Training programs on
Chemical & Industrial Disaster Risk Management (CIDRM)

INTRODUCTION

In recent decades, India has developed as a key global player in industrial and technology sector. Rapid Industrialization of chemical industries of a wider range - manufacturing & formulation, petro-chemicals, pharmaceuticals, agro-chemicals-fertilizers, pesticides, industrial chemicals, and facilities that store hazardous chemicals – oil depots, exploration/mining and beneficiation sites, ports, docks, treatment plants, power, etc. has brought within its wake several problems. One such is industrial accidents. With rapid advances in technology, industrial processes, newer types of dangers to life, limb and health are being increasingly introduced. Sometimes it leads to a great threat to the local community and even damages the environment. Unlike disasters due to natural hazards like cyclone, flood, tsunami; chemical and industrial disasters are non-inevitable.

Chemical being at the core of modern industrial and production systems, the risk of accidents involving chemicals has attained a very serious concern for disaster management within the government, corporate sector and the community at large. Major chemical (industrial) disasters are low in frequency but are significant in terms of potential loss of lives, environmental impacts, property damage and socio-economic implications. Increase in size of plants, storage and carriers specially in densely populous areas has posed the greater risk and vulnerability for such disaster likeliness. One such example of chemical disaster is Bhopal gas tragedy.

CHEMICAL AND INDUSTRIAL PROFILE OF GUJARAT

Gujarat, as one of the most industrialized states in the country, is home to a high number of hazardous chemical industries. A stretch of 400 kilometers from Ahmedabad to Vapi is known as the 'Golden Corridor'. The growth of chemical industries has led to an increase in the risk of occurrence of incidents associated with hazardous chemicals (HAZCHEM). In addition to the chemical and industrial hazards posed due to such heavy industrialization. In Gujarat state, Director Industrial Safety and Health (DISH) has identified 10,584 as "Hazardous factories" and 570 as Major Accident Hazard (MAH) Unit out of 43,271 registered factories across the state. These hazardous factories are also categorized on the basis of chemical sub Type A, Type B, Type C and 2cb (Section 2(cb) in The Factories Act, 1948, which involves hazardous process) along with MAH. Units where chemical quantities handled are below the threshold quantity for MAH units as mentioned above are known to be Type

'A' industries. Those handling of hazardous solvents and highly inflammable liquids are known to be Type 'B' industries, and much less hazardous industries are known as 'Type C'. Such extensive Chemical & Industrial Profile exposed to more risk and increases the vulnerability of the state.

Gujarat is also vulnerable to natural hazards such as cyclones, earthquakes, flooding, tsunamis, and storm surges, and vulnerability due to Chemical and Industrial Existence may create cascading effect and NATECH (Natural Hazards Triggering Technological Disasters) may emerge. Hence, addressing gaps and preparing for future risks is the need of the hour. Although, industries do have Emergency on-site and off-site plans, which primarily works industry specific and follows Factory related acts and rules. But, Disaster Management Act, 2005 provides more power to authorities and comprehensively seen as Umbrella for other industry related acts and rules.

NEED OF THE CIDRM

The Bhopal Gas disaster brought in a global awareness on the importance of preventing chemical disasters and the damage to environment and health. The realization that a lapse in safety and environmental aspects of economic development can have grave consequence in terms of toll of life, besides serious and long-term damage to natural resources, health, social harmony and peace, and can diminish the social image of the corporate units. Public outcries and litigations relating to the chemical disasters have brought in the serious concern for maintaining faith in the civil governance as well.

A global initiative of the chemical industry known as 'Responsible Care' has also drove in the concept of 'safety circle' in Indian industry as well and the prescriptions of safety audit, safety review and safety surveillance. Risk assessment and disaster management planning for chemical hazards were although brought in the practice in chemical industry during late 1980s, its implementation remained focused to large industrial units. The concept of incident control system for chemical/industrial emergencies was mooted worldwide during 1990s. Environmental legislations as well as Disaster Management Act has adhered the responsibility of planning for disaster management. At the state level – State Disaster Management Authority, Department of Factories and Boilers/Industrial Health and Safety, Labour, Department of Health, Environment, Pollution Control, Labour, Police, Fire, Industry & Commerce, etc. are directly responsible for disaster response. Various departments and stakeholders envisaged with different roles and responsibilities during different stages of chemical disaster risk management need to be put-in appropriate integration along the holistic disaster management framework. However, human errors – operational dimensions,

and availability of relevant information during various phases of disaster management have emerged as critical areas of concern. Proper decisions starting from site selection, public participation in clearance, industrial layout planning, disaster mitigation measures, on-site and off-site emergency coordination planning play key roles in furthering the objectives of a comprehensive framework of disaster management at local and district level.

To avoid disasters one need have deepen understanding of existing and future risks, which can be mitigated through adequate measures. Capacity building is at the core when it comes to Disaster Risk Management. The calculus of industrial hazard is a blend of industrial systems, people and environments that include geological, atmospheric, ecological, psychological and social component. It is, therefore, required to develop a strategic framework especially towards capacity building and integration with holistic environmental risk management within the broader system of multi-hazard risk reduction and mitigation.

ACTION PLAN

In the state of Gujarat, there are different industrial associations as well as allied forums presently existing, along with number of Special Economic Zones (SEZs), Special Investment Region (SIR), Ports, GIDC Estates etc. Each of them has to be empowered with the knowledge of Disaster Risk Management and GIDM may play very vital role in it. Director Industrial Safety and Health (DISH) has identified **10,584 as "Hazardous factories**" and **570 as Major Accident Hazard (MAH)** Unit out of **43,271 registered factories** across the state, which are exposed to disaster risks. Additionally, we have identified the hazardous factories in each district with categorization of Type A, Type B, Type C, 2bc, and MAH.

With the enactment of the Disaster Management Act 2005 there is a paradigm shift in approach to disaster management from post-disaster relief and rehabilitation to pre-disaster prevention and preparedness. However, there is a visible gap in understanding and coordination among various agencies and disaster prevention-mitigation and disaster response related organizations in the context of industrial (chemical) disasters.

Since, we are able to identify the need of the CIDRM across the state, a systematic and holistic approach to cater the desired need may reduce the existing gaps. Government-industry-community interface plays major role in off-site risk management and in responses during emergencies. Industries mostly works in a secluded way, few of them may have updated technologies for identifying and mitigating the risks, but it need to be shared with others for effectiveness of those

technologies. A good mixture of Science, Engineering, Technology & Innovation (SETI) for Disaster Risk Reduction may play vital role in the CIDRM field of Gujarat.

Considering this, Gujarat Institute of Disaster Management (GIDM) is planning to organize series of training programs on Chemical Industrial Disaster Risk Management (CIDRM) targeting First Responders, Safety Officers, Health & Safety Executive (HSE), and all the concerned stakeholders related to safety of the industries.

The program is designed in a such a way that, it will help to understand the participant's concepts of Disaster Risk Management and the need of addressing risks posed by the chemicals & industries to the state.

The said program is aligned with Prime Minister's 10 Point Agendas for Disaster Risk Reduction. It addresses the agenda 1, 2, 5, 8 and 9. It also incorporates Sendai Framework for Disaster Risk Reduction's (SFDRR) priorities and its targets. The programs may also help in taking a step towards achieving Sustainable Development Goal 4, which talks about innovations within industries and Goal 17, partnerships for the goals.

AIM

The Aim of the training program is to update the knowledge and skills of the participants on multi-dimensional aspects of chemical disaster risk management.

OBJECTIVES

1. To have an overview of Disaster Risk Management and get an understanding on Hazard, Vulnerability and Risk Assessment of Gujarat State
2. To state various legal/regulatory framework, provisions, guidelines and institutional arrangements for concerning activities
3. To develop in-depth knowledge of Chemical and Industrial Disaster Risk Management (CIDRM) at industrial level
4. To identify existing OSH measures taken plan taken within the industries and to get an understanding of effectiveness of on-site and off-site across the industries
5. To enumerate and discuss various tools. Technologies, and methods in CIDRM
6. To describe preparedness for chemical emergencies and response of various services in chemical industrial disasters
7. To discuss ways to enhance the existing system and identify new technologies and Innovations that can be useful within the industries

METHODOLOGY

- Power Point Presentation
- Language to be used: Hindi/Gujarati
- Question/ Answer
- Discussion and experience sharing
- Reading material (Soft Copy only)
- Presentations (Soft Copy only)
- Flip chart

EXPECTED PARTICIPANTS

Sr. No.	Name of Departments/Authorities/ Boards/Corporations	Officials
1	Directorate of Industrial Safety & Health (DISH), Ahmedabad	Officers
2	Gujarat Industrial Development Corporation (GIDC)	Officers
3	District Crisis Management Group, Local Crisis Management Group	Members
4	Petroleum and Explosives Safety Organization (PESCO)	Officers
5	Petroleum and Natural Gas Regulatory Board (PNGRB)	Officers
6	Chief Electrical Inspector (CEI)	Officers
7	Industries Associations	Representatives
8	Public Sector Units (GoI & GoG)	Officers
9	Private Industries	Officers