in these categories of workers and use it for performance monitoring of the State Government and other social partners.
- To suggest appropriate and low cost preventive and control measures for the control and elimination of the disease.
- To sensitize the stakeholders including the state health service departments for adoption of the necessary diagnostic facilities of international standards which is conspicuous by their absence at present
- To develop suitable deliverables for raising the general awareness of key stake holders for raising the safety and health standards of these sectors employing such categories of workers.
- To sensitize and extend the Associate Fellow of Industrial Health (AFIH) courses to the medical institutions for creating and maintenance of supply chain of qualified Factory Medical Officers as prescribed under the Factories Act, 1948 and to facilitate adoption of best practices through establishment of Occupational Health Services
- To sensitize and Extending support to the state government for effective enforcement of the health provisions stipulated under section 41F of the Factories Act, 1948 by equipping them with work environment monitoring technologies.
- To generate a momentum for responsible care by the key stakeholders through public-private partnership and continual improvement in the control technology as envisaged under the National Policy.

III. Justification of the Scheme:

Consequent to the writ petitions filed by a number of NGO's and subsequent judgments of the Honorable Supreme Court of India a number of directions were issued for actions to be initiated by the key stake holders, specially to the Ship breaking and Micro, Small and Medium Scale Enterprises were the asbestos handling is significant. There is an increasing pressure from all the concerned stakeholders for urgent action for protecting the workers and the general population against primary and secondary exposure to Chrysotile form of Asbestos fibres. Greater concerns on the central government are whether or not to ban the mining and use of chrysotile asbestos in India. Besides this a similar concern is felt through International community bringing pressure on the government for immediate action on the control measures and its elimination.

So far as the large scale Asbestos processing units are concerned the prevalence of Asbestosis and Asbestos related disorders have been observed on the lower side (46/1000 exposed Workmen). Effective control measures to contain the levels of Asbestos fibres in the work environment in such units and controlled disposal of Asbestos wastes have been not only adequately addressed under the Factories Act, 1948 but also have been effectively enforced.

However there are certain lapses on effective implementation of strategies to mitigate the issue of asbestosis in India.

However, no data is available to establish the prevalence of Asbestos disease in small and medium scale enterprises using Chrysotile asbestos. Lack of such data has been an issue of greater concerns of the stakeholders and the Government for making a policy decision for inclusion of chrysotile asbestos under the Annex-3 of the Rotterdam convention to which India is a signatory to ban the same.

The National Policy on Safety, Health and Environment at Workplace also emphasizes priority for safety and health concerns of the migrating workers of the weaker sections of the society who are especially engaged in Micro, Small and Medium Enterprises and the ship breaking industry for social and economic reasons.

OUTCOME OF THE SCHEME:

- National level database for policy planning for the safety and health protection and promotion of migrating workers employed in Chrysotile Asbestos processing in Micro, Small and Medium Enterprises The data base creation would help in tracking the long term impact of Health effects in the exposed workers.
- Sensitization of stake holders to adopt National Policy on Safety Health and Environment in letter and spirit to ensure safety and health protection of weaker sections of society especially the migrant workers engaged in Asbestos industry.
- Technical assistance to state health department to set up diagnostic centres of international standards and evolve a system of periodic health surveillance of such workers on a regular basis and at par with that made available to workers in large scale asbestos industry.
- Generate adequate numbers of AFIH qualified doctors through increasing the number accreditation of medical colleges to start AFIH courses through out the country.
- The deliverables generated would be utilized as tools for raising awareness levels of key stake holders for promoting safety and health standards of the vulnerable groups of workers.

PHYSICAL ACTIVITIES AND TARGETS:

Sr. No.	ACTIVITY	TARGETS
1.	Creation of posts (Common to 5 &6)	11
2.	Procurement of Equipments	20 states
3.	Experts involvement for Identification and Control of Asbestosis covering 20 States and Union territories	5 Projects
4.	Monitoring of Work Environment through Dust Surveys in States having concentration of Units processing Chrysotile asbestos fibres.	5 Projects
5.	National Level Awareness campaigns on Asbestos hazards and Asbestosis	
6.	Demonstration /Training of Workers on Engineering control measures	

7.	Collaborative research studies for developing low cost protective gears/ equipments	
8.	Detection Equipments including ILO Radiographs to State Factory Directorates	20 States
9.	Competence building of Master trainers for Asbestosis by providing the training through International Experts (ILO/WHO)	5 programs
10.	Special Training in ILO radiography on Pneumoconiosis for Medical doctors of ESIC/PHC /Charitable Hospitals.	10 Programs
11.	National level Seminar and workshops	5 Programs
12.	Preparation /Publication of Status report, Standards Guidelines , Code of practices , Booklets, Posters etc	1 each

VI. PROPOSED FINANCIAL OUTLAY - Rs. 20 Cr.

4.5.2.7 PLAN SCHEME. 7

I. NAME OF THE SCHEME STRENGTHENING OF ENFORCEMENT SYSTEMS IN FACTORIES - ESTABLISHMENT OF INDUSTRIAL SAFETY, OCCUPATIONAL HEALTH AND WORK ENVIRONMENT CENTRE IN THE STATE FACTORY DIRECTORATE - CENTRALLY SPONSORED SCHEME - Rs. 25 Crores

II. YEAR OF COMMENCEMENT

a) Continuing or new start : New Scheme
b) Date of Start of the Scheme : April 2012

III. OBJECTIVE AND SCOPE OF THE SCHEME:

- To Create in Each State a Robust System in Prevention of Industrial Accidents, Industrial Disasters, Workplace Injuries and Diseases
- To Provide Quicker, Easier and Practical Solutions in the Field of Prevention of Industrial Accidents, Disasters, Workplace Injuries and Diseases
- To Disseminate Knowledge and Information to the Users
- To Enhance the Knowledge and Skill of Enforcement Officials

IV. ACTIVITIES

Setting up the following center in each state depending upon the number of registered factories :-

- Safety Demonstration and Lab-cum-Display Centre,
- Industrial Hygiene Laboratory Centre,
- Work Environment Monitoring and Valuation Centre

- In Each State Factories Directorate by Transfer of Funds by DGFASLI to State Factories Directorates and Monitoring its Implementation

V. JUSTIFICATION

- The Brief of the activities carried out by the State Factories Directorate are as follows (based on the information provided by the CIF, Karnataka as per the Discussion held in Working Group Meetings)
- Rendering services to agencies like Revenue, Fire services, Police, Ecology and Environment, etc.
- Collection of statistics, compilation, onward transmission.
- Day to day correspondence – interaction with Industrialists, Trade Unions, Employees, General Public.
- Written communications.
- Attending to court cases, conducting and assisting court proceedings.
- Training programmes.
- Approval of Plans, Registration of Industries, Renewal of Licenses, Identification of unregistered factories.
- To furnish information under Right to Information Act.
- Rendering assistance to redress the public grievances.
- Conducting public awareness programmes.
- Organizing National, State Level, District Level Seminars and Conferences.
- Organizing mock rehearsals on on-site and off-site emergencies.
- Observance of Chemical Disaster Prevention Day.
- Celebration of National Safety Day.

The following are some of the Short comings in Functioning of the Inspectorates

- Lack of mobility
- Poor communication facilities
- No programmes for updating the knowledge and skill
- No technical and legal libraries
- No Internet facilities
- Absence of scientific instruments for meaningful and effective assessment of work environment in the field of safety and health.
- Absence of Centrally sponsored schemes to provide impetus for safety and health
- Inadequate budgetary support from the State Governments to develop new schemes for effective functioning to meet the present day requirement of industries.
- Inadequate supporting staff.
- Absence of electronic gadgets for collection, compilation and onward transmission of statistics which are of vital importance.
- Absence programmes on soft skills, motivation, personality development etc.,

Need for strengthening of the state Factories Directorates Functioning

- To improve the efficiency and effectiveness of the state enforcement machinery.
- Deliverance of quality services to the various stake holders in field of OSH.
- To contain and for better management of industrial accidents, disasters.
- To create positive attitude and enhance motivation in the field of soft skills, personality development etc.,
- Enhance the capabilities of the state enforcement officials by advance training nationally and internationally
- Providing state of the art equipment to the Inspectorates.
- The Details of the Equipment and facilities to be set up are as follows

SAFETY DEMONSTRATION LAB-CUM-DISPLAY CENTRE –

Display Of Dangerous Machines, Equipments Such As Power Presses, Sheering Machine, Press Brakes, Textile Machinery, Electrical Safety, Fire Safety, Working At Height, Confined Space Entry, Working On Fragile Roofs, Construction Safety, Etc.

Various Kinds Of Personal Protective Equipment On Manicures - Respiratory And Non-respiratory PPE Such As - Helmets, Safety Shoes, Fire Suits, Safety Harness Belts, Goggles, Ear Muffs, Face Masks, Etc.

A Small Auditorium Or Conference Room For Training And Screening Of Video Films

INDUSTRIAL HYGIENE LABORATORY

Personal Samplers, Noise Dosimeter, Area and Personal Heat Stress Monitors, Personal Human Vibration, Personal Samplers, Gas Leak Detector, Light Meter, Radiation Meter, Etc.
•Fourier Transform Infrared (FTIR) Spectrometer, High Performance Liquid Chromatograph (HPLC), Gas Chromatograph with Head Space having Flame Ionizing Detector (FID) and Electron Capture Detector (ECD) and Nitrogen Phosphorus Detectors (NPD), Atomic Absorption Spectro-photo Meter (AAS).

•Work Environment Monitoring And Evaluation Centre, Personal Samplers, Spectro-photo Meter, Physical & Electronic Balance, and Direct Reading Sample Analyzers.

MEDICAL LABORATORY

Lung Function Test, Vision Tester, ECG, Audiometric Booth, Audio Meter, Noise Level Meter With Frequency, Equipment For Pathological Investigation

FINANCIAL OUTLAY Rs. 25 Cr. (To be finalised based on the request and requirement from the State Government received through their State Factories Directorates to be adopted in a phrase manner based on the merit of the proposal case by case. The proposal would be scruntinized based on the density of the number of registered factories.

ANNEXURES (MANUFACTURING AND PORT)

Table 1 : Inspectors of Factories for the year 2009 (P)

Sl. No	States/ Union Territories	Sanctioned	In-position
1	Andaman & Nicobar Islands	2	2
2	Andhra Pradesh	76	54
3	Assam	29	25
4	Bihar	23	10
5	Chandigarh	0	6
6	Chhattisgarh	15	7
7	Daman & Diu & Dadra & Nagar Haveli	1	1
8	Delhi	15	12
9	Goa	8	5
10	Gujarat	124	46
11	Haryana	..	..
12	Himachal Pradesh	..	..
13	Jammu & Kashmir	5	4
14	Jharkhand	25	19
15	Karnataka	46	46
16	Kerala	55	55
17	Madhya Pradesh	39	30
18	Maharashtra	131	69
19	Manipur	..	..
20	Meghalaya	3	3
21	Nagaland	3	3
22	Orissa	27	23
23	Pondicherry	9	8
24	Punjab	26	11
25	Rajasthan	39	27
26	Tamil Nadu	132	100
27	Tripura	5	5
28	Uttar Pradesh	45	18
29	Uttaranchal	2	2
30	West Bengal	53	13
	Total	938	604

Note: There are no registered factories in Arunachal Pradesh, Lakshadweep, Mizoram and Sikkim
Note: P : Provisional .. : Not Available
Source: Data collected by DGFASLI through correspondence with Chief Inspector of Factories of States/UTs

Table 2: State-wise Specialist Inspectors of Factories for the year 2009 (P)

Sl. No	States/ Union Territories	Medical Inspectors		Chemical Inspector		Hygiene Inspector		Others	
		Sanct-ioned	In-position	Sanct-ioned	In-position	Sanct-ioned	In-position	Sanct-ioned	In-position
1	Andaman & Nicobar Islands	0	0	0	0	0	0	0	0
2	Andhra Pradesh	3	1	1	0	0	0	0	0
3	Assam	1	0	0	0	0	0	0	0
4	Bihar	2	2	2	1	0	0	0	0
5	Chandigarh	0	0	0	0	0	0	0	0
6	Chhattisgarh	0	0	0	0	0	0	0	0
7	Daman & Diu & Dadra & Nagar Haveli	0	0	0	0	0	0	0	0
8	Delhi	1	1	1	0	0	0	0	0
9	Goa	1	1	0	0	0	0	2	1
10	Gujarat	2	0	1	0	0	0	11	6
11	Haryana	..	..	..	..	..	..	..	..
12	Himachal Pradesh	..	..	..	..	..	..	..	..
13	Jammu & Kashmir	0	0	0	0	0	0	0	0
14	Jharkhand	0	0	0	0	0	0	0	0
15	Karnataka	1	1	0	0	0	0	1	1
16	Kerala	4	2	5	5	0	0	2	2
17	Madhya Pradesh	1	1	0	0	0	0	0	0
18	Maharashtra	2	0	0	0	0	0	0	0
19	Manipur	..	..	..	..	..	..	..	..
20	Meghalaya	0	0	0	0	0	0	0	0
21	Nagaland	0	0	0	0	0	0	0	0
22	Orissa	1	0	1	0	0	0	0	0
23	Pondicherry	1	1	1	0	0	0	1	1
24	Punjab	3	3	2	0	0	0	0	0
25	Rajasthan	1	1	2	2	1	1	1	1
26	Tamil Nadu	0	0	0	0	0	0	0	0
27	Tripura	0	0	0	0	0	0	0	0
28	Uttar Pradesh	2	0	0	0	0	0	0	0
29	Uttaranchal	0	0	0	0	0	0	0	0
30	West Bengal	0	0	2	0	0	0	0	0
	Total	26	14	18	8	1	1	18	12

Note: There are no registered factories in Arunachal Pradesh, Lakshadweep, Mizoram and Sikkim

P : Provisional .. : Not Available

Source: Data collected by DGFASLI through correspondence with Chief Inspector of Factories of States/UTs

Table 3: Certifying Surgeons of Factories for the year 2009 (P)

Sl. No	States/UTs	Employed		Notified		Remarks
		Sanctioned	In position	Sanctioned	In position	
1	Andaman & Nicobar Islands	0	0	4	4	
2	Andhra Pradesh	0	0	0	0	
3	Assam	3	0	0	0	
4	Bihar	0	0	0	0	
5	Chandigarh	0	0	0	0	!
6	Chhattisgarh	0	0	0	0	
7	Daman & Diu & Dadra & Nagar Haveli	0	0	0	1	
8	Delhi	1	1	0	0	
9	Goa	1	0	0	0	
10	Gujarat	12	4	0	0	
11	Haryana	..	..	..	..	
12	Himachal Pradesh	..	..	..	..	
13	Jammu & Kashmir	0	0	0	0	
14	Jharkhand	0	0	0	0	
15	Karnataka	0	0	0	0	
16	Kerala	1	1	1	1	
17	Madhya Pradesh	0	0	0	0	
18	Maharashtra	1	1	46	0	
19	Manipur	..	..	..	..	
20	Meghalaya	0	0	0	0	
21	Nagaland	0	0	0	0	
22	Orissa	0	0	0	0	
23	Pondicherry	0	1	0	0	#
24	Punjab	0	0	0	0	
25	Rajasthan	1	0	0	0	
26	Tamil Nadu	9	6	0	0	
27	Tripura	0	0	14	14	
28	Uttar Pradesh	0	0	0	0	
29	Uttaranchal	0	0	0	0	
30	West Bengal	0	0	0	0	#
	Total	29	14	65	20	

Remark: '#' All Medical Inspector is also the Certifying Surgeon,

'! ' Medical officer of Health has been declared Certifying officer,

Note: There are no registered factories in Arunachal Pradesh, Lakshadweep, Mizoram and Sikkim

P : Provisional .. : Not Available

Source: Data collected by DGFASLI through correspondence with Chief Inspector of Factories of States/UTs

Table 4 : State-wise and year-wise Frequency Rates of Industrial Injuries in Factories

State/UTs	2003	2004	2005	2006	2007(P)
Andaman & Nicobar	4.17(-)	NA	NA	NA	2.85(-)
Andhra Pradesh	1.93 (0.10)	1.73(0.08)	1.61(0.12)	1.34(0.15)	1.40(0.13)
Arunachal Pradesh	NA	NA	NA	NA	NA
Assam	1.61(0.06)	0.78(0.12)	0.46(0.04)	0.56(0.05)	0.86(0.12)
Bihar	NA	NA	1.28(0.21)	NA	1.41(0.30)
Chandigarh	2.15(0.29)	0.09(-)	0.07(0.03)	0.44(-)	0.23(0.08)
Chhattisgarh	NA	NA	NA	NA	NA
Daman & Diu	NA	NA	NA	NA	NA
Delhi	NA	NA	NA	NA	NA
Goa	1.38 (0.03)	1.51(0.11)	2.03(0.16)	1.69(0.07)	1.37(0.07)
Gujarat	NA	NA	NA	5.78(0.18)	NA
Haryana	0.52 (0.07)	0.32(0.10)	0.43(0.06)	0.22(0.03)	0.32(0.09)
Himachal Pradesh	NA	NA	NA	NA	NA
Jammu & Kashmir	NA	NA	NA	NA	NA
Jharkhand	NA	NA	0.26(0.03)	0.32(0.03)	0.20(0.03)
Karnataka	2.02(0.05)	104(0.04)	1.18(0.03)	1.82(0.02)	1.53(0.02)
Kerala	NA	0.90(0.03)	3.67(0.07)	1.40(0.03)	NA
Lakshadweep	NA	NA	NA	NA	NA
Madhya Pradesh	3.90(0.09)	1.51(0.03)	3.27(0.11)	1.20(0.04)	4.65(0.15)
Maharashtra	2.75(0.07)	2.50(0.07)	2.04(0.06)	2.10(0.19)	3.21(0.15)
Manipur	NA	NA	NA	NA	NA
Meghalaya	NA	1.49(-)	0.06(0.00)	NA	-(-)
Mizoram	NA	NA	NA	NA	NA
Nagaland	NA	NA	NA	NA	NA
Orissa	2.16 (0.15)	2.06(0.12)	1.76(0.11)	1.48(0.20)	1.26(0.18)
Pondicherry	255.90(3.52)	NA	NA	NA	NA
Punjab	1.14 (0.02)	0.61(0.02)	1.15(0.02)	1.32(0.01)	NA
Rajasthan	4.63 (0.15)	3.21(0.13)	3.26(0.13)	2.54(0.13)	2.38(0.12)
Sikkim	NA	NA	NA	NA	NA
Tamil Nadu	NA	0.55(0.01)	0.45(0.01)	0.35(0.01)	NA
Tripura	0.58 (0.14)	0.49(-)	0.19(0.08)	0.14(-)	0.13(0.04)
Uttar Pradesh	NA	NA	NA	NA	NA
Uttaranchal	NA	NA	NA	NA	NA
West Bengal	NA	NA	NA	NA	0.46(0.01)
Total:	2.50(0.08)	1.33(0.5)	1.27(0.05)	1.42(0.08)	1.73(0.09)

Note: (i) F.R. = Frequency Rate per lakh man-days worked (ii) NA = Not Available, (iii) (-) = Nil or Negligible, (iv)Figures in bracket pertain to "Fatalities" and are included in the total, (v) P = Provisional.

Source: Data received from Labour Bureau through correspondence dated 25.1.2011.

Table 5: State-wise and year-wise Incidence Rates of Industrial Injuries

State/UTs	2003	2004	2005	2006	2007(P)
Andaman & Nicobar	10.14 (-)	NA	NA	NA	7.39(-)
Andhra Pradesh	2.76 (0.14)	2.50(0.12)	2.36(0.18)	1.98(0.22)	2.11(0.19)
Arunachal Pradesh	NA	NA	NA	NA	NA
Assam	1.69 (0.06)	0.79(0.12)	0.48(0.05)	0.48(0.04)	0.63(0.09)
Bihar	NA	NA	0.47(0.08)	NA	1.56(0.11)
Chandigarh	5.59(0.76)	0.22(-)	0.16(0.08)	0.92(-)	0.50(0.17)
Chhattisgarh	NA	NA	NA	NA	NA
Daman & Diu	NA	NA	NA	NA	NA
Delhi	NA	NA	NA	NA	NA
Goa	3.22 (0.07)	3.91(0.28)	4.54(0.36)	4.19(0.16)	3.63(0.19)
Gujarat	NA	NA	NA	4.95(0.16)	NA
Haryana	0.50 (0.07)	0.36(0.11)	0.47(0.07)	0.32(0.04)	0.21(0.06)
Himachal Pradesh	NA	NA	NA	NA	NA
Jammu & Kashmir	NA	NA	NA	NA	NA
Jharkhand	NA	NA	0.78(0.07)	0.92(0.09)	0.42(0.07)
Karnataka	2.01(0.05)	1.34(0.05)	1.53(0.04)	3.06(0.03)	2.04(0.02)
Kerala	NA	0.75(0.02)	5.54(0.10)	3.84(0.08)	NA
Lakshadweep	NA	NA	NA	NA	NA
Madhya Pradesh	4.96 (0.12)	3.22(0.06)	2.58(0.09)	2.68(0.08)	3.62(0.12)
Maharashtra	5.28(0.13)	4.44(0.13)	3.60(0.11)	3.43(0.30)	5.37(0.25)
Manipur	NA	NA	NA	NA	NA
Meghalaya	NA	2.01(-)	0.23(0.00)	NA	-(-)
Mizoram	NA	NA	NA	NA	NA
Nagaland	NA	NA	NA	NA	NA
Orissa	5.34 (0.37)	5.32(0.31)	4.41(0.27)	3.68(0.49)	3.34(0.49)
Pondicherry	10.51(0.14)	NA	NA	NA	NA
Punjab	0.88 (0.02)	0.41(0.01)	0.63(0.01)	0.74(0.01)	NA
Rajasthan	4.68 (0.16)	3.33(0.13)	3.33(0.13)	3.02(0.16)	2.58(0.13)
Sikkim	NA	NA	NA	NA	NA
Tamil Nadu	NA	1.50(0.03)	1.22(0.04)	0.94(0.04)	NA
Tripura	0.12 (0.03)	0.09(-)	0.15(0.06)	0.15(-)	0.07(0.02)
Uttar Pradesh	NA	NA	NA	NA	NA
Uttaranchal	NA	NA	NA	NA	NA
West Bengal	NA	NA	NA	NA	0.05(0.00)
Total:	3.33(0.11)	2.21(0.08)	2.06(0.09)	2.41(0.130	1.91(0.10)

Note: (i) I.R. = Incidence Rate per 1000 workers employed, (ii) NA = Not Available,(iii) (-) = Nil or Negligible, (iv) Figures in bracket pertain to "Fatalities" and are included in the total,
(vii) P = Provisional.
Source: Data received from Labour Bureau through correspondence dated 25.1.2011

Table 6: Industrial Injuries and their Incidence Rate (IR) per Thousand Workers Employed by Important Industries

Sl. No.	Industry	NIC Code	2003		2004		2005		2006		2007(P)	
			Total Injuries	IR	Total Injuries	IR	Total Injuries	IR	Total Injuries	IR	Total Injuries	IR
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	All Textiles	17,18	5332 (39)	6.53 (0.05)	4172 (66)	3.22 (0.05)	3862 (36)	2.74 (0.03)	5808 (68)	3.57 (0.04)	3582 (50)	2.52 (0.04)
2.	Mfg of Paper & paper products & printing, publishing & allied products	21,22	976 (23)	4.92 (0.12)	617 (19)	2.40 (0.07)	493 (17)	2.02 (0.07)	510 (25)	1.80 (0.09)	496 (26)	1.76 (0.09)
3.	Mfg of Chemicals & Chemical products (Except Petroleum and coal products)	24	944 (78)	2.50 (0.21)	982 (54)	1.67 (0.09)	1159 (91)	1.91 (0.15)	1560 (155)	1.97 (0.20)	991 (68)	1.87 (0.13)
4.	Manufacture of Non-metallic mineral products	26	799 (46)	2.50 (0.14)	821 (52)	1.87 (0.12)	742 (47)	1.51 (0.10)	896 (73)	1.63 (0.13)	1038 (68)	1.70 (0.11)
5.	Basic metal and alloys Industries	27	1370 (79)	3.97 (0.23)	1130 (78)	2.84 (0.20)	1543 (102)	3.06 (0.20)	1842 (166)	3.16 (0.28)	1822 (179)	2.61 (0.26)
6.	Mfg of metal products & Parts (except machinery & transport equipment)	28	659 (16)	2.32 (0.06)	723 (37)	1.85 (0.09)	688 (36)	1.91 (0.10)	1151 (38)	2.64 (0.09)	1209 (21)	2.55 (0.04)
7.	Manufacture of machinery, machine tools & parts (except electrical machinery)	29.30	993 (19)	3.26 (0.06)	923 (25)	2.49 (0.07)	953 (17)	2.21 (0.04)	1522 (59)	3.26 (0.13)	999 (27)	1.86 (0.05)
8.	Manufacture of transport equipment and parts	34.35	1184 (12)	3.93 (0.04)	1399 (36)	3.57 (0.09)	1250 (38)	3.00 (0.09)	1312 (80)	5.42 (0.33)	1043 (15)	2.29 (0.03)
9.	Electricity, Gas and Steam	40	274 (31)	3.17 (0.36)	699 (32)	6.27 (0.29)	520 (32)	4.10 (0.25)	392 (23)	2.79 (0.16)	119 (12)	0.70 (0.07)
Total of (Sl. No. 1 to 9 Industries) :			12531 (343)	4.13 (0.11)	11466 (399)	2.70 (0.09)	11210 (416)	2.44 (0.09)	13767 (609)	2.69 (0.13)	11299 (466)	2.18 (0.09)
* Total of All Industries :			16432 (525)	3.33 (0.11)	15020 (562)	2.21 (0.08)	14776 (613)	2.06 (0.09)	19912 (1068)	2.41 (0.13)	15290 (821)	1.91 (0.10)

Note : (i) Figures in brackets indicate "Fatalities" and are included in the Total, (ii) P = Provisional
(iii)* The figures for All Industries include the figures of other industries apart from above Industries shown
Source: Data received from Labour Bureau through correspondence dated 25.1.2011.

Table 7 : Frequency Rate of Total Injuries by Important Industries

Sl. No.	Industry	NIC Code	2005	2006	2007(P)
1.	All Textiles	17,18	1.87	2.11	2.48
2.	Manufacture of Paper & paper products & printing, publishing & allied products	21,22	1.18	1.04	1.64
3.	Manufacture of Chemicals & Chemical products (Except products of Petroleum and coal)	24	0.96	1.20	1.34
4.	Manufacture of Non-metallic mineral products	26	1.25	1.33	2.11
5.	Basic metal and alloys Industries	27	1.47	1.49	1.73
6.	Manufacture of metal products & Parts(except machinery & transport equipment)	28	1.05	1.68	2.38
7.	Manufacture of machinery, machine tools & parts (except electrical machinery)	29,30	1.37	2.09	1.80
8.	Manufacture of transport equipment and parts	34,35	1.22	1.25	1.52
9.	Electricity, Gas and Steam	40	1.91	1.32	0.51
Total of (Sl. No. 1 to 9 Industries) :			1.42	1.50	1.88
* Total of All Industries :			1.27	1.42	1.73

Note : (i) Figures in brackets indicate "Fatalities" and are included in the Total,
(ii) P = Provisional (iii)* The figures for All Industries include the figures of other industries apart from above Industries shown
Source: Data received from Labour Bureau through correspondence dated 25.1.2011.

Table 8: Reportable Accidents in Major Ports

Year	**Fatal Injuries**	**Total Injuries**
2001	30	180
2002	31	198
2003	29	191
2004	28	201
2005	30	208
2006	36	193
2007	23	158
2008	33	149
2009	23	140
2010	24	126

Table 9: Cargo Handled in the Major Port during 2009 and 2010 (In Tonnes)

Year	**Containers in Twenty Feet Equivalent Units (TEUs)**	**Petroleum Oil and Liquid (POL)**	**Others**
2008	6926631	149808362	264987103
2009	6504866	170602022	275324593
2010	10866807	133038995	290127084

CHAPTER 5

UNORGANISED SECTOR

5.1 EXISTING SCENARIO OF OCCUPATIONAL SAFETY AND HEALTH IN VARIOUS SEGMENTS OF UNORGANISED SECTOR

Occupational Health and Safety cover for the unorganized sector can well be said as non-existent. Of the total employed population in the country during 2007 about 17 per cent was in the organized sector and 83 per cent is in the unorganized sector. An analysis based on the Census report data shows that agriculture is the main occupation in which 58 per cent people are employed (Table- 1).

From the perspective of occupational health such increase in female workers cause concern about occupational hazards to which women of reproductive age may be susceptible. Unfortunately, the Factories Act, 1948 or the Mines Act, 1952 does not cover this vast majority of workers because they work in the informal sector where accidents are not reported at all. Therefore, for such a very large work force in the country not much of statistics or studies are available for formulating coherent policies or action plan to cover these segments of economic activity in the informal sector.

Table 1. Employment (in millions) in different economic sectors of activities in urban and rural India

Total Rural Urban	Individuals Male Female	Total Workers	Cultivators	Agricultural Labourers	Homework	*Other Workers
Total	Individuals	403	128	107	16	151
	Males	275	86	57	8	123
	Females	127	41	50	8	28
Rural	Individuals	311	125	103	12	71
	Males	199	84	55	6	55
	Females	111	41	48	6	16
Urban	Individuals	92	3	4	5	80
	Males	76	2	3	3	69
	Females	16	1	2	2	11

*Other Workers: Mining & Quarrying, Manufacturing, Servicing & Repairs, Construction, Trade & Commerce

(Ref: Saiyed et al, Occupational Health Research in India, *Industrial Health*, 2004, 141-142)

As per the International Labour Organisation (ILO) estimates, nearly 2 lakh workers die annually and about 1200 lakh are injured. Nearly 50 percent of these deaths and injuries occur in developing countries.

As far as occupational diseases are concerned, the absence of any national level statistics is partially compensated with independent studies reporting existence of many occupational diseases. Some of the studies conducted by National Institute of Occupational Health are listed below in Table-2.

Table 2. Prevalence of Occupational Lung diseases studies of NIOH

Economic Activity	Morbidity	Percentage
Slate Pencil	Silicosis	54.5
Agate Polishing	,,	38
Stone Quarries	,,	21
Potteries	,,	15.2
Asbestos mines (open cast)	Asbestosis	11

(Ref: Saiyed et al, Occupational Health Research in India, *Industrial Health*, 2004, 141-142)

5.1.1 Agriculture Sector

This sector provides employment to the largest number of persons, which is presently about 58% of the total workforce. This sector constitutes the backbone of the National economy. Development, growth and productivity of this sector affect the growth of the other sectors. Further, from the published ILO documents, it is evident that agriculture is one of the most hazardous occupations.

Sample surveys by certain institutions provide information about the nature of hazards and type of accidents. They are due to: i) Agriculture hand-tools and implements such as pick-axe, spade, sickle, etc. ii) farm machinery such as tractors, threshers, fodder chopping, machines, etc. iii) chemical agents such as pesticides, fertilizers, strong weed killers, etc. iv) climatic agents such as high temperature, heavy rain, humidity, high velocity wind/storm, lightening, etc., v) electricity, vi) animal/snake bites, vii) other agents such as dust, solar radiation, etc. and viii) psychological stress due to socio-economic problems.

The Insecticides Act, 1968 and The Dangerous Machines (Regulation) Act, 1983 and their Rules are the two legislations presently applicable to specific aspects of agricultural operations.

The Insecticides Act, 1968, 1983 deals with the manufacturing, packaging, labeling, distribution, handling and use of insecticides in general. Therefore, the control measures given in this Act relating to the hazards in the use of insecticides are applicable to the agriculture sector also. This Act is enforced by the State Agriculture Departments as far as its applicability to the agricultural operation is concerned.

The Dangerous Machines (Regulation) Act, 1968 is enacted as “An Act to provide for the regulation of trade and commerce in, and production, supply, distribution and use of, the product of any industry producing dangerous machines with a view to securing the welfare of Labour, operating any such machine and for payment of compensation for the death or bodily injury suffered by any labourer while operating any such machine, and for matters connected therewith or incidental thereto.” This Act applies to the dangerous machines, as defined under the Act, intended to be used in Agriculture or rural sector. The enforcement of this Act also lies with the State Agricultural Departments.

5.1.2 Construction Sector

The construction industry in India employs about 31 million persons (National Sample Survey Organisation, 1999-2000). It is considered to be the second largest industry after agriculture in terms of employment generation. Construction workers are one of the most vulnerable segments of unorganised labour in the country who are exposed to a wide variety of serious occupational safety and health hazards. The Indian construction industry comprises of large construction firms including large public sector undertakings. About one lakh medium and large firms of contractors and sub-contractors execute small jobs including repairing. As per the Chief Labour Commissioner's status paper on "Implementation of the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996.

A number of Labour Laws are applicable to the workers engaged at construction sites. These are:

(a) Contract Labour (Regulation & Operative) Act, 1970.
(b) Minimum Wages Act, 1948.
(c) Payment of Wages Act, 1936.
(d) Equal Remuneration Act, 1976.
(e) Inter-State Migrant Workmen 9Regulation of Employment and Condition of Services) Act, 1979.

The above laws do not have adequate provisions for safety and health of construction workers. The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1986 was enacted on 1.3.1996. The Act is applicable to all establishments employing 10 or more workers in any building and other construction works. The Central Government is the appropriate government for notifying the rules and regulations under the Act as well as the enforcement of the provisions under the said Rules, in respect of establishments in relation to which Central Government is the appropriate government under the Industrial Disputes Act, 1947. In respect of other establishments, the State Government is the appropriate government for notifying the Rules and enforcing the provisions.

The Chief Labour Commissioner (Central) is entrusted with the task of enforcement of this Act and the Central Rules. As a Director General of Inspection, the Chief Labour Commissioner has been vested with Quasi-judicial powers. Since the year 2000-01, 12023 inspections have been conducted, 1750 prosecutions are filed in the Court whereas 5313 complaints are filed (Chief Labour Commissioner's status paper on "Implementation of the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 in the Central Sphere" presented at DGFASLI during the Seminar on 27th Feb. 2006) before Director General (Inspection) / CLC (C).

The nature of violations relating to safety provisions under the Act predominantly relates to provision of:

(i) Medical facilities such a first-aid boxes, essential life saving aid, ambulance room, ambulance van, stretcher etc.
(ii) Preparation of health and safety policy.
(iii) Transport equipment and traffic.
(iv) Excessive noise and vibration.
(v) Fire Protection

The accidents in construction industry are mainly due to the factors such as:

1. Large number of small firms and self-employed workers
2. Shorter duration of construction activities at sites
3. High-turn over of workers
4. Large number of seasonal and migrant workers not familiar with construction activities.
5. Many different trades and occupations involved in construction activity.

Although the Act of 1996 gives a wide coverage to take care of OSH of construction workers, there are a large number of construction workers who do not come under the purview of the Act.

5.1.3 Shops and Establishments

The Shops and Establishments spread across the length and breadth of the country provide the network necessary for reaching the goods and services to the consumers. This sector employs about 6 million employees. The sector is covered by the Shops and Establishments Acts enacted by various State Government as far back as 1948.

In most of the States they have been made applicable to the notified areas falling under the jurisdiction of Local Authorities but there is a provision to extend them to the whole state. The enforcement of these statutes has been entrusted to either the State Labour Commissioner or the Local Authorities.

In these statutes there is a separate Chapter on Occupational Health and Safety providing for cleanliness, ventilation, lighting, and precautions against fire as may be prescribed and first aid. A variety of operations which pose safety and health hazards are performed in shops and establishments such as electrical and mechanical repair shops, small garages, air conditioning/refrigerators repair shops, small jobbing workshops, coffee grinding shops, flour grinding shops, etc. The above mentioned Chapter, however, does not provide for control measures required for ensuring safety in these type of operations.

5.1.4 Beedi and Cigar Manufacturing

This is one of the traditional agro-based industry employing over 4.1 million workers. About 90 percent of them are “home workers” and majority of them are women. The remaining 10 percent are employed as factory workers to whom the provisions of the Factories Act, 1948 are applicable.

The Beedi and Cigar Workers (Conditions of Employment) Act, 1986 which is applicable to this sector defines the term "employee' in a broad manner which includes "home worker". This legislation is enforced by the State Commissioners of Labour. This Act has provisions relating to cleanliness, ventilation, overcrowding, drinking water, latrines and urinals, crèches, first aid, canteens, working hours, etc. which are applicable only to the 'industrial premises' where as mentioned above only 10 per cent workers are employed.

5.1.5 Eating Places

There is no reliable data relating to workers employed in eating places. However, estimates indicate that more than one million persons are employed in this sector. In majority of the States, these workers are covered under their respective The Shops and Establishments Acts, while in Tamil Nadu, they are covered by an exclusive enactment called The Catering Establishments Act. While in Tamil Nadu all the eating places throughout the State are covered, in other States the eating places situated outside the Notified Area, such as those along the Highways are left uncovered. However, there is a provision to extend the statute to the entire State through a notification.

As discussed earlier under the Section on Shops and Establishments, there is a separate Chapter on Health and Safety in the Shops and Establishments Act, the provisions of which seem to be adequate to address the hazards present in the eating places. However, these provisions being general in nature are required to be supported by specific guidelines.

5.1.6 Waste Management

Waste management is a function of urban local bodies. Union Ministry of Urban Development and Poverty Alleviation and the State Governments deal with the legislation governing waste management in urban areas. Local civic authorities in some States deal with collection and disposal of wastes. However, these laws are by no means comprehensive. A new set of rules, Municipal Solid Waste (Management & Handling and Trans boundary) Rules 2008 was promulgated by the Ministry of Environment and Forests. These rules cover the urban local bodies of the country and have fixed the responsibilities of the State Governments, Central Pollution Control Board, State Pollution Control Boards and Municipal authorities.

Epidemiological studies show that the workforce engaged in waste management services are exposed to high health risks and frequently suffer from respiratory tract infections, gastro-intestinal problems, worms, etc. Indian domestic waste contains human excreta, bio-medical waste and sometimes other toxic and hazardous wastes. Improper management of waste can therefore pose big problems for the entire populace.

5.1.7 Home Work

Many types of 'home work' are being carried out traditionally for a number of decades. A rough estimate of the current level of employment in home work sector for the country would be around 3.5 million.

The report published in 1988 of the National Commission on Self-Employed Women constituted by the Ministry of Human Resource Development has addressed the problems of 'home based workers" in a detailed manner devoting a whole Chapter. Since then several new types of home work may have been added. Manufacture of leather products like hand bags, jackets, belts; stuffed toys, sports goods, foot wear in and around Agra for big exports/companies; are examples of some new types of home work. Further, consequent to the strict enforcement of some labour laws such as the Child Labour Act, even activities like drying and labeling of fire works have also been outsourced as home work as revealed by reports of accidents in newspapers.

There is no legislation providing OSH coverage for home work. However, ILO convention 177 defines the term 'employer' for home work. The employer has a crucial role and he can be made accountable for creation of awareness to the home workers employed by him. Suitable legislative measures may have to be formulated in this regard in line with ILO guidelines. As formulation of legislative measures may take considerable time, employer support could be enlisted on voluntary basis as an immediate measure.

5.2 STATUS OF OCCUPATIONAL HEALTH AND SAFETY IN UNORGANIZED SECTOR

Except a few pilot surveys in some of the segments of the unorganized sector no authentic statistics at the national level are available on accidents and occupational diseases in these segments. The sample surveys in the agriculture sector provide information about the nature of hazards and type of accidents. These are due to agriculture hand tools and implements, farm machinery, chemical agents, climatic agents, animal/snake bites, etc. The workers are also exposed to many types of hazardous substances, which have a potential to cause serious occupational diseases such as asbestosis, silicosis, lead poisoning, etc.

A number of studies are now available on agricultural injuries in India. One study revealed an incidence rate of 28 / 1000 workers / year in phase I and 49 / 1000 workers / year in phase II in a sample of 2635 workers from 9 villages of Uttar Pradesh and 30 villages of Haryana (Adarsh, K. Mohand, D. Mahajan,P. Studies of Tractor–related Injuries in Northern India. *Accident; Analysis and Prevention* 1998; 1:53-60). In a review of equipment-related injuries in Indian agriculture, it was observed that 5 per cent and 46 per cent of injuries are caused by tractors and hand-held equipment (Adarsh, K. et al. Equipment–related injuries in Agriculture: An International Perspective. *Injury Control and Safety Promotion* 2000; 7:1-12). In a longitudinal study of 12,189 agricultural workers in Madhya Pradesh during 1995-99, the incidence rate was 1.25/1000 workers/year. Nearly 9.2 per cent of the incidents were fatal and 43 per cent were caused by tractors and snake bites. Seventy eight per cent of all injuries were due to farm machinery. 12 per cent were due to hand tools and 11 per cent were due to other causes (Tiwari, S.P. Gite, P.S. Dubey A.K. Kot, L.S. Agricultural Injuries in Central India: Nature, Magnitude and Economic Impact. *Journal of Agricultural Safety & Health*. 2002:1:95-111).

An epidemiological study in Haryana, identified 576 agricultural injuries in one year; of these 87 per cent were minor, 11 per cent moderate and 2 per cent severe injuries. It was estimated that agricultural activities caused 5000-10,000 deaths, 15,000-20,000 amputations and 150,000-2000,000 serious injuries every year in Haryana, Punjab and Madhya Pradesh

alone (Mohan, D. & Patel, R. Design of Safer Agricultural Equipment: Application of Ergonomics and Epidemiology. *International Journal of Industrial Ergonomics*, 1992:10: 301-309).

In the Ship breaking industry in the State of Gujarat there were 29 fatal injuries reported in the year 2000 which has come down in 14 in the year 2009. The non-fatal injuries have also decreased from 40 in the year 2000 to 12 in the 2009. About 30% of injuries are caused due to fire and explosion where as 36% are due to persons falling from height or struck by falling objects as (Directorate of Industrial Safety and Health, Gujarat).

5.3 REGULATING AGENCIES FOR UNORGANISED SECTOR

Chief Labour Commissioner (CLC) enforces the 'Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996' and the central rules framed thereunder. DGFASLI provides technical support in drafting model rules, carrying out surveys and conducting training programmes in construction sector. The National Safety Council (NSC) and Central Board of Workers Education (CBE) undertake training and awareness creation activities in this sector. The Central Insecticides Board under Ministry of Agriculture and Co-operation regulate manufacturing, packaging, labelling, distribution, handling and use of pesticides. The State Agriculture departments enforce the provisions of the Insecticides Act as relating to agriculture operations.

The State Labour Commissioners and the local authorities enforce the provisions under respective State Shops &Establishment Acts. These Acts are applicable to commercial establishments, hotels, restaurants, eating houses, theatres and other places of public amusement or entertainment.

The Directorate General, Labour Welfare under the Ministry of Labour deals with the welfare aspect of workers employed in beedi and cigar manufacturing.

To summarize, in spite of various agencies involved in regulating work place safety and health issues in the unorganised sector, the efforts are by no means comprehensive and unified. The Government has enacted various legislations i.e. the Building & other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996; The Dangerous Machines (Regulations) Act, 1983; The Insecticides Act, 1968 to ensure the health and safety of unorganized sector workers engaged in agriculture and construction activities. The implementation of these legislations is tardy. Efforts need to be made to review, if required, and ensure proper modifications of these legislations.

5.4 RECOMMENDATIONS

The overwhelming target population to be covered in the unorganised sector for the improvement of the safety and health status is a Herculean task to be achieved in a vast country like India. In the Eleven five-year plan certain steps may be taken to achieve the task in a phased manner.

5.4.1 Based on the preventive self-management principle, occupational safety and health (OSH) guidelines needs to be prepared for certain large segments of the unorganised sector workers, taking into account the uniqueness of their cultural contexts and the gender characteristics. The preparation of the guidelines will need the involvement of the professionals from varied field including safety engineering, occupational health, health education, public health, sociology, psychology, community social worker, educational technologists, mass communication specialists etc. The task of formulating the guidelines may be entrusted to an organization which is already engaged in imparting training to the unorganised sector workers.

5.4.2 Unorganised Sector workers in Agricultural Occupation

5.4.2.1 OSH awareness: Since agriculture sector provides employment to over 185 million persons, the scheme for creating OSH awareness may be implemented with the close involvement of the Ministry of Agriculture Departments. These Departments have good technical infrastructure for providing training and extension services through their Mechanization and Technology Division, four Farm Machinery Engineering in different regions of India. These departments also run programmes on safety for farmers and other target groups

5.4.2.2 Review of course contents: The course contents relating to safety and health being offered by the training institutes under the Ministry of Agriculture need to be reviewed and enriched. This task may be entrusted to a group of experts from DGFASLI, NSC and the training institutes under the Ministry of Agriculture. Based on recommendations of the experts' group, the course contents will be suitably developed and a comprehensive training module on safety and health be designed**.**

5.4.2.3 Conducting Trainers' Training programmes: DGFASLI and NSC will conduct training programmes for trainers in agricultural sector based on the training module on safety and health developed by the expert group.

5.4.3 Unorganised sector workers in non-agricultural occupations

The departments, institutes and NGOs need to be identified to develop appropriate training modules for OSH on the basis of the OSH guidelines (mentioned in para 4.1). Based on these modules, Trainers' Training Programme will be conducted by DGFASLI, NSC and other departments, institutes and NGOs involved in developing those training modules. These trainers will in turn conduct training programmes at the grass-root level to create awareness among the unorganized sector workers in non-agricultural occupations namely, workers in non-registered factories, road transport, shops, eating establishments, printing, dyeing, chemical storage and handling, etc.

5.4.4 The message of the OSH guidelines need to be spread across the target population through mass-media technology, mainly electronic media (T.V.) including the E-Choupal and integrating the same in such services already being provided in the various states.

5.4.5 Appropriate training modules (duration not more than 90 minutes) on OSH in relevant areas may be developed. Instead of imparting these training programmes as 'stand alone' programmes, these are to be integrated into the existing developmental training programmes conducted for the targeted segments of the unorganised sector by various government or non-government organisations. Training modules are to be developed by the reputed agencies in the region and need to be local culture and gender sensitive and if need be, gender specific.

5.4.6 In four or five regions of India, model projects need to be undertaken. The projects could be at the Block level (in rural area) or at the Ward level in the Municipal or Corporation (in the urban area). All the workers in the target segment will be registered into proposed social security coverage formulated by the Ministry, National Commission for Enterprises in the Unorganised Sector and National Advisory Council. The benefits proposed under the draft bills include Medical cum Life Insurance and pension benefits. Under the above mentioned model projects for OSH, workers have to undergo a periodic medical check up every second year and as an incentive for the check up, the worker's personal contribution for the year may be waived under the scheme. The check-up will be done through a panel of doctors who will be doing the medical examination on the basis of medical parameters and tests formulated by an expert agency (e.g. the proposed National Board of Occupational Safety and Health). The panel of doctors (trained in occupational health) will be provided with facility to transfer medical examination data through on-line data transfer facility so that a national level occupational health and safety database is formed. It may be launched on an experimental basis in a particular sector in a Block or in a State as a pilot project. Based on experiences drawn from the impact study of the projects, larger segments of the target population could be covered and such larger projects could be adopted by the concerned States or local self-governments.

5.4.7 To coordinate the entire project throughout the nation a special cell with executive power attached to a government department in the Ministry need to be formed and this could be part of the proposed National Board of Occupational Safety and Health. In fact, the Board will be formed under a Government Legislation on Occupational Safety and Health (Safety and Health at Work Act), which the government is proposing to enact. This Board will be an apex body at national level to deal with matters connected with OSH issues of workers in all sectors or economy and will assist the Government of India in the implementation of the National Policy on Occupational Safety and Health.