DISASTER MANAGEMENT PLAN

STATE POLLUTION CONTROL BOARD

GOVERNMENT OF HIMACHAL PRADESH

Contents

Chapter-1: Introduction

1.1 Overview of the Board

Himachal Pradesh State Pollution Control Board is a nodal agency in the administrative structure of the State Government for planning, coordination, prevention & control of pollution and so also protection of environment in the framework of environmental regulations. The State Board has always endeavoured to strike a rational balance between economic growth and environmental preservation. In the pursuit of attaining the objectives enshrined in the environmental legislations the State Board has followed the principles of sustainable development. Continuous efforts are being made by the board to expand its activities to fulfill the demands of emerging environmental concerns, challenges and new statutes.

It was about three decades now that the foundation of the current direction on Environment Protection was laid and a legislative base initially formed at the national level to protect the environment from the adverse impacts of rapidly expanding industrial society. The legislative & technological bases have substantially expanded in the subsequent period primarily necessitated by the agglomeration and magnification of the problems resultant to the development for outpacing the capabilities to resolve them.

Over these years a continuous effort has been made by the Board to expand its activities to fulfill the demands of emerging ecological concerns, challenges and new statutes. The principal activities undertaken by H.P. State Pollution Control Board consist of prevention & control of pollution, protection of environment, in the framework of following legislations:

- Water (Prevention & Control of Pollution) Act, 1974: The Parliament in the 25th year of the Republic promulgated this legislation in pursuance to Clause-1 of Article 252 of the Constitution of India, with the objective of prevention and control of water pollution and maintenance and restoration of wholesomeness of water. The H.P. State Pollution Control Board was constituted in 1974 under the provisions of this Act.

- Water (Prevention & Control of Pollution) Cess Act, 1977: This Act provides for levy of cess on the water consumed for specific purposes with a view to dissuade wasteful and indiscreet use of water.

- Air (Prevention & Control of Pollution) Act, 1981: On the analogy of the Water (Prevention & Control of Pollution) Act, 1974 the Union Government promulgated another identical legislation which was exclusively meant to deal with the problems of air quality and preservation

and maintenance thereof.

• Environment (Protection) Act, 1986: In order to provide the existing legislation for control of water and air pollution more effectively and to remove the deficiency of these legislations, the Union Government enacted umbrella legislation in 37th Year of Republic. The prime objective of the legislation was to plug the existing statutory gaps whereby tremendous responsibilities by way of functions have been entrusted to the State Board.

Disasters can be categorised as natural, Man-made & environmental disaster, which are basically the products of poverty, over population and environmental degradation. The geo-climatic conditions of Himachal Pradesh induce occurrences of natural calamities like earthquake, landslides, flood, fire, drought, hailstorm, avalanche and lightning are more frequent and intense, bringing misery to the lives of people. Being situated on the Himalayan range, the State has very high vulnerability to Landslides, Earthquakes and Flash floods/cloud bursts. Many-a-time, the state also faces drought due to vagaries of monsoon. This apart, the whole state falls under the seismic vulnerability zone IV & V. Recurrent natural calamities, high altitude areas and tough terrain have been a major stumbling block in the path of the socio-economic development of the State.

1.2 Purpose of the Plan

Main objective of the Disaster Management Plan (DMP) is to reduce the risk level through preparedness at various levels.

1. DMP helps to bring together the information related to equipment, skilled manpower and critical supplies.
2. It helps to know the standard operating procedures of the Board at the time of disaster.
3.To fix the role and responsibility of each and every officer for disaster preparedness.
4. It helps the Board to assess its own capacity in terms of available resources and get ready to mitigate any unexpected disaster effectively and to prevent the loss of human lives and property through preparedness, prevention & mitigation of disasters.
5.To assist the line departments, block administration, communities in developing compatible skills for disaster preparedness and management.
6.To disseminate factual information in a timely, accurate and tactful manner while maintaining necessary confidentiality.
7.To develop immediate and long-term support plans.
8.To have response system in place to face any eventuality.

1.3 Scope of the Plan

In accordance with the Disaster Management Act 2005 and Himachal Pradesh State Disaster Management Plan 2012, the plan must include the following:

- Identify the vulnerability of different parts of the State to different forms of disasters in context of the Board;
- The measures to be adopted for prevention and mitigation of disasters;
- The manner in which the mitigation measures shall be integrated with the development plan and projects;
- The capacity-building and preparedness measures to be taken;
- The roles and responsibilities of different Boards of the Government of the State in responding to any threatening disaster situation or disaster;

1.4 Authorities, Codes, Policies:

Section 40 of the Disaster Management Act 2005 provides that there shall be a Disaster Management Plan for every Board of the State. The Boardal DM Plan shall be prepared by each Board and shall be approved by the State Executive Committee. This plan is prepared under the provisions outlined in the Disaster Management Act 2005.

The following prominent rules and notifications are significant in context to the role and functions of the H.P. State Pollution Control Board:-

1. Manufacture, Storage and Import of Hazardous Chemical Rules, 1989.
2. The Hazardous Waste (Management & Handling) Rules, 1989/2000
3. Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganism, Genetically Engineered Organisms or Cells, 1989.
4. Noise Pollution (Control and Regulation) Rules, 1999.
5. Bio-medical Wastes (Management & Handling) Rules, 1998.
6. Recycled Plastics Manufacture and Usage Rules, 1999/2003.
7. Municipal Solid Wastes (Management & Handling) Rules, 2000.
8. Ozone Depleting Substances (Regulation & Control) Rules, 2000.
9. Batteries (Management & Handling) Rules, 2000.

Other Areas/Acts/Rules Concerning General Public:

The following Rules, which have bearing on, the state of the environment and health of the society are also in existence/enactments. Under these Rules, the H.P. State Environment Protection & Pollution Control Board is not the only agency responsible for the implementation of these Rules but nevertheless these Rules and enactments are of great significance.

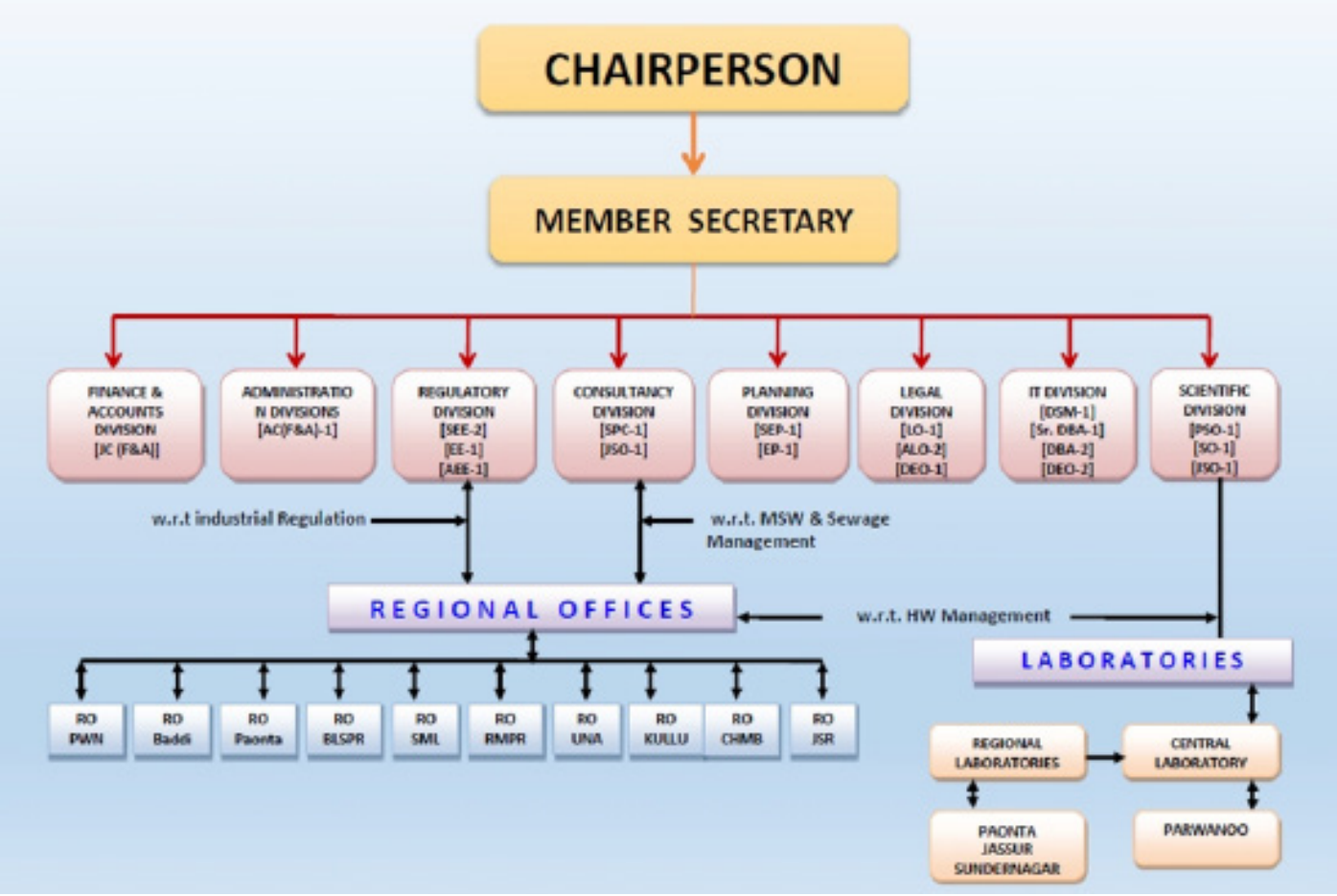
They are as under:

- Public Liability Insurance Act, 1991.
- H.P. Non-Biodegradable Garbage (Control) Act, 1995.
- Motor Vehicle Act, 1988.

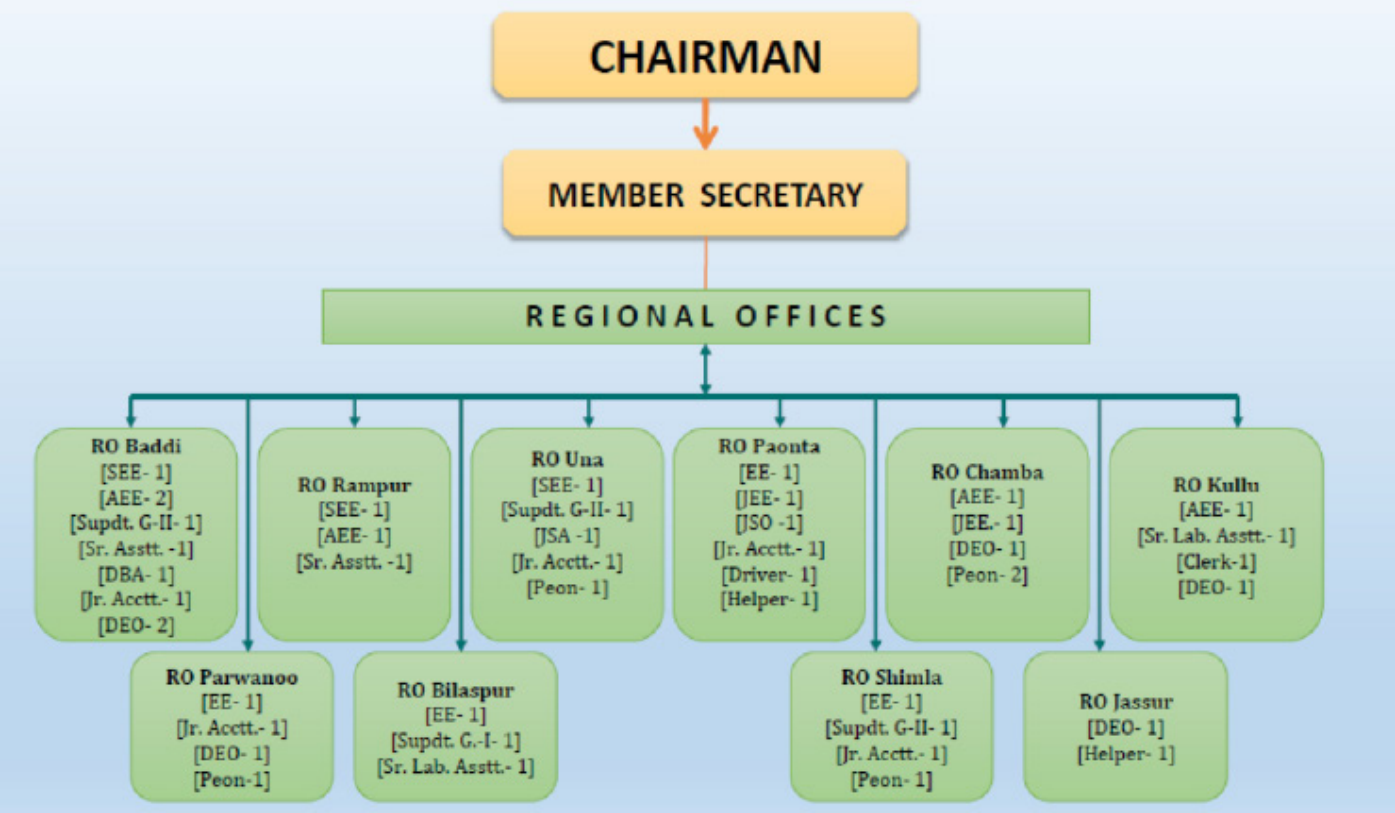
1.5 Institutional arrangements for Disaster Management:

The Himachal Pradesh State Pollution Control Board was constituted in the year 1974 under the provision of Water (Prevention and Control of Pollution) Act, 1974. Subsequently the implementation of the provision contained in Water (Prevention and Control of Pollution) Cess Act, 1977, Air (Prevention and Control of Pollution) Act, 1981 and Environmental Protection Act, 1986 in addition to Rules framed under these Acts were also entrusted to the State Board. The prime objective of all these Acts is maintaining, restoring and preserving the wholesomeness of quality of environment and prevention of hazards to human beings and terrestrial flora and fauna.

Organogram of the HP State Pollution Control Board
At State Level:



Organogram of the HP State Pollution Control Board
At Regional Level:



Infrastructure Available

The State Board has eleven Regional Offices, a Central Laboratory and three Regional Laboratories, which are catering to the diverse requirements in terms of environmental monitoring, surveillance and analysis of complex environmental parameters.

1.6 Plan Management (Monitoring, Review and Revision):

DM Plan is a "Living document" and would require regular improvement and updating. The plan must be updated at least once a year. The Disaster Management plan prepared by the Board shall be circulated to all its district offices. The Plan shall be shared on the Boardal portal. The plan will be updated as and when required and modified plan shall be communicated to the key stake holders.

For the annual review of the disaster management plan participation of different stakeholders will be ensured by inviting them to meetings/workshops. Based on their feedback, necessary changes will be incorporated in the plan.

Dissemination of Plan

The primary responsibility for dissemination of the plan will be with the State Board. HPSPCB would involve HPSDMA for capacity building at different levels for training and dissemination. The Disaster Management Plan will be disseminated at three levels: District authorities, government Boards, NGOs and other agencies and institutions within the State. The content of the plan would be explained through well designed and focussed awareness programmes. The awareness programmes would be prepared in the local language to ensure widespread dissemination up to the school level.

Disaster Management Plan will be uploaded in the Board website. A printed document will be supplied to all the stakeholders. Meetings and seminars will be held to disseminate the Disaster Management Plan.

Chapter-2: Hazard, Risk and Vulnerability Analysis

2.1 Risk Assessment of Himachal Pradesh

The state of Himachal Pradesh is exposed to a range of natural, environmental and man-made hazards. Main hazards consist of earthquakes, landslides, flash floods, snow storms, avalanches, GLOF, droughts, dam failures, fires, forest fire, lightning etc. Enormous economic losses caused due to natural disasters such as earthquakes, floods, landslide, avalanche, etc., erode the development gain and bring back economy a few years ago. Most of the fatalities and economic losses occur due to the poor construction practices, lack of earthquake resistant features of the buildings and low awareness about disasters among people. In order to estimate and quantify risk, it is necessary to carry out the vulnerability assessment of the existing building stocks and lifeline infrastructure.

The entire state is at risk of being affected by a severe seismic event. About 32% of the total geographical area of Himachal Pradesh falls in the very high seismic zone V, while the rest (68%) lies in the high seismic zone IV. Ten out of 12 districts fall in the very high seismic zone. Three districts have over 90% of their geographical area prone to very high seismicity. Two districts have more than 50% of the geographical area with the severest seismic intensity: Chamba (53.2%), and Kullu (53.1%). During 1800–2008, about 70% of earthquakes occurred in three districts, namely, Chamba, Lahul and Spiti, and Kinnaur. Three districts, Solan, Hamirpur and Bilaspur, have less than 1% concentration, whereas in Una district, no earthquake has ever been recorded during this period but that doesn't mean that in future there will be no such events. In recent past the state has been facing mild earthquakes within short span which itself embarks the risk and gives the scope to assess it for mitigation.

The growth of chemical industries has led to an increase in the risk of occurrence of incidents associated with hazardous chemicals (HAZCHEM). A chemical industry that incorporates the best principles of safety can largely prevent such incidents. Common causes for chemical accidents are deficiencies in safety management systems and human errors, or they may occur as a consequence of natural calamities or sabotage activities. Chemical accidents result in fire, explosion and/or toxic release. The nature of chemical agents and their concentration during exposure ultimately decides the toxicity and damaging effects on living organisms in the form of symptoms and signs like irreversible pain, suffering, and death.
Increased industrial activities and the risks associated with HAZCHEM and enhanced vulnerability lead to industrial and chemical accidents. Chemical accidents may originate in the manufacturing or formulation facility, or during the process operations at any stage of the product cycle, material handling, transportation and storage of HAZCHEM.

2.2 Assessment of Sectoral and Departmental Risks

Hazard Specific Role and Responsibility of the Board: Further, the Board is prone to both natural hazards to which the particular area is prone to and human induced hazards like food-adulteration, outbreak of diseases like cholera, malaria, diarrhoea, flue etc. either due to negligence on the part of the functionaries entrusted with the responsibility of ensuring the food management at the school/hostels or as after effect of any disaster.

Earthquakes can cause ground, air, and water pollution, depending on where they strike. The 2008 Sichuan earthquake in China caused additional hardship when factories that collapsed in the quake spread pollution both on the ground and through the air. When large river floods, many pollutants, such as farm waste, detergents, chemicals from processing plants, and fertilizers from crops, are swept downstream and deposited on land. These large deposits pollute drinking water and farmland. In addition, floodwaters deposit sediments, sand and moisture in homes and other buildings. This leads to mold production, and many forms of mold are hazardous to humans.

Contamination of the environment and the drinking water sources with the various chemicals from the demolished and damaged factories cause significant disasters to the public health beside the deterioration of the environment. Also irritating odors and spread of epidemic diseases take place due to the dead bodies which are not buried immediately. Air pollution caused by the fires at the inhabited areas will reach to significant levels by mixing with the toxic and carcinogenic gases emitted from the damaged factories.

Capacity of Board to deal with the identified disasters and gaps therein:

Pollution Control Board needs to ascertain the developing severity of the emergency in accordance with responsive measures by constant monitoring of the environment. If and when an area is fit for entry will depend upon the results of the monitoring. A decontamination operation would be required to be carried out with the help of other agencies and industries.

At the State level - State Disaster Management Authority, Department of Factories & Boilers, Pollution Control Board, Department of Health, Police, Fire, Industry & Commerce, etc. are directly responsible for industrial accident related issues. There is a need to work out better and effective institutional mechanism, coordination and strategies for ensuring synergy in the various activities of different Ministries and organization. A strategic framework is needed especially towards capacity building and integration with holistic environmental risk management within the framework of a multi-hazard risk reduction strategy.

Chapter-3: Risk Prevention and Mitigation

3.1 Risk Prevention

One of the major problems that the world is facing is the environmental pollution. Among these, the appropriate management of the hazardous and special wastes is significantly important especially for the economically developing countries. Another problem that the authorities in the waste management are combating is the wastes of natural disasters such as flooding, earthquake and fire. Lack of the related regulations and necessary systems, experts in the field and ignorance of the authorities make the solution of these problems much more difficult.

At an earthquake, buildings, bridges, dams, factories, chimneys of factories and monuments collapse and the communication and power lines, sewer system and drinking water lines are damaged. These wastes block the roads, so the rescue and first-aid groups, related heavy duty machines cannot reach the disaster areas easily. Also, due to the damage of the communication lines authorities cannot obtain sound information about the extent of the disaster and give necessary orders to the related people because of the damage of the communication lines.

The amount of the demolishing waste depends on the type of the area such as urban or rural area, intensity of the earthquake and the number of demolished buildings and facilities. When the amount of demolishing wastes is estimated, also the amount of the wastes generated during the repair and construction of wastes should be considered. The composition of the wastes is important for the determination of the recycling programs.

The composition of demolishing wastes has been continuously changing due to the developments in the field of the construction materials. They generally contain iron, steel, aluminum, glass, bricks, asphalt, paper, lime, wooden materials and some organics which contain non-hazardous materials. Thus new technologies have been developed to process/recover/recycle these materials after earthquakes.

Air pollution caused by the fires at the inhabited areas will reach to significant levels by mixing with toxic and carcinogenic gases emitted from the damaged factories.

Also irritating odors and spread of epidemic diseases take place due to the dead bodies which are not buried immediately.

Contamination of the environment and the drinking water sources with the various chemicals from the demolished and damaged factories cause significant disasters both for the public health and the deterioration of the environment.

It is important to group the necessary precautions to be taken to minimize the negative impacts and the environmental pollution/public health threats consequences of earthquakes into two groups as “Necessary Preparation Activities to be Realized Before Earthquakes” and “Necessary Activities to be Realized After Earthquakes”. Also “Disaster Management Plan” should be prepared and updated continuously.

3.2 Risk Mitigation

Risk mitigation is reducing the risks of disasters that are already there due to exposure of vulnerabilities to the hazards. Mitigation projects reduce the level of exposures or the depth of vulnerabilities or both through a combination of various structural and non-structural measures.

3.3 Strategies for Risk Prevention and Mitigation

Checklist of Action to be taken by the Board: To deal with the manmade disasters arising out of negligence, poor management etc.

Earthquakes:

Despite the advances made by modem science, the exact time and place where an earthquake may strike cannot be predicted. Hence, the occurrence of an earthquake cannot be prevented. However, there are certain regions that are earthquakes prone and so the administration must work before hand to minimize the damages due to occurrence of earthquakes in such areas. The control and mitigation measures in earthquake prone regions include hazard reduction programmes, development of critical facilities and proper land use planning.

Chapter-4: Disaster Preparedness

4.1 Strategies for Disaster Preparedness

For better supervision, monitoring and preventive measures capacity building programme will be launched for officials working at various levels as per their requirements. Capacity building programmes are categorized into two types. One will be for the managers of Board and the other for teachers. For Managers of the SOMA one day advocacy programme will be organised and for teachers three day training programme will be conducted. Teachers will be trained to make their school/hostels safe by preparing safety plans and practicing mock drills. Managers of Board will facilitate the efforts of risk reduction. Trainings for Capacity building will be conducted at two levels:

State Level Advocacy Programme:

This programme will be for senior functionaries of the Board. State Nodal Officer will organise one day advocacy programme. Director (SC, OBC & MA) will Chair the advocacy programme.

Regional level Capacity Building Programme

A similar capacity building programme will be organised at the regional level to sensitize the field staff working at the cutting edge. In this programme, personnel who have attended the State level programme will facilitate at regional level, the respective DDMAs of the districts can be involved for better conduct of the disaster specific programs. The District Welfare Officer, Tehsil Welfare Officers and other staff/ teachers will be the participant.

4.2 Measures for Disaster Preparedness

In case of any disaster, logistics play a vital role in delivery of services. The provision of following items is prerequisite for safety measures in institutions.

1. Necessary Items: Items in this head include Stretcher, ropes, torch, alternative communication system, Siren, Public addressable system and tents etc.
2. Fixing Non-Structural Elements: It includes fixing of Almirah and other material that can harm during earthquake.
3. IEC material: Pamphlet, brochures or booklets that can be developed to distribute in the Catchment area of the institutions.
4. Competitive Activities: Competitive activities on disaster management among students not

only prepare students but their impact is larger. Teachers have to equip themselves with the latest knowledge to evaluate students. Students also discuss such issues with their parents. Hence, the competitive activities prepare students, teachers and the society.

5. Repair of computer, printer, phone, fax etc: Most of schools/hostels have phones, computers, printers etc. These accessories may be used for warning and information during the period of emergencies. Such equipments need to remain functional.

Some of the key Preparedness Activities to be carried out by Board of HPSPCB:

Recently, the emergency preparedness of environmental disaster has been grown because of the climate change and growth of new technology in industry. The need to reduce the risk of major event of air pollution is of great concern. To ensure the quality of response management and reduce the loss in the air pollution event, it is necessary to design a reliable emergency response system. However, the phenomenon of air pollution is very complicated so it is very difficult to consider all possible factors in one system. A well prepared response management plan should include the prediction and recommendation for the policy makers so as to reduce the possible damage of the disaster. This chapter sets out the method to improve both planning for emergency response of air pollution and recommendations to improve the effectiveness of this system.

The effect of air pollution includes the long-term and short term. Long-term effect of air pollution was controlled by the abatement program of source reduction. However, the short-term episode is more difficult to control because the emergency response is usually very complicated and related to many people in the neighboring area.

The environmental disaster, both from the natural and man-made release, has to be controlled by the well-designed management program. However, the consequence of the disaster was related to so many actions and regulations, therefore it is very difficult to make a quick and correct response measure only by the human. The supplementary system with the aid of computer system become more important in the decision making process.

The decision making system for air pollution management has to consider the appropriate method to avoid the damage from the pollution. Therefore, a complete database includes all the possible reason and consequence results should be included in this system. Beside, the system should be able to deduce the possible consequence and suggest the best choice for the decision makers.

Necessary Precautions to be taken Before Earthquakes

The necessary activities to be realized at the areas which are prompt to the earthquakes are summarized as follows:

• "Disaster Management Plan" should be prepared by public and non-governmental organizations at the nearest town/city. In this management plan, the units, departments, people and the authorities and responsibilities of them should be clearly identified. They should act immediately without waiting any directive during an earthquake.

• In case of the damage/demolishing of the public institutions/buildings, and the disability of the authorities, it should be clearly indicated who will be taking over the authority and responsibility and the place that these services will be conducted.

• In case of the damage of the normal communication lines, it should be clearly identified what will be the "emergency communication systems" and these systems will be prepared and always kept ready for operation in order to be able to get dependable information about the earthquake area and keep people informed about the situation.

• In case of the blockage of the highways/roads, the transportation means of the rescue teams should be determined beforehand. Also, planning of the renovation and opening of the damaged and blocked highways should be made.

• The inventory of the heavy duty machines and how they will be transferred (by highways or airways, etc.) to the earthquake area should be planned.

• In case that the operators of heavy duty machines are injured, the method of appointing/involving other experienced operators should be planned.

• In case of the damage/collapse of the hospitals, health-care institutions and the disability of the related experts/people at these institutions, it should be decided where and who will be giving these treatment services and how the rescued people will be transferred to these areas.

• The responsibilities/services of the non-governmental organizations, means of communication and transfer of them to the affected areas should be planned.

• The awareness and training courses for the local people about how to behave and how to help others should be organized.

• Identification of the temporary houses and how people will be transferred to these houses for people who will lose their houses should be planned.

• Planning of the collection and distribution of the financial aids and donations should be made.

• The experts who will prepare "Earthquake Impact Maps" for the potential earthquake places with respect to the center of the earthquake occurred and the places they will be

working should be identified.

• The places where the dead people will be buried and how the religious ceremonies will be conducted should be planned.

• Most of the time, due to the generation of the huge amount of the earthquake wastes, it is almost impossible to bury them in the existing sanitary landfills. Thus, the means of transportation of these wastes to the temporary storage areas and methods of their treatment (sorting, burying, recycling, recovery) after earthquake should be planned.

• The amount and types of the wastes to be generated during the earthquakes is completely different from the waste generated routinely during the daily life. People will be generally consuming canned/packed food thus generating wastes of tin, aluminium and plastic cans/ bottles.

• Besides, due to the short-cuts of the electricity, the food will easily be spoiled at homes.

• Municipalities cannot accomplish the collection of wastes properly, thus these wastes will cause another source of threat to public health. Therefore people should be informed/trained about keeping this kind of materials at cool places at their homes and burying them in the gardens to convert them into compost.

• The appointed people according to "Disaster Management Plan" should be informed and trained properly.

Chapter-5: Disaster Response and Relief

5.1 Response Plan

Mechanism for Early Warning and Dissemination

After getting warning from State Disaster Management Authority or District Disaster Management Authority, information shall be disseminated to the field by the State/District Incident Response Team. Mass media like TV, Radio, and Press should also be included for awareness.

The State and District Control room will be activated to function round the clock in the affected district. The State IRT shall furnish the status report about the establishment of control room at district level. Deputy Director will be responsible to provide all kinds of support to the control room at district level.

Trigger Mechanism for Response

After issue of early warning, nodal officer of the HPPCB of the vulnerable districts will explain the detailed response plan at district level meeting of District Disaster Management Authority constituted in every district in conformity with GOI guidelines for planning, coordinating and implementing various activities.

Response Plan for Responding Effectively and Promptly

The Deputy Directors of non-affected districts will prepare 3 separate teams of NSS, NCC, Scout and Guide, Rangers and Rovers for deployment to the affected areas on the request of State IRT. The first team will be replaced after specified time say 7 days by second team and so on. All the field staff will be asked to remain at their respective head quarter with necessary preparations as per the standard operating procedure.

The control room will collect, collate and transmit information regarding matters relating to the natural calamities and relief operations undertaken, if any, and for processing and communicating all such data to concerned quarters. The list of volunteers and community resources that are already available should be in readiness to support response measures.

The Control Room shall be manned round the clock during the peak period of disaster till the relief operations are over. For this purpose one officer, one assistant and one peon will be on duty in suitable shifts.

The Officer-In-Charge of the Control Room shall maintain a station diary and such other records as may be prescribed by the Board. The particulars of all the information received and actions taken should be entered in the station diary chronologically.

The Deputy Director shall furnish a daily report to the head of office on the important messages received and actions taken thereon. The head of office shall indicate the particulars to be released for public information.

Appointment of Nodal Officers

Member Secretary will be the nodal officer at state level and will be supported by Controller (Finance) and an Officer on Special Duty. PC Board will serve as a support agency for regulating relief operations with the help of NSS, NCC, Scout and Guide, Rangers and Rovers during the disaster. The Board will also assist the District administration for spreading the information of do's and don'ts to the people of the affected areas.

Roles and responsibilities of the nodal officers

Roles and responsibilities of the nodal offices are as under:-

1. Act as the focal point for disaster management activities of the Board. The Board may ensure that he/she has the mandate to work immediately without waiting for directions from the higher authorities. This will save time.
2. Provide his/ her contact and alternate contact details to SDMA/DDMA and Revenue Board, State and District Emergency Operation Centre, all line Boards and agencies.
3. Accountable to any communication/actions related to disaster management of the Board.
4. Take lead to prepare the Board disaster management plan, Emergency Support Function (ESF) plan and Standard Operating Procedure (SOP).
5. Constitute the Incident Response Team (IRT) in the Board as per the need and organize training for members.
6. Help the Board to procure the equipments necessary for search and rescue, first aid kits and disburse the same to IRTs and for the Board if required.
7. Provide regular information on disaster or task assigned to him to SEOC/ Revenue Board during and after disasters in consultation with the Board head.
8. Attend Disaster management meeting, trainings, workshops or any related programme on behalf of the Board.
9. Identify an alternate nodal officer and build his/her capacity.
10. As per the need of the Board, set up control room and assign other official (s) for control room duty.
11. Identification and staffs for deployment on site operation centers (on site control room during a disaster)
12. In consultation with the Board, make arrangement of alternative communication system for the Board.
13. Mobilise resources for disaster response activities as per the resource inventory put in the Board DM Plan if it is needed by the Board or other line Boards.
14. Organise regular awareness programmes in the Board.

15. Organise the periodic mock drills at least twice a year as per the suitability of the Board and update the plans at all levels and ensure participation of the Board in mock drills of other agencies and other Boards.

16. To have liaison with other Boards and functionaries working in the field of DM.

Activities to be conducted After the Earthquake

One of the most important activities to be conducted after the earthquake is to construct homes for the people who have lost their houses. New job opportunities should be developed for those who have lost their jobs. Psychological therapy sessions should be arranged for people especially for children.
The activities related to the environmental pollution and the removal/disposal of the wastes properly are summarized below.

- The wastes accumulated at the temporary storage areas should be sorted and transported to the final treatment/disposal areas without causing soil pollution.
- Recycling/recovery of wastes are much more economic than burying them in sanitary landfills. The economy of this process depends on many factors such as applied solid waste management policies in the country, contract specifications, applied recycling/recovery projects. Recycling/recovery processes involve sorting and treatment of these wastes according to the demand of the market. There are some companies establishing recycling/recovery plants with capacity of 500-1500 tons per day at economically developing countries.
- The construction and demolishing wastes are generally used as concrete aggregates due to the lack of sufficient land area for the storage of these wastes and the diminishing of the natural aggregate sources.
- The wooden materials in the construction and demolishing wastes should be used in the adjustment of the parks, animal beds, and for burning as fuels in boilers and stoves. The asphalt wastes generated from the demolishing of roofs of buildings should be used in filling the holes.
- The plastic construction materials in the wastes should be recovered to be used as construction materials and aggregates. The tires mixed with cement can be used in the repair of roads, filling holes around bridges and construction of retaining walls and foundations.
- Special care should be taken in the usage of special materials such as asbestos generated from the demolished buildings. Asbestos should be mixed with glass and heated to be encapsulated in the glass. The obtained glass blocks can be used for different purposes.

Recovery planning: Management of Construction and Demolishing Wastes

Planning of the management of the construction and demolishing wastes covers applied technology, recycling/recovery centers and economic aspects. The specifications about them are summarized in the following sections.

Technology

The amount and composition and the amount of various components of the wastes to be recovered should be determined for the selection of the recycling/recovery technology. Also, collection, sorting, processing and identification of required machines, market potential and demand and meeting quality requirements are very important.

Although the amount and the components of the demolishing wastes can be determined from the plans/projects of the demolished plans, it is very difficult to accomplish it. According to the type of the waste, the appropriateness of the recycling center for recycling/recovery of waste to the product according to the market demand and packaging and putting them into the market should be determined. Since the sorting and processing of wastes most of the time cannot be accomplished at the site that waste are generated, transportation methods of these wastes should also be planned.

Recycling Centers

The recycling centers should be operated in coordination with the local waste management authorities, construction sector and environmental management authorities. The economic benefits of recycling/recovery of these wastes should be explained to local authorities.

The authorities should be convinced about the extension of the life-time of sanitary landfills, decrease in the expenses of disposal of wastes, and the decrease of the expenses of the construction of buildings by the usage of recovered construction material.

The public and private authorities should be informed about the results obtained, benefits and financial gains by the application of the recycled/recovered material in the construction sector.

Economic Aspects

The initial investment and operation expenses should be considered when the recycling/recovery programs are planned. The repair of the damaged buildings as well as the construction of new buildings should also be included within the scope of this plan.

The moral and material losses at the natural disasters such as natural fire, flooding, earthquake, etc. are too severe and some of them cannot be recovered. Thus, in order to minimize the effects of these disasters both on local people, the economy of the country and the environment, the precautions and activities summarized at the manuscript should be conducted and the management plans should be prepared and updated continuously.

Chapter-6: Financial Arrangements

Section 40(2) of the Disaster Management Act stipulates that every department of the State, while preparing the DM Plan, shall make provisions for financing the activities proposed therein. Normally the funds required for risk assessment and disaster preparedness must be provided in the budgets of every concerned Board. Such funds are not very sizeable and HPPCB will allocate such funds within their normal budgetary allocations from coming budget year for risk assessment and preparedness.

HPPCB should make financial allocations in preparing and executing the disaster management plan. The Director (Finance) should plan for the following:

- Funds for Prevention and Mitigation Activities
- Funds for Preparedness and Training Activities
- Funds for Response Activities (including pre-authorization to draw money from treasury in the event of an immediate emergency)
- Funds for Disaster Risk Insurance
- Funds to strengthen and trainings of Disaster Recovery Planning cell/DM cell