



**GUIDELINES FOR ON-SITE AND OFF-SITE EMERGENCY PLANS**  
**FOR**  
**FACTORIES & INDUSTRIAL UNITS**  
**IN HIMACHAL PRADESH**

**HP State Disaster Management Authority**

**Government of Himachal Pradesh**

**Disaster Management Cell, Department of Revenue.**

## CHAPTER - 01

### Introduction

After the incident of Bhopal gas disaster, the Factories Act has been amended and a new chapter i.e. Chapter IVA – provision relating to hazardous processes has been added to the Factories Act with addition of new provisions sec 41A, 41B, 41C, 41D, 41E, 41G and 41H covering all hazardous process industries. Under the provision of Sec 41B (4) every occupier shall with the approval of the Chief Inspector of Factories draw up an On-site Emergency Plan and detailed disaster control measures for his factory and make known to the workers employed therein and to the general public living in the vicinity of the factory the safety measures required to be taken in the event of an accident taking place. This is the statutory provision laid down in the Act for preparation of On-site Emergency Plan to control disaster in the factories. Major accidents may cause emergency and it may lead to disaster, which may cause heavy damage to plant, property, harm to persons and create adverse effects on production. Many disasters like Bhopal gas tragedy, Chernobyl nuclear disaster etc. have occurred at many places in the world causing heavy loss of life and property. Emergency situation arises all of a sudden and creates havoc and damage to property, production and environment and harm to human beings. Therefore such situations and risks should be thought, visualized and assessed in advance and it should be planned beforehand to tackle them immediately and control them within the shortest time.

### What is Emergency?

2. A major emergency can be defined as an accident/incident that has potential to cause serious injuries or loss of life. It may cause extensive damage to property, serious disruption both in production and working of factory and may adversely effect the environment. The following factors may cause major emergency:-

- (i) Plant failure.
- (ii) Human error.
- (iii) Vehicle crash.

- (iv) Sabotage.
- (v) Earthquake.
- (vi) Natural Calamities.
- (vii) Fire

### **On-site Emergency**

3. If an accident/incident takes place in a factory, its effects are confined to the factory premises, involving only the persons working in the factory and the property inside the factory it is called as On-site Emergency.

### **Off-site Emergency**

4. If the accident is such that its affects inside the factory are uncontrollable and it may spread outside the factory premises, it is called as Off-site Emergency.

### **Why Emergency Plan?**

5. The main objectives of an emergency plan are:-

- a. to control and contain the incident/accident and if possible, eliminate it; and
- b. to minimize the effects of the incident on persons, property and environment.

6. Each factory or industrial unit should prepare an emergency plan incorporating details of action to be taken in case of any major accident/disaster occurring inside the factory. The plan should cover all types of major accident/occurrences and identify the risk involved in the plant. Mock drills on the plan should be carried out periodically to make the plan foolproof and persons are made fully prepared to fight against any incident in the plant. The plan will vary according to the type of industry and emergency.

## CHAPTER - 02

### On-Site Emergency Plan

#### Statutory Provision

7. After the Bhopal gas tragedy (1984) and Supreme Court direction in case of M/S. Sriram Foods and Fertilizers Vs the Govt. of India has made some important amendments to the Factories Act 1948 in the year 1987 with incorporation of special provisions relating to hazardous process. Under Section 41(B) (4) every occupier 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 is 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.

8. Preparation of On-site Emergency Plan by the occupier is mandatory. **The occupier shall ensure a mock drill of the on site emergency plan is conducted at least one in every six months.** A detailed report of the mock drill conducted under rule shall be made immediately available to the Inspector and Chief Inspector.

#### Main elements of On-site Emergency plans

9. The main elements of on-site emergency plans are:-
- Leadership and Administration.
  - Role and Responsibilities of Key Personnel.
  - Emergency action.
  - Light and Power.
  - Source of energy control.
  - Protective and rescue equipment.
  - Communication.

- Medical care.
- Mutual Aid.
- Public relation.
- Protection of vital records.
- Training.
- Periodical revision of plan.

### Emergency Action Plan for On-Site Emergency Plan

10. The Action Plan should consist of the following:-

- Designated Emergency Control Centre/Room.
- Key Personnel.

#### I. Emergency Control Centre

11. This is the main center from where the operations to handle the emergency are directed and co-ordinated. Facilities to be made available in the emergency control are:-

- i. Internal and external communication.
- ii. Computer and other essential records.
- iii. Daily attendance of workmen employed in factory.
- iv. Storage of hazardous material records and manufacturing records.
- v. Pollution records.
- vi. Walky-talky.
- vii. Plan of the plant showing:-
  - a. Storage area of hazardous materials.
  - b. Storage of safety equipments.
  - c. Fire fighting system and additional source of water.
  - d. Site entrance, roadway and emergency exist.
  - e. Assembly points.
  - f. Truck parking area.
  - g. Surrounding location.
- viii. Note Book, Pad and Pencil.

- ix. List of Key Personnel with addresses, telephone number etc.

## II Assembly Points

12. A safe place far away from the plant should be pre determined as assembly point where in case of emergency personnel evacuated from the affected areas are to be assembled. The plant workers, contract workers and visitors should assemble in assembly point in case of emergency and the time office clerk should take their attendance so as to assess the missing persons during emergency.

## II. The Key Personnel for onsite emergency:-

1. Works Main Controller.
2. Works Incident Controller.
3. Other Key Officers
  - a. Communication Officer.
  - b. Security and Fire Officer.
  - c. Telephone Operators.
  - d. Medical Officer.
  - e. Personnel/Administrative Officer.
  - f. Essential work team leaders.

### 1. Works Main Controller

13. The General Manager of the Plant should act as main controller. His duties are to:-
- i. Assess the magnitude of the situation and decide whether the evacuation of staff from the plant is needed.
  - ii. Exercise and direct operational control over areas other than those affected.
  - iii. Maintain a continuous review of possible development and assess in consultation with work incident controller and other Key Personnel.
  - iv. Liaison with Police, Fire Service, Medical Services, Factory Inspectorate and other Govt. Agencies.
  - v. Direct and control rehabilitation of affected area after emergency.

- vi. Intimate Off-site Emergency controller if the emergency spreads beyond the factory premises and likely to affect the surrounding area.
  - vii. Ensure that evidence is preserved for enquiries to be conducted by statutory authorities.
14. The Works Main Controller will declare the emergency and he will instruct gate office to operate the emergency siren after assessing the gravity of the situation.

## 2. Work Incident Controller (WIC)

15. He is the next responsible officer after the Works Main Controller. Generally the plant manager is designated as Work Incident Controller. In case of emergency he will rush to the place of occurrence and take overall charge and report to the Works Main Controller by personnel communication system like cell phones or walky-talky and inform about the magnitude of emergency. He will assess the situation and considering the magnitude of emergency he will take decision and inform Communication Officer to communicate the news of emergency to different agencies. He will give direction to stop all operations within the affected area. He will take the charge of Main Controller till the Main Controller arrives. He will order for shutdown and evacuation of workers and staffs from affected area. He will inform all Key Personnel and all outside agency for help. He will inform security and fire officers and State Fire Services. He will ensure that all non-essential workers/staff are evacuated to assembly point and areas searched for casualties. He will report all significant development to Communication Officer. Moreover he will advise to preserve evidence of emergency into the cause of emergency.

## 3. Other Key Personnel and their duties

- a. **Communication Officer.** On hearing the emergency siren/alarm he will proceed to the control center and communicate to Work Incident Controller. He will collect information from the emergency affected area and send correct message to work main controller for declaration of emergency. He will maintain a log book of incident. He will contact all essential departments. He will take stock of the meteorological

condition from local meteorological Department. He will communicate all information as directed by Works Main Controller.

- b. Security and Fire Officer.** The Security or Fire officer will be responsible for the fire fighting. On hearing the emergency alarm/siren, he will reach the incident area with fire and security staff. Immediately after arrival to the emergency area, he will inform through telephone or walky-talky to the communication officer. He will inform to the Work Incident Controller about the situation and requirement of outside help like State Fire Service and other mutual aid members. At the site, the entire fire squad member will respond to the advice and information given by the works incident controller. The security will control the visitors and the vehicle entry.
- c. Telephone Operator.** In case of fire is discovered but no emergency siren is operated, he shall ensure the information about the location of the fire/emergency incident from the persons discovered/notices the above and communicate to different Key Personnel immediately with clear message.
- d. Medical Officer.** Medical Officer with his team will report to the Works Incident Controller on hearing the fire/emergency siren immediately. The ambulance will be parked nearest to the site of incident. Name of injured and other casualties carried to the Hospital will be recorded and handed over to Works Incident Controller. The ambulance will carry the injured to the nearest hospital for treatment.
- e. Personnel/Administrative Officer.** He should work as a liaison officer liaisoning with works main controller and other essential departments such as Police, Press and Statutory authorities. His responsibilities shall include:-
- To ensure that casualties receive adequate attention to arrange additional help if required and inform relatives.
  - To control traffic movement into the factory and ensure that alternative transport is available when needed.
  - When emergency is prolonged, arrange for the relief of personnel and organize refreshment and catering facilities.
  - Arrange for finance for the expenditure to handle the emergency.



*f. Essential Works and Team Leaders.* During emergency the plants immediately affected or likely to be affected, as determined by the Works Main Controller, need to be shut down for safety. In the area immediately affected, it may be possible to isolate equipment from which flammable or toxic material is leaking. This work must be immediately carried out by plant supervisors and essential operators. Workers/staff need to be nominated to carry out the following essential works at the time of emergency:-

- Extra first aid personnel to deal with casualties.
- Emergency engineering works, provision of extra or replacement of light, isolation of equipment, temporary bypass electrical lines etc.
- Moving tankers or other vehicles from area of risk.
- To carry out tests on ambient air quality.
- To act as runner in case of communication system fails.
- The Works Main Controller will require a task force of suitable trained people for the following works:-
  - Manning of assembly points to record the arrival of evacuated people.
  - Assistance of casualty arrival areas to record details of casualties.
  - Manning the factory entrance in liaison with security to direct emergency vehicle containing the gate e.g. ambulance, fire tenders etc.

16. For these essential jobs designated teams should be made available. The responsibilities of the team and the leader should be given.

The essential work teams are-

1. Task Force and repair team.
2. Fire fighting team.
3. Communication team.
4. Security Team.
5. Transport Team.
6. First aid and medical team.

7. Safety team.

### Alarm System

17. 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. Automatic alarm may be needed for highly hazardous nature of plant.

### Communication System

18. Communication is a key component to control an emergency. The following communication system may be provided in the plant-

- Walky-Talky.
- Telephone (internal & external).
- Cell phone.
- Intercom/paging.
- Runners (verbal or written messages).

### Siren for Emergency

19. Siren for emergency should be different from the normal siren. The emergency siren should be audible to a distance of 5 KM radius. The emergency siren should be used only in case of emergency.

### Escape Route

20. The escape route from each and every plant should be clearly marked. The escape route is the shortest route to reach out of the plant area to open area, which leads to assembly point. This route should be indicated on the layout plan attached to the On-site Emergency Plan.

### Evacuation

21. All non-essential staff should be evacuated from the emergency site. As soon as the emergency siren rings the workers have to shut down the plant and move to the assembly point. The plant shut down procedure in case of emergency should be prepared and kept ready and responsible persons should be nominated for the purpose.

### **Counting of Personnel**

22. All personnel working in the plant should be counted. Time office persons should collect the details of personnel arriving at the assembly point. These should be checked with the attendances of regular workers, contract workers present in the site on the day of emergency. The accident control should be informed and arrangement should be made for searching missing persons in the emergency affected area. The employees' address, contact number of next of kin should be maintained in the time office so that during emergency relatives of those affected due to emergency may be informed accordingly. Information in respect of emergency should be given to the media and other agency.

### **All Clear Signal**

23. After control of emergency the Work Incident Controller will communicate to the works main controller about the cessation of emergency. The main controller can declare all clear by instructing the time office to sound "All Clear Sirens".

### **Mutual Aid System**

24. Mutual aid scheme should be introduced among industries so that in case of emergency necessary help from mutual aid partner may be extended. Essential elements of this scheme are:-

- Mutual aid must be a written document signed by the Chief Executive of the industries concerned.
- Specify 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.

- Mode of payment/replacement of material given during an emergency.
- May be updated from time to time based on experience gained.

25. 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 is reviewed every year.

### Emergency facilities

26. The following facilities should be provided in any factory to tackle any emergency at any time.

- i. Fire protection and fire fighting facilities.
- ii. Emergency lighting and standby power.
- iii. Emergency equipment and rescue equipment :-
  - a. Breathing apparatus with compressed air cylinder.
  - b. Fire proximity suit.
  - c. Resuscitator.
  - d. Water gel Blanket.
  - e. Low temperature suit.
  - f. First aid kit.
  - g. Stretchers.
  - h. Torches.
  - i. Ladders.
- iv. Safety Equipment:-
  - a. Respirators.
  - b. Gum boots.
  - c. Safety helmets.
  - d. Asbestos Rubber hand gloves.
  - e. Goggles and face shield.

- f. Toxic gas measuring instruments.
- g. Explosive meter.
- h. Oxygen measuring instruments.
- i. Toxic gas measuring instrument.
- j. Wind direction indicator.

### **On-site Emergency Plan should contain-**

1. Site plan and topographic plan.
2. Plan showing the fire fighting facilities.
3. Plan showing hazardous material storage area.
4. Material safety data sheets for hazardous chemicals.
5. Facilities available in main control center.
6. List of emergency equipment.
7. List of Safety Equipment.
8. List of important telephone numbers and addresses.
  - i. Nearest hospitals and ambulance service center.
  - ii. Nearest fire station.
  - iii. Govt. Officials.
  - iv. Transport provider.
9. Names and address & contact telephone number of Key Personnel.

27. The on site emergency plan so prepared shall be documented in a printed form in sufficient copies to give all concerned for knowledge, study and easy follow up. The emergency plan shall be rehearsed and practiced at regular intervals to test efficiency of personnel, equipment coordinated efforts and to increase confidence and experience to operate such plan. The plan so prepared should be updated annually and uploaded in the factory website for easy reference.

## CHAPTER - 03

### *Off-site Emergency Plan*

28. The main objectives of the off-site emergency plan are:-
- i. To save lives and injuries.
  - ii. To prevent or reduce property losses and
  - iii. To provide for quick resumption of normal situation or operation.

#### **Legal Provisions**

29. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 prescribes for the constitution of the State Crisis Group as apex body at the State Level to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents. 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. The composition of the District Crisis Group has been prescribed under the chairpersonship of District Collector and Local Crisis Group under the Chairpersonship of Sub-Divisional Magistrate. The District Crisis Group shall meet every forty five days and send a report to the State Crisis Group. The Local Crisis Group shall meet every month and forward a copy of the proceedings to the District Crisis Group.

#### **A. Functions of the State Crisis Group**

The State Crisis Groups shall –

- i) Review all district off-site emergency plans in the State with a view to examine its adequacy in accordance with the Manufacture, Storage and Import of Hazardous Chemical, Rules and forward a report to the Central Crisis Group once in three months;
- ii) Assist the State Government in managing chemical accidents at a site;
- iii) Assist the State Government in the planning, preparedness and mitigation of major chemical accidents at a site in the State;

- iv) Continuously monitor the post accident situation arising out of a major chemical accident in the State and forward a report to the Central Crisis Group;
- v) Review the progress report submitted by the District Crisis Groups;
- vi) Respond to queries addressed to it by the District Crisis Groups; and
- vii) Publish a list of experts and officials in the State who are concerned with the management of chemical accidents.

**B. Functions of the District Crisis Group**

The District Crisis Group shall –

- i. Assist the preparation of the district off-site emergency plan;
- ii. Review all the on-site emergency plans prepared by the occupier of Major Accident Hazards installation for the preparation of the district off-site emergency plan;
- iii. Assist the district administration in the management of chemical accidents at a site lying within the district;
- iv. Continuously monitor every chemical accident;
- v. Ensure continuous information flow from the district to the Centre and State Crisis Group regarding accident situation and mitigation efforts;
- vi. Forward a report of the chemical accident within fifteen days to the State Crisis Group; and
- vii. Conduct at least one full scale mock-drill of a chemical accident at a site each year and forward a report of the strength and the weakness of the plan to the State Crisis Group.

**C) Functions of the Local Crisis Group**

The Local Crisis Group shall -

- a) Prepare local emergency plan for the industrial pocket;
- b) Ensure dovetailing of the local emergency plan with the district off-site emergency plan;

- c) Train personsnel involved in chemical accident management;
- d) Educate the population likely to be affected in a chemical accident about the remedies and existing preparedness in the area;
- e) Conduct at least one full scale mock-drill of a chemical accident at a site every six months and forward a report to the District Crisis Group; and
- f) Respond to all public inquiries on the subject.

### **Risk Assessment**

30. Risk assessment is most essential before preparing any off site emergency plan. Hazardous factories and their hazard identification, other hazard prone areas, specific risks, transportation risk, storage risks, pollution risks by air and water pollution, catastrophic risks such as disasters, natural calamities, earthquake, landslide, storm, high wind, flood, scarcity, heavy rain, lightening, massive infection, heavy fire, heavy explosion, heavy spill, toxic exposure, environmental deterioration etc., risks from social disturbances, risks from the past accidents must be considered while carrying out risk assessment for a particular area(district) from which the off-site emergency plan is to be prepared.

### **Central Control Committee**

31. As the offsite plan is to be prepared by the Government, a Central Control Committee shall be formed under the Chairmanship of the District Collector. Other officers from Police, Fire Service, Factory Inspectorate, Medical Department shall be incorporated as members of the Central Control Committee. Under the Central Control Committee the following committees shall be constituted under the control of the District Collector.

- i. Incident and Environment Control Committee.
- ii. Fire Control Committee.
- iii. Traffic control, Law and order, Evacuation and Rehabilitation Committee.
- iv. Medical help, Ambulance and Hospital Committee.
- v. Welfare, Restoration and Resumption Committee.
- vi. Utility and Engineering Services Committee.
- vii. Press, Publicity and Public Relations Committee.



32. The Off-site Emergency Plan shall be prepared by the District Magistrate in consultation with the factory management and Govt. agencies. The plan contains up-to-date details of outside emergency services and resources such as Fire Services, Hospitals, Police etc. with telephone number. The district authorities are to be included in the plan area.

- a. Police Department.
- b. Revenue Department.
- c. Fire Brigade.
- d. Medical Department.
- e. Municipality.
- f. Gram Panchayat.
- g. Railway Department.
- h. Telephone Department.
- i. Factory Department.
- j. Electricity Department.
- k. Pollution Control Department.
- l. Explosive Department.
- m. Press and Media.

33. **Mock exercises on Off-site plan should be carried out at least once in a year to train the employees, up to date the plan, observe and rectify deficiencies.**

### **Hazop Study**

34. Before making the on site and off site plan hazop study has to be carried out to identify the potential hazardous situations and to find out possible control measures. Hazop study is to be carried out by a team of experts. The team should consist of:-

- (a) Mechanical Engineer.
- (b) Chemical Engineer.
- (c) R & D Chemist.
- (d) Works Manager.
- (e) Project Manager.
- (f) Outside experts.

(g) Safety Officer/ Manager.

The department of Industries should get the study conducted.

### **Risk Communication and Public Awareness**

35. On the basis of risk assessment the risk communication activity should also take place to the stakeholders – local residents, NGOs, CBOs, PRIs, ULBs etc. Awareness about do's and don'ts through leaflets, mass media – radio, television, local cable, and print media etc. should be carried out regularly. And training and capacity building of local populations should be carried out as per the requirement. These activities should be done regularly through PPP mode under Corporate Social Responsibility.

### **Conclusion**

36. To carry out mock exercises and rehearsal of the off site plan to ensure its efficiency, test and response, interaction and co-ordination of operators various service organizations evaluate the effectiveness and adequacy of the equipments and to gain experience and confidence to implement the plan. The finalized disaster management plan shall be given to all concerned for implementation and rehearsal for preparedness.

- Note: i) The above guidelines would be in addition to the Guidelines issued by the NDMA on Chemical Disasters (Industrial) which is available at: <http://ndma.gov.in/ndma/guidelines.html>.
- ii) In addition to the above guidelines, the direction issued by the NDMA, SDMA, SEC or the DDMA shall also be adhered to.

**For more information please contact:**

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