



# DISASTER MANAGEMENT PLAN

**DIRECTORATE OF INDUSTRIES**

GOVERNMENT OF HIMACHAL PRADESH



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## INTRODUCTION

### 1.1 INDUSTRIES SECTOR PROFILE

Himachal Pradesh has conferred Statehood in 1971. The severe climatic conditions topographical and geographical severities throw challenges in the process of industrialization. Being a hill state, it faces access constraints and higher risks of natural disasters. The climatic and geophysical reduces the reliability of the road network while the uneven distribution of resources limits the advancement of mineral based industries. Other problems faced by the state were non-availability of infrastructure and communication facilities, shortage of capital and lack of modern skills.

The state and national government provided incentives and subsidies to encourage industrial growth, especially over last two decades. These incentives included the establishment of industrial estates, fiscal incentives. Stress was laid on the infrastructure development of the industries. Industrial areas were developed at Parwanoo, Barotiwala, Bilaspur, Shamshi, Nagrota Bagwan, Mehatpur & Chambaghat. The District Industries Officers were posted in each District. The Rules regarding Grant of Incentives to Industries-1971 were formulated. The Labour & Employment Wing was separated from the Department in 1972. District Industries Centres came into being in 1978 through a 100% Centrally Sponsored Scheme, and the District Industries Officers were replaced with General Managers, District Industries Centres. The industrial sector in the state has entered the take-off stage with a well-diversified base of industries ranging from rural and traditional Handloom and Handicrafts, Cottage, Micro and SSI units to High-tech Textile, Telecommunication equipment, sophisticated Electronic units, Pharmaceuticals, Engineering, High-Quality Precision Tools, Food Processing industries etc.

In 2003 with the announcement of the Industrial package, industrialization in the State of H.P. has made significant progress. The Share of industries and Services Sector to the State GDP has respectively been increased from 1.1 & 5.9 percent in 1950-51 to 5.6 & 12.4 percent in 1967-68 and to 9.4, 13 percent in 2010-11 and 27.84 in 2015-2016. As on 17th September 2015, the state had 40150 Small Scale and 505 Medium & Large Scale industrial units registered with the Industries Department with a total investment of about Rs. 19043.50 Crore and employment of about 28.69 lac people. (Source: Directorate of Industries, Government of Himachal Pradesh)

Table 1.1.1 Details of Industrial enterprises in the State as on 31.07.2016 (Source: Dept. of Industries, Govt. of HP)

#	Categories	No of Units	Investment (in Crores)	Employment
1.	Small Scale Enterprises	40150	7164.35	225889
2.	Medium Scale Enterprises	368	5173.33	31968
3.	Large Scale Enterprises	137	6705.82	29072
	Total	40655	19043.50	286929

Table 1.1.2 Details of Industrial Enterprises Udyag Aadhar Memorandum w.e.f. 18.09.2015 to 31.07.2016

#	Category	Micro	Small	Medium	Total
1	Manufacture	788	405	20	1213
2	Service	566	91	15	672
	Total	1354	496	35	1885

### 1.1.1 MINING INDUSTRY

The state of Himachal Pradesh is relatively less endowed with metallic minerals, barring Limestone and some non-metallic minerals including building stones it virtually lacks any major metallic or fuel minerals. Limestone and dolomitic Limestone is fairly widespread, occurring in the six mid-Himalayan districts. The Geological and Mining wing of the Department of Industries is concerned with various geotechnical / geological investigation and mining of Minor Minerals in Hill slopes and River Beds along with Limestone mining by the cement companies.

Table 1.1.1.1 Type of Minerals available in Himachal Pradesh

#	District	Major Minerals
1.	Bilaspur	Limestone, Dolomitic Limestone, Shale, Brick earth
2.	Chamba	Lime Stone, Roofing slate, Magnesite
3.	Solan	Limestone, Dolomitic Limestone, shale, Building stone
4.	Mandi	Lime Stone, Roofing slate, Rock salt, Quarzite
5.	Shimla	Lime Stone, Quarzite, Slabs slate
6.	Sirmour	Lime Stone, Quarzite, Gypsum, Dolomitic Limestone, Shale, Barytes

Source: Annual Administrative Report, Department of Industries, 2005-2006

During 2013-14 about Rs. 112.08 crores and during 2014-15 (up to 20th January 2015) about Rs. 103.00 crores of royalty from minerals have been realized and total revenue earning to the tune of Rs. 120.00 crores as estimated during current financial years.

### 1.1.2 SERICULTURE INDUSTRY

Sericulture is one of the important agro-based rural cottage industries of Himachal Pradesh that provides gainful employment to about 9,200 rural families for supplementing their income by producing Silk Cocoons. Thirteen silk yarn reeling units have been set up in private sector i.e. District Kangra and Bilaspur five each and in Hamirpur, Mandi and Una one each with the assistance of Government. Up to 31st December 2014, 192.76 MT Silk Cocoons were produced that was converted into the raw silk of 25.35 MT providing an income of about ` 710 lakh by the sale of Silk products in the State. The anticipated production of Silk Cocoon is 224 MT and converted raw silk production is 29.50 MT during the year.

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### 1.1.3 HANDICRAFT AND HANDLOOM INDUSTRY

The Handloom and Handicraft cooperative societies have a vital role to play in the Endeavour of raising the standard of living of weaker sections of society and rejuvenating the rural economy of India. So the contemporary relevance of a study on apex weaver society in a hilly state like Himachal Pradesh is evident from this strategy of decentralized growth being emphasized in the five-year plans.

The Himachal Pradesh State Handloom & Handicrafts Development Cooperative Federation Ltd. known as “**HIMBUNKAR**” is a state level APEX organization of primary cooperative societies consisting of weavers and artisans engaged in production of handicraft woven on handloom as well as others like woodcraft, leather, embroidery, woolen, carpets of Tibetan pattern artistically stitched rumals and shawls of Chamba, decorative wooden pieces, grass shoes, Himachali caps, made-ups, embroidered ladies suits, shawls etc.

Himbunkar provides training, technical knowhow, raw material and avenues for marketing to artisans members of 292 affiliated cooperative societies out of which 89 are exclusive of rural women artisans. These functions of himbunkar pave way for the economic amelioration of rural artisans and help in earning their livelihood through utilization of time spared from agricultural activities particularly during the winter season when the areas remain snow clad for months together. The production and marketing of Himachali craft products are helping in preservation and upkeep of the age-old tradition of art, heritage and local culture.

## 1.2 FUNCTIONS AND BUSINESS ALLOCATION UNDER THE ‘RULES OF BUSINESS

As per the rule of business notified by the Government of H.P. on 25th January, the work regarding industrial development was allocated to the Industries Department. The functions performed by the employees of the department are laid down in different Act, Rules, and Byelaws which are being implemented by the department as under:

- i. Creation and improvement of Industrial infrastructure in the State for better industrial growth.
- ii. Promotion of industrial investment to facilitate generation of employment opportunities in the State.
- iii. Promotion of handicrafts & handloom sector in the State.
- iv. Promotion of Sericulture activities in the State.
- v. Promotion of entrepreneurship through Self-employment to increase potentials of entrepreneurs through various training Programmes.
- vi. Regulation of mineral development and mineral exploitation.
- vii. Finalization of Rate Contracts for Govt. Purchases.
- viii. To impart training to employees of the Department for capacity building of the Department.
- ix. Constructive interaction with Industries / Industrial associations for better environment & cooperation.
- x. Implementation of rules / regulations and policies to control pollution and Industrial emission.



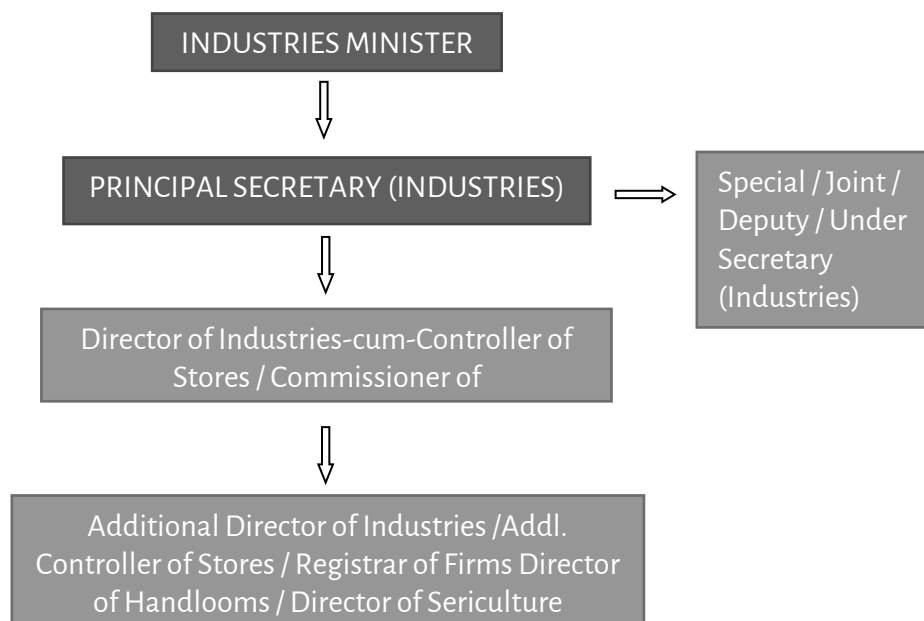
### 1.3 SECTORS AND FUNCTIONAL UNITS OF THE DEPARTMENT

The Industries department has the following sectors and functional jurisdiction as under:

- i. Sericulture-Central Silk Board.
- ii. Khadi and Village Industries- Khadi and Village Industries Commission.
- iii. Handloom-All India Handloom Board.
- iv. Handicrafts-All India Handicrafts Board.
- v. Small Scale Industries.
- vi. Medium and Large-Scale Industries.
- vii. Marketing and Emporia.
- viii. Industrial Estates.
- ix. Industrial Survey.
- x. Rural Industrial Project.
- xi. Industrial and financial assistance to industries.
- xii. Government-owned and industrial concerns, except those under Forest Department.
- xiii. Registration of Firms.
- xiv. Geology & Mines.
- xv. Grant of Loans and Subsidies for Industrial Enterprises.
- xvi. Mines, Minerals, Financial and Industrial Corporations.
- xvii. Trade and Commerce within the State production, supply and distributaries of manufactured goods and products of large scale and small-scale industries.
- xviii. Establishment, budget and accounts matter

### 1.4 ORGANIZATIONAL STRUCTURE

Organization Chart of the Department



### Staff: Directorate of Industries

Store Purchase Organisation	Administration	Industrial Development	Geological & Mining	Sericulture
i. Addl. Controller of Stores ii. Joint Director of Industries iii. Tehsildar iv. Naib Tehsildar v. Store Inspection Officers vi. Superintendent Gr.-I vii. S.O. (Audit)	i. Addl. Director of Industries / Joint Director of Industries (Admin.) ii. Assistant Controller (F&A) iii. Superintendent Gr.-I iv. Ministerial Staff	i. Sr. Industrial Advisor ii. Joint Director of Industries iii. Deputy Directors of Industries iv. Ministerial Staff	i. State Geologist ii. Geologists iii. Assistant Geologists iv. Driller v. Superintendent Gr.-I vi. S.O (Audit) Assistant vii. Driller viii. Lab Assistant ix. Ministerial Staff	i. Deputy Director of Industries (Seri.) ii. Ministerial Staff

### Field Offices

District Industries Centres	Mining	Sericulture
i. General Managers / Member Secretaries, SWCAs, Parwanoo, Baddi, Nalagarh, Paonta Sahib, Kala Amb, Sansarpur Terrace, Damtal & Gwalthai ii. Industrial Promotion Officers iii. Economic Investigators iv. Extension Officer (Industries) (Block Level)	i. Mining Officers ii. Mining Inspectors iii. Assistant Mining Inspectors iv. Mining Guards	i. Deputy Director of Industries (Seri) / GMDICs / Managers ii. Silk Seed Production Officers iii. Sericulture Officers iv. Development Officers v. Technical Officer (Tassar) vi. Sr. Sericulture Inspectors viii. Extension Officer (Tassar) ix. Technical Assistant x. (Tassar)/Sericulture Inspector

The Geological & Mining Wing comes under the Department of Industries with its headquarters at Shimla, is engaged in two-fold activities, namely (i) Mineral Survey, Prospecting and Exploration on one hand and (ii) Mineral Administration including collection of revenue, checking of illegal mining and dispatches and supervision of mineral exploitation on the other hand. These activities are looked after by the Geological & Mining Wing. The Geological & Mining Wing also makes coordination with the Central and State Agencies engaged in the exploration of different minerals. The overall control of these activities is exercised by Director of Industries.

The Geological and Mining Wing is headed by the State Geologist. He reports to the Director of Industries for mineral exploration/regulation works. He is further assisted by Geologists, Assistant Geologists, Superintendent Gr.-I & II, the ministerial and other staff at Head office Shimla. The Mining Office is headed by a Mining Officer. He is assisted by Mining Inspectors, Asstt. Mining Inspectors, Mining Guards and ministerial and other staff. Furthermore, the drilling operations are supervised by Drillers who are assisted by Asstt. Drillers and Laboratory Assistants.

## 1.5 LEGAL PROVISION FOR DEVELOPING DISASTER MANAGEMENT PLAN

Section 23 of the Disaster Management Act, 2005 mandates that there shall be a plan for disaster management for every State to be called the State Disaster Management Plan (SDMP). Copies of the State Plan shall be made available to the departments of the Government of the State and such departments shall draw up their own plans in accordance with the State Plan. Besides, as per Section 40 of Act every department of the State Government, in conformity with the guidelines laid down by the State Authority, shall draw up their own disaster management plans. The SEC as per Section 22 (2) (c) of the Act would lay down guidelines for preparation of disaster management plans by departments of the State and District Authorities. Further, as per Section 38 (2) (g) of the Act, the State Government shall ensure the preparation of disaster management plans by different departments of the State in accordance with the guidelines laid down by the National Authority and the State Authority.

## 1.6 PURPOSE OF THE PLAN

The purpose of the Disaster Management Plan for the Industries Department is to provide guidance to all the agencies within the department to manage risks of disasters before, during and after disasters. These include assessing the spectral and departmental risks of disasters, mitigating the existing risks of disasters, preventing the creation of new risks of disasters presenting the status of its preparedness to perform its role and responsibilities as defined in the State DM Policy and the State DM plan.

## 1.7 SCOPE OF THE PLAN

The Industries department and its assets are vulnerable to earthquake, flood, industrial fire/accidents, landslides, road accidents causing loss of lives and serious disruption to production, supply chain (goods and services) causing severe economic losses. The scope of the plan would cover prevention, preparedness for effective response and restoration and recovery.

## 1.8 AUTHORITIES, CODES AND POLICIES

Following are the relevant laws, regulations and policies the Department of Industries has to adhere to while performing its business.

1. Explosives Act 1884
2. Petroleum Act 1934
3. Factories Act 1948
4. Insecticides Act 1968
5. The Environment (Protection) Act 1986
6. Manufacture, Storage and Import of Hazardous Chemicals, Rules
7. Motor Vehicles Act 1988
8. Public Liability Insurance Act 1991
9. The National Disaster Management Act, 2005
10. Himachal Pradesh State DM Policy, 2011
11. Himachal Pradesh State Disaster Management Plan, HP Disaster Management Authority, Govt. of HP
12. Bio-Medical Waste (Management & Handling) Rules, 1998
13. The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 2015

## **1.9 INSTITUTIONAL ARRANGEMENTS FOR DISASTER MANAGEMENT**

Under the State Disaster Management Plan, specific roles and responsibilities have been assigned the Department Industries. The department of industries is the Nodal department / Primary agency for Industrial and chemical disasters. The department is also the nodal agency for Landslide and Mudflow disasters. The crisis management group at State and districts level have not been constituted in the State. The department does not have a dedicated cell / mechanism for disaster management as such. Inter alia, the department shall deploy nodal officers to State EOC (SEOC) for coordination measures on activation of State ESF Plan for coordination measures as per the HPSDMP. The department is also mandated to coordinate with their national counterparts and mobilize specialists and assistance as per requirement. Additionally, they shall place the resources at the disposal of DDMA during disaster situation

The Industry Department does not have an Emergency Control Room. However, there is a designated nodal officer for coordinating the disaster management activities of the department.

### **1.10 PLAN MANAGEMENT (IMPLEMENTATION, MONITORING AND REVISION)**

The Department has developed a Fire-specific Office Disaster Management Plan featuring details on evacuation and basic do's and don't in case of a fire incident. The plan is wanting on covering the other hazards, risks and capacity of the department besides being a state / office-centric plan. The department needs to set up a departmental mechanism for development, implementation, monitoring, revising, reviewing and updating the existing plan and supplementary documents such as checklists, SOPs and so on. If not, the nodal officer for disaster management may be assigned the task for review, monitoring and regular updating of the plan and other relevant documents. Once the updation of the plan is done the SDMA shall be intimated for necessary revision SDMP.

## 2. HAZARD, RISK AND VULNERABILITY ANALYSIS

### 2.1 STATE HAZARD AND VULNERABILITY PROFILE: OVERVIEW

Hazards both natural and manmade are of immediate concern to the State of Himachal Pradesh as it faces the fury of one or the other disaster every year. The fragile ecology and geology of the State coupled with large variations in Physio-climate conditions render it vulnerable to vagaries of nature in one way or the other. In a nutshell, the State is prone to 23 types of Natural and man-made disasters. The Industrial and Mining sector is particularly prone to major natural hazards such as earthquake, flash flood, cloudburst, landslides, land subsidence, drought and forest fires (as the majority of MSMEs are agriculture and Horticulture based) and accidental hazards such as forest fires, electrical fires, urban fires, road and rail accidents, industrial fires, gas and chemical leakages. The hazard risk is increasing with population pressure and consequent anthropogenic interference besides the lack of awareness and preparedness.

At present the state has about 41 industrial areas established at Bilaspur, Gwalthai, Garnota, Hatli, Hamirpur, Nadaun, Nagrota Bagwan, Sansarpur Terrace, Nagri, Dhaliara, Bain Attarian, Badhal, Raja Ka-Bag, Nargala Jawali, Shamshi, Reckong Peo, Sauli Khad (Mandi), Ratti, Bhambala, Maigal, Shogi, Maindli, Jais, Jubber Hatti, Paonta Sahib, Kala Amb, Baddi, Barotiwala, Chambaghat, EPIP Baddi(Phase I&II), Banalgi, Mamlig, Katha Bhatoli, Mehatpur, Amb, Tahliwala, Gagret, Jeetpur Bheri and Basal.

In view of the fast development of industrial areas in Solan, Sirmour, Una and Kangra districts of the State the possibilities of accidents in the industrial and chemical sector cannot be ruled out.

### 2.2 DISASTER HISTORY OF INDUSTRIES

Industries in Himachal Pradesh are rather new and most of them, except pharma and chemical industries, do not store or use a large amount of Accident/hazard-prone chemicals. Due to fragile ecosystem and uncertain rainfall and risks of landslides and flash floods, the Hydel projects are some of the risk-prone industries. The disaster risk from natural events are analysed in respective hazard risk sections. The primary study of industries did not provide major disaster events based on recollection. Out of the 143 industries contacted only 40 respondents could recall any event casing impacts on their industries.

Table: 2.2.1

Type of Event	No of respondents reporting events	% of respondents reporting events	Reported Work days lost	Average work days lost /year /industry*
Cold wave / snowstorm	3	2	75	0.03
Drought	5	3	185	0.06
Earthquake	3	2	-	0.00
Floods	9	6	134	0.05
Hailstorm	3	2	0	0.00
Landslide / Roadblock	7	5	12	0.00

Torrential rain / cloudburst	10	7	98	0.03
Total	40	28	504	0.18

\*considering all sampled industries and 20 year recall period, Sample size 143 respondents. Source: TARU Analysis 2014

The direct risk of flood damage is lower, but road access gets affected by the floods and torrential rains. A significant number of industries located in Shiwalik zone and this region has short streams clogged with sediments, and flash flood risks are high to orographic extreme rain events. Since drought affects the agro-industries and Himachal faces recurrent droughts, the raw material shortage from droughts is an issue for agro-industries. None of the respondents recollected any other disasters chemical disasters. Minor industrial fires are reported from time, but unless formal mechanisms for recording these events are implemented it is not possible to collect the time series information at the state and district level.

## 2.3 INDUSTRIAL FATALITIES AND CASUALTIES

The secondary data on fatality from industrial disasters from the Directorate of Labor and Employment for three years is presented in the following table. With over 3 lakh persons engaged in Industry sector, the fatality figures are about 4 persons / Lakh persons / year and casualty figures are of the order of 12 persons / lakh persons / year

Table: 2.3.1 Industrial Accidents in Himachal Pradesh

Year	No. of fatal accidents	No. of persons died in fatal accidents	No. of non-fatal accidents	No. of persons injured in non-fatal accidents	Total no. of Accidents	Total no. of persons died & injured
2008	6	6	5	5	11	11
2009	10	19	9	32	19	51
2010	3	11	3	5	6	16

Source: Directorate of Labour and Employment, Govt. of Himachal Pradesh

## 2.4 HAZARD, VULNERABILITY & RISK ANALYSIS

### 2.4.1 EARTHQUAKE

Since the industrial sector of Himachal Pradesh, which has been developed over last 30/40 years, has not witnessed any major earthquake during this period, hence there is no record of death and economic losses in this sector. However, the State has been shaken by more than 80 times by earthquakes having a magnitude of 4 and above on the Richter Scale as per the recorded history of earthquakes. As per the BIS seismic zoning map five districts of the State, namely Chamba (53.2%) Hamirpur (90.9%), Kangra (98.6%), Kullu (53.1%), Mandi (97.4%) have 53 to 98.6 percent of their area liable to the severest design intensity of MSK IX or more, the remaining area of these districts being liable to the next severe intensity VIII. Two districts, Bilaspur (25.3%) and Una (37.0%) also have a substantial area in MSK IX and rest in MSK VIII. The remaining districts also are liable to intensity VIII.

The Earthquake Hazard Map of BMTPC, 2006 shows that Himachal Pradesh falls in one of the highest risk zone areas of the state (Zone IV & V). Kangra earthquake of 2005 was the severest earthquake claiming 19,800 lives and causing huge economic damages to the housing and infrastructure sector. The industrial belt (Nalagarh, Mehatpur, Baddi-Barotiwala, Kala-Amb and Paonta Sahib) through fall in earthquake zone IV, a shallow earthquake with a magnitude of VII and above in the Richter scale could cause massive damage to the industrial and MSME sector. With increasing unplanned urbanization, population pressure, poor land use, non-conformity to safe building codes, lack of awareness and poor resilience further would further enhance the vulnerability of the State in general and industrial areas of Himachal Pradesh in particular. Even the industries and their allied assets such as office infrastructures, road and rail tracks of industrial zones, District Industries Centres, power infrastructures, storage and transport godowns, cold storages and raw material stocks would be at greater risk.

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#### **2.4.2 CLOUD BURST / FLASH FLOOD**

Flash flood is the most frequent and damaging floods that occur with little or no warning causing immense loss to life and assets and infrastructures of the state. Damages are caused due to flash floods mainly in the Sutlej, Yamuna, Beas and Parvati rivers. In August 1994, the Manimahesh cloudburst and a flash flood washed away almost the entire length of Chamba-Bharmour road (62 km), over 50 people feared dead, and 2000 injured. Similarly, the flash flood in Satluj river in 2000 had claimed 140 lives in Kullu, Mandi, Kinnaur and Rampur. Floods though have not directly damaged the assets of Industrial sectors have caused direct and indirect losses to the industrial production and the manufacturing MSMEs by impacting the power, road infrastructure and intra and inter-state distribution networks of the state.

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#### **2.4.3 FIRE**

Fire is caused by the factory electrical short circuits, flammable materials, and operational mishandling including burning hazardous materials causing health hazards. Persons working in the factory, as well as inhabitants of in nearby places, face threat to their lives, safety and wellbeing of workers due to such fires. Industrial Fire and explosion may cause huge loss to valuable properties in the factory including stock, plants, office infrastructures, power infrastructures, storage and transport godowns, cold storages and raw material stocks thereby affecting the production and livelihood provided by the industrial units.

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#### **2.4.4 ENVIRONMENTAL IMPACT**

The population located neighbouring regions can be impacted by any disaster occurring in the large industries. These may be due to loss of livelihoods from disasters like earthquakes, or direct impacts of air pollution or water pollution. An estimate was done using GIS methods to estimate the potential population directly or indirectly impacted by the large industries. The results are presented in the following Table.

Table 2.4.4.1 Source: TARU Analysis (2014)

District	Area Buffer (K.M)			Estimated Population		
	1	2.5	5	1	2.5	5
Bilaspur	21	100	286	12,466	34,835	97,648
Chamba	16	83	386	5,938	9,250	35,635
Hamirpur						3295
Kangra	32	146	492	13,053	49,772	1,58,672
Kinnaur	31	139	394	4,990	17,024	21,890
Kullu	131	463	1051	29,688	56,567	1,22,464
Mandi	131	463	1051	29,688	56,567	1,22,464
Shimla	48	194	545	17,487	45,817	84,158
Sirmour	65	259	615	31,701	58,603	99,169
Solan	269	585	699	1,07,810	1,48,083	1,33,120
Una		227	516	26,105	84,566	54 1,68,706
Total	705	2386	5398	2,65,062	5,83,110	10,56,487

A total of about 10 lakh population are located within a buffer area of the large industries and part of its population may be affected in worst case scenarios. The 1 km radius is a more probable population that can be affected by major industrial disasters. People living in Solan and Kullu district's 1 KM buffer area will be comparatively more affected in case of chemical accidents as it may be inferred from the table above.

#### 2.4.5 INDUSTRIAL POLLUTION: CATEGORY OF INDUSTRIES

Based on pollution potential, the industries classified by Ministry of Environment & Forests, Govt. of India under Central Action Plan under Schedule – VIII, (Rules 3(2) and 12) 3. As per this classification, "Red" represents highly polluting industries, 'Orange' represents moderately polluting industries and 'Green' represents marginally polluting units. This classification helps the people to understand pollution potential of the industry as well as to prioritize plans and programmes of pollution control and surveillance. The number of industries in different categories in small medium and large industries is presented in the following Table below.

Table: 2.4.5.1 Type of Industries Based on Size and Pollution Categories

Pollution Potential Category	No of Industries by size / class				% of industries in each Size class		
	Large	Medium	Small	Total	Large	Medium	Small
Green	107	119	2,758	2,984	23%	24%	44%
Orange	154	198	2,692	3,044	33%	40%	43%
Red	200	182	805	1,187	43%	36%	13%
Total	461	499	6,255	7,215	100%	100%	100%



Source: AGSAC 2014

The above table shows that only about a 43% large, 36% of medium and industries and 13% of small industries are categorized under the Red category. This classification only indicates the pollution potential and does not classify industries based on hazards. Except for eight Major Accident Hazard (MAH) industries, no other industry classification based on hazards is available. The following map shows the distribution of different categories of Industries across the state.

#### 2.4.6 MAJOR ACCIDENT HAZARD (MAH) INDUSTRIES

As per Department of labour and welfare, there are only 8 MAH industries in the state. The list of these industries along with their location and buffer areas of 5 km and 10 km respectively in the table below:

Table: 2.4.6.1 Estimated Area and population (2011) in Buffer Zones of MAH Industries

District	Estimated Area (2011)		Estimated Population (sq.km)	
	Km> 5	10	5	10
Bilaspur	-	9,219	1.5	48.9
Hamirpur	-	18,052	1.8	52.5
Kullu	11,208	32,005	53.4	185.4
Mandi	5,599	20,534	24.5	126.3
Sirmour	44,231	1,02,747	176.5	497.7
Solan	37,499	70,523	107.3	289.5
Una	8,591	47,578	74.8	199.0
Grand Total	1,04,846	2,95,563	439.7	1399.4

Source: AGSAC, Dept. of Labour & Employment, TARU Analysis

The above table shows that Sirmour district has the highest area and population under risk from any MAH industry-related accidents with three MAH industries located in the district. It is necessary to do detailed risk studies to design mitigative and emergency measures.

#### 2.4.7 MINING HAZARDS, VULNERABILITY AND RISK

The Department undertakes two types of mining activities namely, Riverbed Mining and Hill slope mining. Other mining activities in Himachal Pradesh are mostly associated with opencast mining so these Geological and Mining activities are associated with small potential hazards.

The river bed mining is vulnerable to flash floods, truck/dumper accidents, failure of waste dumps and occupational and health-related hazards. Similarly, the Hill slope mining is prone to the toppling of trucks in the hilltop, dumper/truck accidents, failure of waste dumps, and health hazards.

A concept of Mining Plan under has been introduced by the department which includes Scientific Mining as the well Proper safety of the Man and environment should be submitted by the leaseholder before the

start of Mining Activities. Under the Mines Act, 1952, the mine owners are mandated to follow safety guidelines and ensure workers safety.

## **2.5 ASSESSMENT OF CAPACITY GAPS AND NEEDS**

Even though Himachal Pradesh state had a history of industries (breweries and other food industries) going back to 1850's, the industrial growth has a short history of the only couple of decades. Most of the industries are located in the Shiwalik zone with both earthquakes as well as flood risks. The state does not have Directorate of Industrial Safety and Health. As a result, data on disasters, fatalities etc. is not sufficiently managed. The data on industries, disaster history is poor and needs to be significantly improved. The study by TARU indicates that torrential rains, floods and droughts are the main issues impacting the industry sector. The study further reveals most the industries are located fairly safe areas from floods, except in a few cases. There are eight MAH industries. Risk modelling is necessary to identify the likely impact area under different meteorological conditions.

It is certainly possible to reduce the potential impact of disasters to the sector by evolving appropriate safety audit, setting up a system for collecting damage and loss data, risk assessment, preparedness, preventive and response plans. Risk identification and assessment constitutes the first step in developing the Sectoral and Department plan for the Industries and Mining sector. DICs with the assistance of Local Administration take appropriate steps towards ameliorative measures when such disasters take place. However, the department needs to develop required institutional, organizational & infrastructural capacities to deal with the disasters like earthquake, fire, industrial and chemical hazards, etc. considering the worst-case scenarios.

### 3. PREVENTION AND MITIGATION

Practical strategic options for disaster mitigation and prevention and disaster preparedness that the Department of Industries can pursue are:

1. Conduct of industry-specific consultations for the eventual crafting of MSME Disaster Risk Reduction framework, State plan, and local action plans.
2. Rationalization of national and state land use policy capitalizing on the development and use of vulnerability and hazard maps, with particular adherence to precautionary safety measures against exposure to hazard when setting up business establishments.
3. Promotion of proactive posture through business continuity plans for all enterprises.
4. Prepositioning of supplies and provisions as applicable and stockpiling of materials and products in appropriate locations as applicable.
5. Strengthening supply chain resilience by taking into account supply routes for raw materials and finished products, including forging pre-disaster arrangements with suppliers and or nodal industry players.
6. Capacity building among SMEs to strengthen planned and adaptive resilience to disaster events through:
  - i. Promotion of effective networks or business associations to support/strengthen SMEs,
  - ii. Focus on augmenting organizational resilience particularly on leadership and employee culture,
  - iii. Training, stress testing and disaster response simulation, and
  - iv. Provision for a backup system for important business files and documents.
7. Establishment of compliance mechanisms for the business sector on DRR standards.
8. Strengthening of implementation of or reform existing laws on land-use and related laws such as building code for disaster-resilient industry and service sectors.
9. Assessment of the level of DRR awareness and activities among the private sector and disseminate information, education and campaign (IEC) materials on DRR to ensure their support, participation and cooperation
10. Development of innovative financing schemes to secure sustainable financing for programs on climate change.
11. Creation of policies and stable policy environment for the development of climate-smart industries and services; Adoption of eco-efficient production;
12. Development of capacity building programs and knowledge for promoting climate-smart industries and services;
13. Development of productive employment and livelihoods from these industries;
14. Climate-proofing of infrastructures in village and Khadi industries
15. Development of CC-adaptive housing and land use;
16. Full implementation of ecological waste management.
17. Support / encourage SMEs to build a culture of adaptive capacity among management and employees.

### **3.1 PREVENTION AND MITIGATION MEASURES FOR RIVER BED MINES**

1. Mining should be done during the non-monsoon periods; therefore, problem of inundation is not likely to happen
2. Transportation should be within applied mining lease area, Proper loading points, proper fencing of roads, Proper Maintenance of Vehicles, Road signs should be provided.
3. Waste should be dumped at proper locations outside of the rivers.
4. Dust masks, earplugs / muffs and other equipment should be provided and change timely.

### **3.2 PREVENTION AND MITIGATION MEASURES FOR HILLSLOPE MINING**

1. Proper Planning of Mining activities during the preparation of Mining Plan.
2. Transportation should be within applied mining lease area, Ma freeloading points, Proper fencing of roads Proper Maintenance of Vehicles, and Road signs should be provided.
3. Waste should be a dump at proper locations at benches, proper terracing of the dump slopes, planting vegetation as early as possible over the overburden dump slopes, Provide drainage channels.
4. Dust masks, earplugs/ muffs and other equipment should be provided and change timely.
5. A statutory provision of the fence, constant education, training etc. will go a long way in preventing the incidence of such accidents.

## 4. MAINSTREAMING DISASTER RISK REDUCTION

### IN INDUSTRIAL DEVELOPMENT PLAN

Section 40 (1)(a)(ii) of Disaster Management Act, 2005 has stipulated that DM Plans of the Departments of State Government shall integrate strategies for prevention and mitigation of the risks of disasters with the development plans and programmes of the department.

The mapping of hazards, identification of elements at risk and exposure data assists in quantifying risk in the industries sector. Thereafter risk reduction initiatives can be taken up. Mainstreaming DRR would a prerequisite for safe and sustainable industrial development in Himachal Pradesh. Some of the DRR mainstreaming measures in industries sector are as follows:

1. Incorporate disaster risk impact assessment as a part of the planning process before the setting up of industries and mining.
2. Site analysis and risk-sensitive land-use planning (either avoid development in hazard-prone areas or adopt treatment and mitigation measures).
3. Strengthen compliance with the various provisions of the codes - set up hazard safety cell for advice and monitoring.
4. Disaster resistant technologies mandatory in case of all construction using public/corporate funds.
5. Industrial safety audit (buildings, assets and manpower)
6. Training and capacity building of the department and functionaries.
7. Promotion of disaster insurance in the housing sector.
8. Institutionalization of 'Business Continuity Planning'
9. Integrate this into Project Cycle Management (PCM) particularly in programming, identification and appraisal phases.
10. Having an industrial reconstruction policy.

With the abolition of Planning Commission and devolution of higher tax revenue to the States, many central sectors and centrally sponsored plan / programmes are undergoing changes. The State Government shall, therefore, have greater freedom to design state specific development programme for the industries and mining sector. This will create new opportunities for disaster risk reduction. It is therefore recommended that the department may take up specific structural and non-structural DRR measures through the sectoral development programmes based on the assessment of risks in their sector.

The State Government, as per the notification of 2009, may make it mandatory for any new project costing more than Rs.100 crores to have a checklist of *Natural Disaster Impact Assessment* before it is approved. These checklists provide complete information on the hazards, risks and vulnerabilities of the project along with probable effects natural disasters on the project and creating new risks of disasters. The costs involved in the prevention and mitigation of both types of impacts can be built into the project costs and accordingly the economies of the viability of the project can be worked out.

The Department of Industry may need to work on policy / strategy eco-system based approach to promote SMEs or particularly the agro and horticulture based manufacturing industries. Use of clean and green technology, sustainable use of water, forest products, re-use and recycle of bio-degradable materials are some of the key strategies.

Harnessing the potential of clean technologies and promoting technology transfer will significantly contribute towards developing climate resilient industry. Empirical evidence reveals that most increases in

per-capita income stem from advances in technology. Emboldening this knowledge provides increased socio-economic performance with improved climate resilience.

Fostering innovation and strengthening entrepreneurship would provide an opportunity to develop new capacity for wealth creation whilst safeguarding the environment. Small and medium-sized enterprises (SMEs) need to identify business and funding opportunities presented by climate action to spur innovation and entrepreneurship in cleaner technologies and resource efficient production.

The Department of Industry may explore possibilities to bolster partnerships with both state and sub-national entities, including cities, businesses and regional level networks to attract investment and implement the industrial best practice. Diverse sources of expertise and experience play a crucial role in creating climate resilient industry. Therefore, multi-stakeholder partnerships are vital to attract investment and provide the knowledge and expertise for deploying climate-resilient solutions on the ground.

## 5. DISASTER PREPAREDNESS

Disaster preparedness has been defined as ‘the state of readiness to deal with a threatening disaster situation or disaster and the effects thereof’. The Department of Industries may review their ‘state of readiness’ and prepared strategic action plan with a possible disaster situation. The key preparedness measures the department of Industries could undertake may be listed as under:

1. **Awareness Generation:** To make people aware of their vulnerabilities and the need for prevention, mitigation and preparedness measures.
  - i. Preparation of a booklet/pamphlet containing information on various hazards and the steps to be taken for mitigating the same by CEOs of industries.
  - ii. Organizing Mass Media Campaign.
  - iii. Sponsoring awareness generation capsules in print and electronic media.
2. **Capacity Development and Training:** The department should need to make a detailed study on Capability Assessment and Gap Analysis. On the basis of the recommendations, a training strategy needs to be developed. Broadly, the Department may take up the capacity building activities namely,
  - i. Training of industrial personnel, nearby community and volunteers in disaster management.
  - ii. Development of training modules and identification of Master Trainers.
  - iii. Linking the trained personnel with the Disaster Management Teams under the District Administration.
3. **Preparation of On-site and Off-site Emergency Plan:** Preparation of on-site and off-site DM plans by the industries helps the industry to establish necessary linkages with the authorities and the community. It is also a mutually beneficial arrangement as it enables the industry to summon immediate help in case of an emergency within its premises. Under Section 41(B) (4) of the Factories act 1984, every factory is to prepare On-site Emergency Plan and detailed disaster control measures for his factory. Again, under provision of Rule 13 of the Manufacture, Storage and Import of Hazardous Chemicals Rules 1989, the occupier shall prepare and keep up to date On-site Emergency plan containing details how major accidents will be dealt with on the site on which the industrial activity is carried on and that plan shall include the name of the persons who are responsible for safety on the site and names of those who are authorized to take action in accordance with the plan in case of emergency. Similarly, functional drills for joint industry-offsite agency response, public information, site security, management of mass casualty, and others can be conducted. HPSDMA has come out with detailed guidelines on the preparation of On-site and Off-Site Emergency Plan.
4. **Communication and Information Technology Support:** Alarm system varies and will depend on the size of the works area - simple fire bell, hand operated siren - break open type, fire alarm etc. An automatic alarm may be needed for highly hazardous nature of the plant.
5. **Mutual Aid Scheme:** Mutual aid scheme should be introduced among industries so that in case of emergency necessary help from mutual aid partner may be extended. The Mutual Aid Scheme is a written document giving consent for mutual support to be extended to one another at the times of emergencies. The agreement specifies key personnel who are authorized to give requisition of materials from other industries, Specify the available quantity of material / equipment that can be spared, mode of requisition during emergency and mode of payment / replacement of material given during an emergency. The document may need to be updated from time to time based on experience gained.
6. **Mock Drills and Simulation/Table top exercises:** Conducting mock-drills at regular intervals to enhance preparedness levels and linkages with the District Administration and other Emergency Support Functions (ESF) departments / agencies, especially targeted at chemical, mining and

pharmaceutical sectors. The Factory Act 1984 stipulates that mock drills on emergency planning should be conducted once in 6 months and sequence of events should be recorded for improvement of the exercise. Exercises on On-site Emergency Planning should be monitored by Factory Inspectorate and the high officials of the organization and the plan are reviewed every year. Tabletop exercises should be conducted to assess response capability and plan for resources and procedures during emergencies.

7. **Inventorization of Resources:** Inventorization of resources is a pre-requisite for mounting a speedy and effective disaster response. An on-line web-enabled resource inventory has been developed and commissioned to capture the resources in terms of specialized equipment, machinery, manpower etc. in the India Disaster Resource Inventory (IDRN). The web-enabled inventory IDRN already has more than eighty thousand records of resources available with Government machinery at the Central and Provincial (State) levels across 550 districts in the country. Alternatively, the Department met to do a GIS mapping of resources of the industries sector.
8. **Sensitization Programmes:** The Department of industries may undertake a number of sensitization programmes in the districts in association with the State Fire Services. The sensitization programmes may primarily concentrate on informing the industries about the hazards and the risks keeping in mind the vulnerability profile of the State; the requisite structural and non-structural mitigation measures necessary to protect industrial assets and infrastructure against earthquakes, landslides, floods and others; the need to make the manufacturing processes and procedures inherently safe especially against chemical and fire hazards; importance of developing on-site and off-site disaster management plans and establishing linkages with the district administration as also about the role of corporate sector in overall disaster risk reduction and mitigation initiatives.
9. **Risks Transfer Mechanism:** Apart from disaster risk management measures to arrest the spiralling cost of disasters and their wider socio-economic import, the Department of Industries may address the risk of damage and losses through a well thought out risk transfer mechanism. Each risk is evaluated and ranked according to its probability and severity and the strategy is to purchase insurance in order to transfer the financial risk. However, while going in for insurance, the company should make sure that the insurance company is financially stable with a long-term commitment; review risk financing options yearly; prepare early and be proactive for insurance renewals and underwriters and appraise the market realities viz. higher deductibles, sizeable premium increases and limitations.
10. **Check List:** The department shall prepare a check List of Disaster Preparedness which would form an integral part of the Departmental Disaster Management Plan. This checklist would be useful to review that every necessary action for disaster preparedness has been taken and the Department is not caught unaware during rapid or slow onset disaster

As per the State Disaster Management Plan, the Department has taken up the following preparedness measures at different stages:

### **Preparedness Standard Operating Procedure Check List**

#### Normal Time

- Designate one Liaison Officer in the department as the Disaster Management Focal Point.
- Ensure all possible steps for the security of manpower, implements, stock, installations / factories etc.
- Prepare listing and locations of industries and establishments for possible sourcing of relief material during disasters.
- Training on preparedness programmes to be adopted at different levels for all manpower employed in factories and establishments in disaster vulnerable areas.



- Preparation of implementation of emergency preparedness plans by all industrial units
- Implementing the existing laws for preventing an environmental disaster in the chemical industry or industries emitting toxic gases and effluents.
- Issue detailed instructions to the employees about their duties and responsibilities in precautionary, disaster and post-disaster stages of a normal disaster.
- Arrange regular training for mining employees and contractors in the disaster-prone areas on disaster issues.

#### Alert and Warning

- Evacuation of the mineworkers from the mines and factories on the receipt of the early warning.

## 6. DISASTER RESPONSE PLAN

Section 39 of the Act, each department must respond effectively and promptly to any threatening disaster situation or disaster in accordance with the State Plan, and in accordance with the guidelines or directions of the SEC. Further, the department should make available its resources to the SEC or the District Authorities for the purposes of responding promptly and effectively to any disaster in the State, including measures for:

- i. providing emergency communication with a vulnerable or affected area;
- ii. transporting personnel and relief goods to and from the affected area;
- iii. providing evacuation, rescue, temporary shelter or other immediate relief;
- iv. carrying out the evacuation of persons or livestock from an area of any threatening disaster situation or disaster;
- v. setting up temporary bridges, and landing places;
- vi. Providing drinking water, essential provisions, healthcare and services in an affected area.

### 6.1 MECHANISM FOR EARLY WARNING AND DISSEMINATION THEREOF

- i. In the event of any disaster, the Block Level Officer (Industries Extension Officer) shall immediately intimate through phone/ e-mail to the General Manager, DIC and shall describe the magnitude of the disaster vis-a-vis the local resources available to negotiate the disaster. The General Manager, RIC / DIC will communicate the details to the District Level Disaster Management Cells for initiation actions as per the nature of the disaster.
- ii. Contact details of officers of Industry and Mining Department and its field functionaries are enclosed at Annexure I.
- iii. On receipt of the communication from the General Manager, RIC / DIC, the Cell will mobilise the Quick Response Team (QRT) to the spot of disaster relief and rescue.
- iv. Response plan for responding effectively and promptly to any threatening disaster situation or disaster in accordance with the State Plan, and in accordance with the guidelines or directions of the National Executive Committee and the State Executive Committee and the State Government and the SDMA
- v. The head of District Level Disaster Management Cells shall mobilise the Cell for meeting the requirements as demanded by the situation / disaster. He will also assess the situation further and if required he will immediately contact the State Executive Committee and SDMA and seek necessary assistance from them promptly.
- vi. Appointment of Nodal Officers to perform Emergency Support Functions (ESFs)/roles in an emergency in the format already circulated by the State Government.

Immediately on receiving information about the disaster that strikes any area the trigger mechanism is activated either from 'TOP' or from the 'BOTTOM' depending upon the situations the following actions will be initiated:

- i. Activation of Department Control Room
- ii. Generation of event scenario report to be sent as per the trigger mechanism.
- iii. Preparation of current status on lifeline facilities and infrastructure.
- iv. Rapid visual assessment of damage to buildings.
- v. Assessment of Casualties.
- vi. Assessment of a number of displaced persons.

- vii. Assessment of Transport requirements
- viii. Assessment of requirement of shelters
- ix. Assessment of basic need requirement of displaced persons.
  - x. Status of search and rescue operations.
  - xi. Details and listing of missing persons.
- xii. Assessment of type & extent of medical support for undertaking the emergency operation.
- xiii. Status of identification of stakeholders and role players for providing supporting response and recovery operations.
- xiv. Status of activating call centre for providing multiple pieces of information to callers and relatives of victims.

**Primary tasks during early warning and dissemination:**

- i. Proper need assessment through village response
- ii. Deployment of resources to all affected sections in an equitable manner
- iii. Besides food, cloth and shelter facilities such as public health and sanitation is to be provided in shelters or camps.
- iv. Ensuring total transparency in distribution of relief material
- v. Putting in place an objective method of assessing damage

## 6.2 ROLE OF STATE EOC

Getting early warning and alerts are critical to mounting timely and appropriate response. The unified SEOC located in the HP Secretariat will handle information related to disaster management. The state EOC would provide necessary information and coordination to all nodal departments and ESF. The SEOC with robust communication system will be handled by concerned nodal departments by deploying their specialist at the time of crisis.

## 6.3 DISTRICT DISASTER MANAGEMENT AUTHORITY (DDMA)

- i. DDMA shall assess the situation in coordination with the District Crisis Group (DCG) and give directions to the Industry department head in the district for better handling of the situation.
- ii. DDMA shall assess the situation by taking into consideration reports from all formal and informal sources and decide upon the level of the disaster.
- iii. Issue necessary direction for handling the response, relief & restoration measures.
- iv. Call for outside support if necessary
  - v. Keep the SDMA / SEC informed about the situation
  - vi. Raise demands for support and assistance
- vii. Assess the resource availability and issue necessary direction for pooling resources for speeding an effective response.
- viii. Process requests for NDRF / Army or any other specialised help.
- ix. Monitoring and reviewing the situation on a regular basis

## 6.4 ROLE OF INDUSTRIES

- i. At the time disaster and on activation of State ESF plan Industry departments shall deploy nodal officers to SEOC for coordination measures.
- ii. The Department shall coordinate with their national counterparts and mobilise specialist resources and assistance as per requirement.

- iii. Department and organisations of the state shall place the resources at the disposal of DDMA's during a disaster situation.

## 6.5 TRIGGER MECHANISM

Trigger mechanism is necessary for ensuring unambiguous suo-motto activation mechanism. It is envisaged that in the event of a disaster the response system shall be activated automatically to set in motion command, control and management of the situation. The trigger mechanism is devised to deal with two situations that may arise in the disaster event.

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### 6.5.1 WHEN WARNING SIGNALS ARE AVAILABLE

- i. In certain situation, early warning signals and symptoms are available before the onset of disasters. For such disaster, a national level institution has been identified who has been entrusted with the task of carrying out regular monitoring and research. These agencies indicate the onset of disaster through forecasting and communicate the same to NEOC / NDMA/ MHA.
- ii. Based on the forecast issued by nodal NEOC / NDMA /MHA issue, watch, alert and a warning to SEOC / SDMA / SEC / DEOC / DDMA
- iii. On receiving watch, alert warning the SEOC / SEC activates the state and district response mechanism to deal with the situation effectively.
- iv. DDMA through its mechanism shall inform the community of the impending threat through warning system and undertake evacuation.
- v. Warnings shall be issued at state & district level through the department of public relations and through authorized person only.
- vi. Depending on situation dissemination shall be carried out through alarms, sirens, radio, television, loudspeakers, hoisting of flags.
- vii. Subsequent to warning people shall be kept informed about the status and shall be issued the warning at the appropriate situation.
- viii. Warning messages shall be composed with caution and care so as not to create undesirable impact and understood easily by the recipients.
- ix. DDMA shall issue comprehensive standing order elaborating all necessary pre-emptive measures based on warning.
- x. Periodic evacuation drills shall be carried out in most vulnerable pockets such as perpetual flood prone pockets before the onset of monsoon.

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### 6.5.2 ACTION PLAN FOR RESPONSE

- i. The department needs to encourage industrial units to have a hazard analysis exercise and develop probable off-site scenarios along with an emergency planning team.
- ii. Set up Emergency Response Centres equipped with technology, safety equipment, trained manpower resources for enhancing fire and chemical emergency response capabilities.
- iii. Make preparation of on-site emergency management plan and consider aspects of off-site emergencies arising from on-site incidents.
- iv. Have a complete inventory of toxic and hazardous materials, their physic-chemical properties and potential health and environmental hazards properly been laid down.
- v. Industries / Units need to have adequate equipment for on-site emergency management such as for fire-fighting, communication, personal protection and trained emergency management personnel in the facility, their names, numbers and areas of specialization etc.

- vi. Set up a proper safety organization along with system and procedures for effective safety management.
- vii. Set up the proper system, equipment and procedures for effective prevention of spills and releases.
- viii. Review the available safeguards are at the site to prevent accidental spills/releases.
- ix. Examine safer substitute, for actual toxic and hazardous materials and dangerous processes.
- x. Ensure that the storages of toxic and hazardous materials are properly located, constructed, maintained and operated from the point of view of minimizing risk.
- xi. Updated list of a number of managers, supervisors, workmen formally trained in the various aspects of emergency management. Numbers who may be available for off-site emergency assistance.
- xii. Make 24 hours emergency medical cover available at site; Names of medical personnel in the facility may be provided;
- xiii. Ensure that the antidotes/medicines required for treatment readily available at the hospital / medical centre.
- xiv. Test the on-site emergency plan through mock exercise and prepare a detailed report of such trials.
- xv. Set up robust warning systems for informing the facility personnel, outside communities of an on-site emergency and off-site emergency situations.
- xvi. Develop a comprehensive safety manual etc.
- xvii. Make provision for emergency power available for critical areas during emergencies.

## 6.6 RELIEF AND REHABILITATION

Relief and rehabilitation of the persons affected by disasters is an important function of post-disaster response. The department immediately following the disaster would take up the following relief/rehabilitation measures.

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### 6.6.1 PROVIDE SHORT-TERM RELIEF TO THE PUBLIC AT THE INCIDENT SITE

The DEOC will logistically support relief efforts and / or deploy specialized personnel to provide medical screening, emergency medical care, documentation of medical treatment, temporary shelter, and basic necessities (i.e., water and food) to citizens that were directly affected by the chemical release. Immediate relief funds can also be released as per existing norms and procedures. SEOC will support DEOC in these functions if required.

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### 6.6.2 EMERGENCY MEDICAL RESPONSE

Emergency medical units should collaborate with stakeholders to develop, implement and maintain a comprehensive strategy to prepare for, respond to, and recover from health emergencies of known and unknown origins. The Department of Health will prepare a comprehensive state-level medical emergency management plan. The following is only a stop-gap arrangement and does not undermine the acute need for a comprehensive medical response plan by the Department of Health. The Department of Health will take decisions on following issues:

- i. Appropriate triage and case management
- ii. Appropriate care for those evacuated to temporary shelters
- iii. Collection, identification, and management of dead victims
- iv. Advise SCG on the possibility of evacuation versus shelter-in-place.

In the case of a chemical incident medical response, Quick Response Medical Team should be activated with the following considerations:

- i. Proper communication must be established between DEOCs, designated health care units, district level healthcare response units, and concerned tertiary care health facilities
- ii. Rapid Diagnostic kits must be available to diagnose the chemical agent and thereby provide proper treatment
- iii. Psychosocial support should be given to the worried well category of affected community
- iv. Specialized ambulances, various medical kits for pre-hospital care, and a special vehicle must be available at the incident site so as to provide adequate diagnostic and specialized treatment support for all the contaminated victims.

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### 6.6.3 EVACUATION OF CASUALTIES FROM THE INCIDENT SITE:

For emergencies that are beyond the response capability of the state, additional help can be requested from the central authorities. The following two authorities are available at the national levels. The Central Crisis Group, constituted by the Ministry of Environment and Forests, shall be the apex body in the country to deal with and provide expert guidance for planning and handling of major chemical accidents in the country. The CCG shall continuously monitor the post-accident situation and suggest measures for prevention of recurrence of such accidents.

Along with MOEF, NDMA is also a national body to provide coordination, technical, and logistical support to the state. NDMA, through the Home Ministry, can help the state seek formal support from NDRF. An NDRF company is stationed in Bhatinda. This company is developing in its capability in chemical emergency management to be a resource for the state in the case of emergencies needing national level assistance. HSDMA may consider including NDRF in coordination meetings, plan preparation, and mock drills to ensure a coordinated response whenever needed. Considering the role NDRF battalion at Bhatinda may play, it may be well suited to invite NDRF commandant as a member of SCG.

## 7. RELIEF, REHABILITATION AND RECONSTRUCTION

Norms of Relief if applicable	Relief shall be provided to the affected Industrial units as per the norms decided by the State Government
Minimum Standards of Relief	Minimum Standard of Relief as per the decision of the Government
Rehabilitation Plan	The rehabilitation plan shall be in accordance with the provision of policies as decided by the State Government
Financial mechanism	The Financial Institutions also have a stake in MSMEs. As such the quantum of government support, if any, towards the rehabilitation of MSMEs should take into account the views of FI/Banks associated or the multi-disciplinary team if the MSME is self-financed.
Action Plan for 'Building Back Better'	The District Level Disaster Management Cell will prepare an action plan for the reconstruction of the disaster-affected area. This action plan will be forwarded to the State Level Disaster Management Cell for their appraisal. MSME Department will also send the report of a multidisciplinary team on the assessment of damage and reconstruction thereof. The State Level Disaster Management Cell will finalise the reconstruction process after assessing the proposals of District Level Disaster Management Cell and MSME Department. The entire process may be completed within a period of one month from the date of the disaster.

Post-disaster the Government and the department need to restore the economic activities in damaged communities with urgency. The strategic direct interventions that can be instituted for disaster relief and post-disaster recovery may include:

- i. Prompt address of dysfunctions / breakdowns in public services and key infrastructure.
- ii. Provision of humanitarian / disaster assistance to the local workforce to minimize injury, casualty and displacement.
- iii. Effective restoration of security / peace and order in affected communities to protect the citizens, and the operation of local businesses.
- iv. Setting up of financing facilities such as grants and concessionary loans intended for SMEs and a special credit line in the form of Business Disaster Loans (i.e. a risk mitigating facility) for medium-sized companies must be in place. Grants can be directed to affected micro and small enterprises that have no productive assets left and negligible creditworthiness.
- v. Provision of additional capital support for SMEs during disaster events, including optional loan restructuring, and tax reprieve should be considered especially for small and medium enterprises.
- vi. Implementation of cash for work programs and income support to partially restore the livelihoods of those affected by public works and direct food or cash transfer programs.
- vii. The arrangement of temporary workstations, factories, stores, and other facilities through the municipal or local government.
- viii. The institution of possible labour protection provisions (i.e. compensation), and facilitated / flexible enforcement of applicable laws to aid in early recovery (i.e. movement of goods, customs policy).
- ix. Setting up of accessible an information system for updates on disaster support facilities, basic services and infrastructure status, market information, and other relevant updates / advisory.

## 8. FINANCIAL ARRANGEMENTS

As per the section (49) of the Disaster Management Act, 2005, every ministry or department of the government of India and the state government shall make provisions in their annual budget for carrying out the activities and programs set out in their disaster management plans. The planning department will be advised to mark 0.5% of budget allocation for meeting the disaster management requirement

The Department of Industry in consultation with the SDMA/DDMA may identify mitigation projects and project them for funding into the appropriate funding agency. The guidelines issued by the NDMA vis-a-vis various disasters may be consulted while preparing mitigation projects. The department, as required by the provision of DM policy and Act, is mandated to make necessary financial allocations as part of their annual budgetary allocations, and ongoing programmes. They will also

Considering that the assistance provided by the Government for rescue, relief, rehabilitation and reconstruction needs cannot compensate for massive losses on account of disasters, new financial tools such as catastrophe risk financing, risk insurance, catastrophe bonds, micro-finance and insurance etc., will be promoted with innovative fiscal incentives to cover such losses of individuals, communities and the corporate sector. In this regard, the Environmental Relief Fund under the Public Liability Insurance Act, 1991, enacted for providing relief to chemical accident victims is worth mentioning. Some financial practices such as disaster risk insurance, micro-finance and micro-insurance, warranty on newly constructed houses and structures and linking safe construction with home loans will be considered for adoption

As stated in the section (48) of the DM Act 2005, the State Government shall establish for the purposes of the Act the following funds:

- i. **State Disaster Response Fund:** This fund will be constituted and made available to the SEC for meeting the expenses for emergency response, relief and rehabilitation.
- ii. **District Disaster Response fund:** This fund will be constituted and made available to the District Disaster Management Authority for meeting the expenses for emergency response, relief and rehabilitation.
- iii. **State Disaster Mitigation Fund:** This fund will be constituted and made available to the SEC for meeting the expenses on mitigation activities.
- iv. **District Disaster Mitigation Fund:** This fund will be constituted and made available to the District Disaster Management Authority for meeting the expenses on mitigation activities.



## 9. RECOMMENDATION AND ACTION POINTS

1. A safety audit of industries by the Factory Inspectorate /relevant institutional mechanism.
2. GIS mapping of industries, mines and their respective hazards, vulnerabilities, risks, resources (both equipment's and trained manpower).
3. Setting up an institutional mechanism to record damage and loss data.
4. Enhancing synergy and coordination between Department of Industry, Department of Labour and Employment, State Disaster Management Authority and District Disaster Management authorities.
5. Setting up of State Crisis Group, District Crisis Group and Local Crisis Group for chemical emergencies. (In accordance with the provisions of Rule 6(2) of Chemical Accidents (EPPR) Rules 1996, the State Government is to constitute a State Crisis Group (SCG) for management of chemical accidents. The SCG is to meet at least once in three months and follow such procedure for transaction of business as it deems fit. Schedule 7 and Schedule 8 of the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 prescribes for the constitution of District and Local Crisis Groups.).
6. Development of both On-site and Off-Site Emergency Plan by the Most Accident Hazard Units as per the guidelines of HPSDMA.
7. Conduct of Mock Drills and Simulation Exercises on On-Site and Off-Site Emergency Plan as per the guidelines of HPSDMA.
8. Set up a well-equipped education and training Institute in each industrial area that would take up an industrial disaster, fire safety and health-related awareness, education and capacity building activities among the industries.
9. Set up the Mutual Aid Scheme in Industrial Areas for better synergy and mutual emergency response support, should there be an emergency incident.
10. Collect data regarding hazardous chemicals and processes, MSDS, antidotes, toxic release, resources etc. Development of Chemical Emergency Response Plan.
11. Organize Seminars, Exhibitions and Certificate Courses related to Industrial Safety, Fire Prevention, Fire Protection and Fire Fighting, First Aid, Transportation of Hazardous Chemicals, Handling of Hazardous Chemicals and Disaster Management Plan etc.
12. Promote Public-Private Partnership (PPP) as PPP would allow combining the authority and resources of Government with skills, technology and resources of the private agencies
13. Organize specialized Training Programmes on different aspects of industrial and chemical emergency response planning, simulation exercises, mock drills etc.
14. Promote joint training and resource sharing between industries through forming Mutual Aid Schemes.
15. Data collection regarding hazardous chemicals and processes, MSDS, antidotes, toxic release, resources etc.



## II. Officers of Industries Department and Other Agencies

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