



gtz inWent
Capacity Building
International, Germany



Training program on
*“Chemical Emergency Planning, Preparedness
and Response”*

Jointly organized by

Director, Industrial Safety & Health, Gujarat State & National
Safety Council-Gujarat Chapter

Supported by:

InWEnt India, New Delhi & Disaster Management Institute,
Bhopal

*on 20th & 21st September 2010, at Shalimar Hotel,
Ankleshwar (Gujarat)*



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1. Executive Summary

Title	Training programme on ‘ Chemical Emergency Planning, Preparedness and Response ’.
Short title	‘Chemical Emergency Planning, Preparedness and Response’.
Thrust group	<p>Senior and middle level officers from following target groups:</p> <p>(i) Regulators : Chief Inspectorate of Factories & Boilers, State Pollution Control Boards, Directorate General, Factory Advice Service and Labour Institute (DGFASLI), Chief Controller of Explosives, Central Pollution Control Board and Ministry of Environment and Forests.</p> <p>(ii) Industries: MAH units (From public and private sectors) covering Refineries and Oil sector (public & private), Metallurgical (ferrous and non-ferrous), Pesticides and Fertilizers, Pharmaceuticals, Paper and Pulp and other related chemical sectors industries.</p> <p>(iii) Administration: State, District & Local Crisis Groups from various regions, States Industrial Development Corporations, etc.</p>
Training Provider	DMI (Bhopal), InWent (New Delhi), Director Industrial Safety & Health, National Safety Council-Gujarat Chapter, and Gujarat State govt.
Institute Involved	DMI, InWent (New Delhi), Govt. of Gujarat, National Safety Council-Gujarat Chapter.
Workshop objectives	A series of lectures were delivered by the expertise on chemical disaster risk management, health and safety.

	<p>Through this workshop the following objectives were aimed to be achieved-</p> <ul style="list-style-type: none"> • Promotion of capacity building. • Increase in MAH industries. • To summarize the techniques for Chemical Process Risk Assessment and Management including models for consequence analysis, frequency estimation, etc. • To address the importance of Accident investigation and root cause analysis. • Decrease in fatal accidents. • Implementation and monitoring of on-site and off-site plans. • Encouraging joint collaboration of Traffic police.
<p>Achieved/Expected Result</p>	<p>Now the target group is available to:</p> <ul style="list-style-type: none"> • Modify theories and models of the chemical disaster and management. • Communicate the risk and the benefits of the social safety. • Encourage best practice. <p>The participants recommended that such work shop should be done often to revise the rules and regulations.</p>
<p>Description of contents/agenda</p>	<ul style="list-style-type: none"> • Registration • Welcome address by Vice-Chairman of the National Safety Council-Gujarat Chapter • Address by Director, Industrial Safety & Health, Gujarat State regarding present scenario of accidents & emergency planning and preparedness of factories as well as districts and states. • Dr. Rakesh Dubey, Director, DMI Bhopal, narrated the importance of this training program in his thematic address. • Dr. K. U. Mistry, Chairman of the Inaugural

session & Chairman GPCB, narrated that identification of hazardous industries and emergency planning was done first in the country by the State of Gujarat.

- Presentation on ‘European best practice in the area of chemical/industrial disaster risk management’ by Dr. Christian Jochum - Director of Centre, European Process Safety Centre and Chairman, German Commission on Process Safety.
- Dr. K. U. Mistry, Chairman of the Inaugural session & Chairman, GPCB narrated about the necessity of latest statutes including amendments covering Disaster Management.
- Presentation was made on Hazard Assessment & Risk Management Techniques for Industries, by Mr. Vijay Asar, Chief Coordinating Officer, Disaster Prevention & Management Center, Ankleshwar, Gujarat.
- Presentation was made on “On-site and off-site emergency plans” by Mr. H. Shrinivasaiah, Director of Factories & Boilers, Karnataka.
- Presentation was made on “National Action Plan for Chemical (Industrial) Disaster Management” (NAP-CIDM) by Dr. Rakesh Dubey, Director, Disaster Management Institute, Bhopal, Member Secretary (NAP-CIDM).
- Presentation was made on “European best practice in the area of chemical/industrial disaster risk management” by Dr. Christian Jochum - Director of Centre, European Process Safety Centre and Chairman German Commission on Process Safety.
- Presentation was made on “Community Awareness & Involvement in Disaster Management” by Mr. H. N. Sorathia, Retd. Head of Safety, (RIL, Vadodara) & Chief Officer, CCR, Vadodara.

	<ul style="list-style-type: none"> • Presentation was made on “Application of www.hrdp-idrm.in in the chemical/industrial disaster risk management, High Hazard Industries vis-à-vis Major Emergencies” by Dr. Florian B-Lux, Sr. Advisor, InWEnt, Nuremberg, Germany. • Presentation was made on “High Hazard Industries vis-à-vis Major Emergencies” by Mr. V. C. Bhatt, Chief Manager, GNFC, Bharuch. • Presentation was made on Presentation was made on “Lessons learned from World Big industrial Disaster” Dr. Christian Jochum - Director of Centre, European Process Safety Centre and Chairman, German Commission on Process Safety. • Open discussion for questions and answers. • Concluding sessions.
<p>Resource persons/ speakers</p>	<ul style="list-style-type: none"> • Dr. Rakesh Dubey, Director DMI, Bhopal • Dr. Christian Jochum, Director of Centre, European Process Safety Centre and Chairman, German Commission on Process Safety • Dr. K. U. Mistry, Chairman GPCB, Gujarat State • Mr. Vijay Asar Chief Coordinating Officer DPMC, Ankleshwar • Mr. V. C. Bhatt, Chief Manager, GNFC, Bharuch • Mr. H. M. Sorathia, Retd. Head of Safety (RIL, Vadodara) & Chief Officer, CCR, Vadodara • Dr Florian B-Lux, Sr. Advisor, InWEnt, Nuremberg, Germany • Mr. KNK Murthy, Retd. Sr. Manager (safety), IPCL, Vadodara • Mr.D.C. Chaudhary, Director, Industrial



	Safety & Health, Gujarat State
Participants number	More than 119
Start dd/mm/yy	20/09/2010
End dd/mm/yy	21/09/ 2010
Duration	2 Days
Contact persons	<ul style="list-style-type: none">• Mr.D.C.Chaudhary- ISH, Gujarat• Dr. Rakesh Dubey –DMI, Bhopal• Dr. Sandhya Chaterjee – InWent, Delhi



2. Programme Schedule

Date: 20/09/2010		
Time	Topics	Faculty
0930-1000 hrs.	Registration	
1000-11:00 hrs.	Inauguration	
11.00 – 11.45hrs	National Action Plan for Chemical (Industrial) Disaster Management (NAP-CIDM)	Dr. Rakesh Dubey, Director, Disaster Management Institute, Bhopal Member Secretary (NAP-CIDM)
11.45 – 12.45hrs	European best practice in the area of chemical/industrial disaster risk management	Dr. Christian Jochum - Director of Centre, European Process Safety Centre and Chairman, German Commission on Process Safety
12.45– 13.30hrs.	Appraisal on Latest Statutes including Amendments covering Disaster Management	Dr. K. U. Mistry, Chairman GPCB, Gujarat State
13.30–13.45hrs.	Lunch	
13.45–14.45 hrs	Hazard Assessment & Risk Management Techniques for Industries.	Mr. Vijay Asar Chief Coordinating Officer DPMC, Ankleshwar
14.45-15.45 hrs.	High Hazard Industries vis-à-vis Major Emergencies	Mr. V. C. Bhatt Chief Manager GNFC, Bharuch
15.45–16.00 hrs	Tea	
10.00-11.00 hrs.	Community Awareness & Involvement in Disaster Management.	Mr. H.M. Sorathia, Retd. Head of Safety (RIL, Vadodara) & Chief Officer, CCR, Vadodara
Date: 21/09/2010		
10.00-11.00 hrs.	Application of www.hrdp-idrm.in in the chemical/industrial disaster risk management	Dr. Florian B-Lux, Sr. Advisor, InWent, Nuremberg, Germany
11.00-12.00 hrs.	Lessons learned from World Big Industrial Disaster	Dr. Christian Jochum - Director of Centre, European Process Safety



		Centre and Chairman, German Commission on Process Safety
12.00-13.00 hrs.	On-site and off-site emergency plans	Mr. KNK Murthy Rt. Sr. Manager (safety), IPCL, Vadodara
13.00-14.00 hrs	Lunch	
14.00-15.00 hrs	Open Discussion for questions and answers	Dr. Christian Jochum - Director of Centre, European Process Safety Centre and Chairman, German Commission on Process Safety
15.00-15.15 hrs	Concluding sessions and tea	

2.1 Theme of the Workshop

Disaster management Institute(DMI), Bhopal, in coordination with InWent, gtz-ASEM, under the Indo-German bilateral cooperation on Industrial Disaster Risk Management (iDRM) and Govt. of Gujarat organized two days training cum awareness programme with the objective of disaster risk reduction in the area of industrial (chemical) disaster.

The prime objectives of conducting the programme were to:-

- Improve the awareness in area of industrial disaster risk management with all stake holders.
- On-site and off-site emergency planning development to reduce the vulnerable of the industries and society respectively.
- Promoting the civil administration, industries and community to develop a disaster resilient society jointly by establishing the dialogue.
- Concept development of hazards identification and risk assessment (HIRA) and its application in overall emergency development.
- Make aware of iDRM web platform www.hrdp-idrm.in and make the wider utility by involving the various stake holders to it.
- To understand the demarcation of pollution and disaster.
- Implementation iDRM project operation plan, approved by MoEF.
- The need to share experiences in HIRA, off-Site and On-Site plans to get a common understanding and getting ideas about increasing overall emergency.



- To discuss about the possibilities of including of Civil Defense, Medical preparedness, fire fighting effectively in iDRM.
- To identify the existing and relevant databases, review documents and assessment process and provide direct to the knowledge amongst various stake holders.

3. Programme Details

The programme was held at Ankleshwar (Gujarat) on 20th & 21st of September 2010. The participants assembled on the registration counter at 9.30am.

3.1 Inauguration-

The programme started with a prayer to almighty to give us the strength to face all the eventualities as a part of this training should be meaningful for 2 days.

Mr. D.C. Chaudhary, Director Industrial Safety and Health, Gujarat State stressed on MAH and this concept was unknown till Bhopal Gas Disaster. In Gujarat state many awareness training programmes are conducted frequently. Director, Industrial Safety & Health has identified chemical factories (which are not M.A.H.) in Class A, B, and C considering their hazard potential and according to their rules they are inspected thrice a year. During last 5 years (2005-2009), even though the number of registered factories has increased to 16% and employment of workers has increased to 30% where as fatal and non-fatal accidents have decreased to 19.25% and 25% respectively.

3.2 Presentations-

The honorable chief guest Dr. K.U. Mistry, Chairman, Gujarat State Pollution Control Board, focused on the creditable work done in his state. He said still many work has to be done in future and these type of work shops helps in revising the rules and regulations in the state.

Dr. Christian Jochum, Director of centre, European Process Safety Central and Chairman German Commission on Process Safety focused European best practice in the area of chemical/ industrial risk management.

He said that they strongly believe that accidents are not “act of God” this is man made and can be avoided. He made two presentations.



Dr Florian B-Lux, Sr Advisor InWEnt did a wonderful presentation on the application and the detail feature of www.hrdp-idrm.in web platform to the participants.

Mr. H. Shrinivasaiah Director of factories & boilers, Karnataka gave a line to think that remove the risk before they will remove any of us. He shared the good practices done in Germany to learn good practices and avoid accidents.

Mr. Vijay Asar, Chief Coordinating Officer DPMC, Ankleshwar focused on Hazard Assessment & Risk Management Techniques for Industries.

Mr. V. C. Bhatt Chief Manager GNFC, Bharuch, highlighted High Hazard Industries vis-à-vis Major Emergencies.

Mr. KNK Murthy Retd. Sr. Manager (safety), IPCL, Vadodara, On-site and off-site emergency plans.

Mr. H. N. Sorathia At present, working as Safety consultant associated with Gujarat Safety Council, Baroda Productivity Council, Trivedi & Associates, MGLI etc.

All presentations are available on the www.hrdp-idrm.in for reference.

4. Participant Details

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5. Evaluation of the workshop

Consolidated Summary Sheet for Participant - Evaluation of the Workshop - CSPT Overall Summary

Meeting / Symposia / Conference / Dialogue event - Title	0
Code	0
Training Institution	0
Duration	from 00/01/1900 to 1/0/1900

Overall training course and objectives (Q: 9-1, 9-2, 6-1)

Number of questions (3) where response rounded average is equal to					Evaluation Index (EI)*	Rating**
1	2	3	4	5		
1	2	0	0	0	2.5	very successful
Objectives:						
6-1-1	enter text					
6-1-2	enter text					



6-1-3	enter text
6-1-4	enter text
Remarks	
9-3	I liked especially:
9-4	I disliked especially:
9-5	What kind of awareness did you receive through this event?

Organisation and venue					(Q: 7-1 to 7-10)	
Number of questions (10) where response rounded average is equal to					Evaluation Index (EI)*	Rating**
1	2	3	4	5		
0	10	0	0	0	7.5	very good

Analysis & conclusions by participants	
Follow-up	
8-1	Which follow-up activities would you recommend? (e.g. further specialist events, e-Learning courses, etc.)
8-2	Further comments and suggestions for improvements suggestions for improvement:



The moderator/facilitator and methods					(Q: 4-1 to 4-4)	
Number of questions (4) where response rounded average is equal to					Evaluation Index (EI)*	Rating**
1	2	3	4	5		
0	4	0	0	0	3	very good
Remarks						

Participants - How do you assess					(Q: 3-1 to 3-5)	
Number of questions (5) where response rounded average is equal to					Evaluation Index (EI)*	Rating**
1	2	3	4	5		
0	5	0	0	0	3.75	very good
Remarks						

Relevance and impact of the work					(Q: 2-1 to 2-2)	
Number of questions (2) where response rounded average is equal to					Evaluation Index (EI)*	Rating**
1	2	3	4	5		
2	0	0	0	0	2	excellent
Remarks						
Please name topics that were not covered but would have been important for your work!						
or						
Please name topics that were not on the agenda but would have been relevant to achieve event's objectives.						
2-2-1	If you can't pass your new expertise to colleagues, please give the reason					

Explanations of the evaluation process	
The Evaluation Index is calculated by giving a weight to each frequency of answer scores (rounded from values between 1 and 5) FRAAS.	
* Relative weight of mode for Evaluation Index (EI) calculations:	

Average rounded	weight	<p>The Evaluation Index is the sum of weighted frequencies of the answer scores (rounded from values between 1 and 5): ("FRAAS =1" *1)+("FRAAS =2"*0,75)+("FRAAS =3"*0,5)+("FRAAS =4"*0,25)+("FRAAS =5"*0)</p> <p>frequency of rounded average answer score = FRAAS</p> <p>These weights will automatically be applied in the analysis</p>
1	1.00	
2	0.75	
3	0.50	
4	0.25	
5	0.00	

For each category of questions, the intervals of the Evaluation Index are translated into the following verbal values. The intervals depend on the number of questions in the category.
 The ranges and verbal values for each category of questions:

Overall training course and objectives (Q: 9-1, 9-2, 6-1)

Range of EI-scores	Rating**	3 Questions
2,4 - 3 (>80%)	very successful	
1,5 to 2,3 (>50%)	successful	
1,4 or below (<50%)	unsuccessful	

Organisation and venue (Q: 7-1 to 7-10)

Range of EI-scores	Rating	10 Questions
9 - 10 (90%)	excellent	
7 - 8,9 (70%)	very good	
5 - 6,9 (50%)	good	
below 5	poor	

The moderator/facilitator and methods (Q: 4-1 to 4-4)

Range of EI-scores	Rating	4 Questions
3,6 - 4 (90%)	excellent	
2,8 - 3,5 (70%)	very good	
1,6 - 2,7 (40%)	good	
below 1,6	poor	

Participants - How do you assess (Q: 3-1 to 3-5)

Range of EI-scores	Rating	5 Questions
4,4 - 5 (90%)	excellent	
3,4 - 4,4 (70%)	very good	
2 - 3,4 (40%)	good	
below 2	poor	

Relevance and impact of the work (Q: 2-1 to 2-2)

Range of EI-scores	Rating	2 Questions
1,8 - 2 (90%)	excellent	
1,4 - 1,7 (70%)	very good	

1 - 1,3 (50%)	good
below 1	poor

6. Conclusion & recommendations....

- All agreed that the broad framework of Hazard Identification and Risk Assessment (HIRA) in Chemical Process Industries should be apply in emergency response mechanism.
- Programmes on the techniques and application of consequence analysis, frequency estimation, etc should be thought.
- Further capabilities development is required to the CIF office for the evaluation of effectiveness of On-site and Off-site Emergency Management Planning.
- To address the importance of Accident investigation and root cause analysis some training programmes should be organised.