

GOVT. OF MAHARASHTRA

Off Site Disaster Management Plan for Buldhana District

**Office of Joint Director,
Industrial Safety & Health, Akola**





August-2016

PREFACE

In the recent past, we have experienced Industrial Disasters of serious nature. One of which is Bopal tragedy, one cannot forget. The outcome of such disasters resulted in tremendous increase in awareness of people all over the world. Governments of various countries world-wide have taken prompt action in preventing such Disasters & formalising mitigation activities in case of eventualities. Various groups, institutions, authorities are constantly working / updating such action plans.

Under the leadership of District Collector Mr. Vijay Zade & Technical guidance of Mr. R V Giri Jt. Director DISH, this Disaster Control plan is prepared.

The objective of this plan is to increase awareness of Industry Management in view of mitigating the eventualities & to provide them necessary information with regard to resources available in the District. This plan deals with Industrial Disasters only.

In the year 1989, Central Govt. enforced the rules “Environment Protection Act” known as Manufacture, Storage & Import of Hazardous Chemicals Rules 1989. Under the said rules statutory provisions were laid down for preparation of On-site Emergency Management Plan by the occupiers of the Major Accident Hazard factories & Off-site Disaster Control Plan by the District Collector / District Emergency Authority designated by State Govt.

The Central Govt. subsequently gazetted additional rules in August 1996 making additional provisions with regard to Emergency Planning Preparedness & Response for chemical accidents. These rules are known as “Chemical Accidents” (Emergency Planning, Preparedness & Response) Rules 1996. Under these rules Central / State / District / Local crises groups are required to be constituted. The District crises group has to assist in the preparation of the District Off- Site Disaster Control Plan. This off-site Disaster Control Plan is prepared taking into consideration aforesaid legal requirement.

13/04/2018

Dr. Chandrakant Pulkundwar
District Magistrate
Chairman, Disaster Control Plan
Committee

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1. ABBREVIATIONS

ACP	:	Assistant Commissioner of Police
BLEVE	:	Boiling Liquid Expanding Vapour Explosion
CPCB	:	Central Pollution Control Board
CCE	:	Chief Controller of Explosive
CCG	:	Central Crisis Group
CETP	:	Common Effluent Treatment Plan
CIDCO	:	City & Industrial Development Corporation
CFO	:	Chief Fire Officer
CMG	:	Crisis Management Group
CMO	:	Chief Medical Officer
DCG	:	District Crisis Group
DCP	:	Deputy Commissioner Of Police
DIO	:	District Information Officer
DISH	:	Directorate of Industrial Safety & Health
DGFASLI	:	Director General of Factory Advice Service & Labour Institute
DGP	:	Director General of Police
DIGP	:	Deputy Inspector General of Police
EP Act	:	Environment Protection Act
ER	:	Emergency Response
EPPR	:	Emergency Preparedness & Planning Rules
ECC	:	Emergency Control Centre
EOC	:	Emergency Operating Centre
F & ERS	:	Fire & Emergency Response Station
FDA	:	Food & Drug Administration
HSD	:	High Speed Diesel
HAZMAT	:	Hazardous Material
IDLH	:	Immediate Danger Life & Health
IC	:	Incident Commander IC is responsible for Incident Activities including development and implementation of strategic decisions and for approving ordering and releasing of resources
ICS	:	Incident Commander System
KG	:	Kilogram
LPG	:	Liquefied Petroleum Gas
LCG	:	Local Crisis Group
LC50	:	Level of Concern 50
MAH	:	Major Accident Hazard
MARG	:	Mutual Aid & Response Group
MIDC	:	Maharashtra Industrial Development Corporation
MPCB	:	Maharashtra Pollution Control Board
MSEB	:	Maharashtra State Electricity Board
MSDS	:	Material Safety Data Sheet

MTNL	:	Mahanagar Telephone Nigam Limited
MV Act	:	Motor Vehicle Act
MCL Scenario	:	Maximum Credible Loss Scenario
MIA	:	Marathwada Industries Association
NGO	:	Non Governmental Organisation
AMC	:	Akola Municipal Corporation
NCMP	:	National Crisis Management Plan
ORG	:	Operation Response Group
PWD	:	Public Works Department
PRO	:	Public Relation Officer
PPE	:	Personal Protective Equipments
PHC	:	Primary Health Centre
RTO	:	Regional Transport Authority
SSI	:	Small Scale Industries
SCMP	:	State Crisis Management Plan
SMPV Rules	:	Static & Mobile Pressure Vessels Rules
SCG	:	State Crisis Group
TREMCARD	:	Transport Emergency Management Card
VCE	:	Vapour Cloud Explosion

2. MOEF Guidelines

SR.NO	ELEMENT	MOEF Guideline Section
1	Incident Information Summary	1.0
2	Promulgation Document	2.0
3	Legal Authority & Responsibility For Response	3.0
4	Table of Contents	4.0
5	Abbreviations & Definitions	5.0
6	Planning Factors, Methodology of Identifying the Hazards	6.1-6.6,6.9
7	Impact Analysis	6.6.2-6.6.3,6.8
8	Concept Of Operation	7.1-7.3
9	Co-ordination Of Plan	7.4
10	Integration of Plan	7.6-7.7,7.9-7.12
11	Mutual Aid	7.8
12	Purpose of the Plan	8.1
13	Distribution List	8.2
14	Amendments Record	9.1
15	Emergency Notification Procedures	10.1-10.8
16	Notification to Response	11.0
17	Directions & Control to Response	12.0-12.5
18	Classification Of Incident Severity Levels	12.8-12.9
19	Communication among Responders	13.0
20	Responsibilities in Public Notification	14.2
21	Public Information & Community Relations	15.0
22	Resource Management	16.1-16.6
23	Co-ordinations Of Resources Available	16.7-16.9
24	Health & Medical	17.0
25	Safety Of Response Persons	18.0
26	Personal Protections Of Citizens	19.0
27	Evacuation Procedures	20.0
28	Fire & Rescue	21.0
29	Law Enforcement	22.0
30	On-going Incident Assessment	23.0
31	Human Services	24.0
32	Public Works	25.0
33	Spill Containment & Clean-up	26.0
34	Documentation & Investigation Follow up	27.0
35	Procedures For Testing and Updating the Plan	28.0
36	Training	29.0

3. District Crisis Group

Sr.No	Office Name	Designation	Tel.No.
1	District Collector	Chair Person	07262-242307
2	Asst. Dir.DISH, Akola	Member Secretary	(O)0724-2459932
3.	District Energy Officer (Ex Engineer) Mah State Elec Distribution Co	Member	(O) 7262-243492
4	Chief Fire Officer	Member	101/07262-242893
5	District Information Officer	Member	(O)07262-242341
6	Controller of Explosive	Member	(O)022-27575946/67
7	Chief Civil Defiance(Commandant , Home Guards)	Member	-
8	One representative Trade union to be nominated by the District Collector	Member	-
9	Superintendent of Police Buldhana.	Member	(O)07262-262315
9	Dy. Superintendent of Police Buldhana.	Member	(O) 07262-244925
10	District health officer/Chief medical officer /Civil SURGEON Civil Hospital Buldhana	Member	(O) 07262-242500
10	District Health Officer (District Health Officer Z.P. Buldhana.)	Member	(O) 07262-242338
11	CO - BMC	Member	07262-242892
12	Representative of the Department of Public health Engineering(Executive Engineer PWD Buldhana)	Member	(O) 07262-242796
13			
	Expertise	Member	Contact No.
	Mr S S NAWAL	Member	9892203750/07267262245
	Mr SAMIR SINGH	Member	07263277161/8554998326
14	Commissioner Transport (Assistant Regional Transport officer	Member	(O)07262-242244
15	One representative of industry to be nominated by the District Collector	Member	
16	Chair person/ Member Secretary Local Crises Group	Member	0724-2459932

4. INTRODUCTION

Hazardous Materials - The Need for Emergency Planning :

Major disasters like that in Bhopal, India, in December 1984, which resulted in 2,000 deaths and over 200,000 injuries are rare. Reports of hazardous materials spills and releases, however, are increasing in common place. Thousands of new chemicals are developed each year. Citizens and Officials are concerned about accidents. (e.g. highway incidents, warehouse fires, train derailments, industrial incidents) happening in their communities. Recent evidence shows that Hazardous materials incidents are considered by many to be the most significant threat facing local jurisdictions. Communities need to prepare themselves to prevent such incidents and to respond to the accidents that occur.

Purpose of This Plan

The purpose of this plan is to assist public in planning for hazardous materials incidents. The Objectives of this plan are to:

- ❖ Focus public activity on emergency preparedness and response;
- ❖ Provide public with information useful in organising the planning task;
- ❖ Furnish criteria to determine risk and to help public decide whether they need to plan for hazardous materials incidents.
- ❖ Help public conduct planning that is consistent with their needs and capabilities; and
- ❖ Provide a method for continually updating a public's emergency plan..

This plan will not :

- ❖ Give a simple “ fill-in-the-blanks” model plan (because each public needs an emergency plan suited to its own unique circumstances);
- ❖ Provide details on response techniques; or
- ❖ Train personnel to respond to incidents.

Public planners will need to consult other resources in addition to this plan.

5. PLAN DISTRIBUTION

1. Chairman - District Collector
2. Chairman LCG - Sub-Divisional Magistrate
3. Member Secretary DCG / Joint Director DISH, Akola
4. Member Secretary LCG / Deputy Director DISH, Akola
5. Chief Medical Officer BMC.
6. Superintendent of Police, Buldhana.
7. Chief Fire BMC, Buldhana.
8. ARTO, Buldhana.
9. Joint Chief Control of Explosive, CGO Complex, CBD Belapur, Navi Mumbai.
10. District Information Officer, Buldhana.
11. District Agricultural Officer, Buldhana.
12. RDC/ Tahsildar, Buldhana.
13. District Supply Officer, Buldhana.
14. Civil Surgeon, Buldhana.
15. Medical Superintendent Medical Hospital

16. District Health Officer, Buldhana.
17. Regional Officer MPCB, Akola.
18. Executive Engineer MIDC, Buldhana.
19. Executive Engineer PWD, Buldhana.
20. Experts

Mr S S NAWAL 9892203750/07267262245

Mr SAMIR SINGH 07263277161/8554998326

6. TYPES OF EMERGENCIES

The Off - Site Disaster Control Plan envisages the following types of emergencies

- TOXIC RELEASE OF CHEMICAL SUSTANCES / GASES
- FIRE / EXPLOSION / BLEVE / VCE
- TRANSPORTATION EMERGENCIES.
- SPILLAGE (CORROSIVE CHEMICAL) ON SITE EMERGENCIES ONLY

7. LIST OF MAH UNITS/ CHEMICAL UNITS

THE FOLLOWING FACTORIES ARE IDENTIFIED AS MAH / CHEMICAL FACTORIES IN THE BULDHANA DISTRICT.

MAH FACTORIES IN DISTRICT

Sr.No	Name of Factories	Address	Chemical	Inventory	Accident Scenarios
1	Benzo Chem Industries Pvt Ltd	B-24,25 MIDC Dasarkheda Malkapur Dist Buldhana	Chlorine	10 MT	Toxic Release
2.	Unilever Private Ltd	C-9,MIDC Khamgaon, Dist: Buldhana	LPG	141 MT	Inflammable

OTHER CHEMICAL FACTORIES IN DISTRICT**LIST OF CHEMICAL FACTORIES IN BULDHANA DISTRICT**
YEAR – 2016.

S.N.	Name & Address of the Factory	Chemical	Workers
01.	Hindusthan Lever Ltd., Khamgaon , Dist-Buldhana	Caustic Soda	734
02.	Jai Refiners P.Ltd. Sutala(Bz.) Khamgaon ,Buldhana	Caustic Soda (H2SO4)	13
03.	V.K. Oil Pvt. Limited C-10MIDC, Khamgaon ,Buldhana	Hydrogen/Acid	60
04.	Maharashtra Ice Factory Khamgaon , Dist-Buldhana	Ammonia	03
05.	Himalaya Ice Factory, Khamgaon , Dist-Buldhana	Ammonia	02
06.	Buldhana Zilla Dugdh Utpadak Sanstha, Barph Karkhana, Malkapur , Dist-Buldhana	Ammonia	02
07.	Vikamshi Fabrics Pvt.Ltd., B-27/28, MIDC, Khamgaon .	Calcium Carbonate	34
08.	Chaitanya Chemicals Malkapur , Dist- Buldhana	Liquor/Ammonia/Hydrochloric Acid	32
09.	Chaitanya Biologicals Malkapur , Dist- Buldhana	Methonol	19
10.	Jal-Shudhhikaran Kendra MIDC, Dasarkhed, Malkapur	Chlorine	06
11.	Chlorine	15	
12.	Sahyog Tel Prakalpa, Maharashtra State Coop.Federan Ltd.C-2, MIDC,Khamgaon .		10
13.	Best Cold Storage Nandura , Buldhana	Ammonia	08
14.	New Bharat Ice Factory Chikhali , Buldhana.	Ammonia	05
15.	Danish Ice Factory A-10, MIDC, Chikhali ,.Buldhana	Ammonia	05
16.	A Klass Drugs & Pharmaceuticals Pvt. Ltd, D-48,MIDC, Khamgaon Dist.,.Buldhana	Pharmaceutical	10
17.	Durga Shakti Foods Pvt.Ltd, S.No.323,Januna Road, Khamgaon Dist.Buldana	Hexane	250
18.	Benzochem Industries Pvt.Ltd, B-24,25,MIDC,Dasarkhed, Malkapur Dist.Buldana.	Chlorine	70
19	Chaitanya Agro Bio-teck Pvt.Ltd, s.No.120/2,Umbarnala Road, Laxmi Nagar, Malkapur Dist.Buldana.	Liquor/Ammonia/Hydrochloric Acid	35
20.	Aditya Winery Chikhli Dist.Buldana	Grape Wine	10

8. LEGAL AUTHORITY AND RESPONSIBILITY FOR RESPONSE

As per Chemical Accidents Emergency Planning Preparedness & Response Rules 1996 prescribed under Environment (Protection) Act, 1986, the 4 crisis groups are formed. Authorised legislation and regulations are as follows :

Central Crisis Group

<u>Authority</u>	<u>Responsibility</u>
1. Secretary Govt. of India, Ministry of Environment & Forest	E P Act & Rules
2. Joint Secretary/ Adviser (MOEF)	-do-
3. Joint Secretary Labour	Factories Act, 1948.
3. Joint secretary /Adviser (Chemical & Petrochemicals)	Petroleum Act
4. Director – General, Civil Defence	Relief & Rescue
5. Fire Adviser, Directorate General Civil Defence	Fire & Rescue
6. Chief Controller Of Explosives	Indian Explosives Act
7. Joint Secretary (Health)	Health & Medical
8. Director – General ICMR	Health & Medical
9. Chairman CPCB	E P Act & Rules
10. Director – General ICAR	Insecticides Act
11. Director – General CSIR	Technical Advise
12. Joint Secretary (Fertilisers)	Insecticides Act
13. Director – General (Telecom.)	Telecom Act
14. Joint Secretary (Surface Transport)	MV Act & Merchant Shipping Act
15. General Manager (Rail Safety)	Railway Act
16. Adviser, Centre For Environment and Explosive Safety Act	EP Act & Indian Explosives Act
17. Controller of Mines	Mines Act-1952
18. Chief Inspector Dock Safety &	Dock Workers (Safety, Health & Welfare) Act
19. Chairman AERB	Atomic Energy Act 1972

State Crisis Group

<u>Authority</u>	<u>Responsibility</u>
1. Chief Secretary	Overall Incharge Of the State
2. Secretary (Labour)	Factories Act 1948
3. Secretary, Environment	EP Act & Rules
4. Secretary, Health	Health & Medical
5. Secretary, Industries	Containment & Clean up
6. Secretary, Public Health Engg	Containment & Clean up
7. Chairman, MPCB	EP Act & Rules
8. Commissioner Transport	MV Act & Rules
9. Director, Industrial Safety & Health	Factories Act 1948
10. Chief Fire Officer AMC	Fire & Rescue
11. Director General Of Police	Law & Order

District Crisis Group

<u>Authority</u>	<u>Responsibility</u>
1. District Collector Buldhana	Overall Incharge
2. Joint Director DISH Buldhana	Factories Act 1948
3. District Emergency Officer	Same as Chairman LCG
4. Chief Fire Officer Akola	Fire & Rescue
5. District Information Officer	Public Information
6. Joint Chief Controller Of Explosives	Indian Explosives Act
7. Chief, Civil Defence	Relief & Rescue
8. One representative of trade Unions	Information & help
9. Commissioner Of Police	Law & Order
10. District Health Officer/Chief Medical Officer	Health & Medical
11. Commissioner of AMC	Health & Medical
12. Dept of Public Health Engineering	Public Works
13. RO MPCB	EP Act & Rules
14. District Agriculture Officer	Insecticides Act
15. 4 persons nominated by District Collector (DC)	Public Communication
16. RTO Akola	MV Act
17. One representative of industry nominated by DC	Resource
18. Chairman LCG & District Collector	Prepare & Implement Offsite Plan

Local Crisis Group

<u>Authority</u>	<u>Responsibility</u>
1. Sub Divisional Magistrate / District Energy Authority	Overall Incharge
2. Deputy Director DISH Akola	Factories Act 1948
3. Industries in the area	Resource
4. Transporters of Hazardous Chemicals	Resource & Information
5. Fire Officer, AMC	Fire & Rescue
6. ACP Akola	Law & Order, Rescue & Relief
7. Block Development officer	Communication
8. Primary Health Officer	Health & Medical
9. Editor of Local News Paper	Media
10. Community Leader nominated by Chair person	Public Awareness
11. Representative of non Govt. Organisation	Information

- nominated by Chair person
- 12. Doctors nominated by Chair person
- 13. Social workers nominated by Chair person

Medical assistance
Rehabilitation

9. PLANNING FACTORS

The following parameters have kept in view in the formulation of this plan

- A) Control & direction over all the nine zones to rest with corporation crisis management of Buldhana District headed by District Collector.
- B) Decentralisation of operational control to each zone to be exercise by the respective operational response group.
- C) Each to be self sufficient in first response capability within a specified time in emergency service.
- D) All the zones should have very close linkage to ensure integrated approach to emergency.
- E) All MAH industries in a zones to have a formalised mutual aid agreement covering fire fighting & Medical service.
- F) Instant alarm system to alert the people in danger zone.
- G) Quick response by radio communication network & Mobiles Phones bases on data processing Computer output.
- H) Identification of routes for transport of Hazardous Chemicals should be excluded, as there are no dedicated routes for this purpose. So only existing routes to be included.

10. PHASES OF EMERGENCY MANAGEMENT.

Before the emergency : Preparatory actions which include identification of specific Hazards and area of vulnerability, adoption of mitigatory steps, setting up of response facilities education of communities, conducting of simulated training exercise etc.

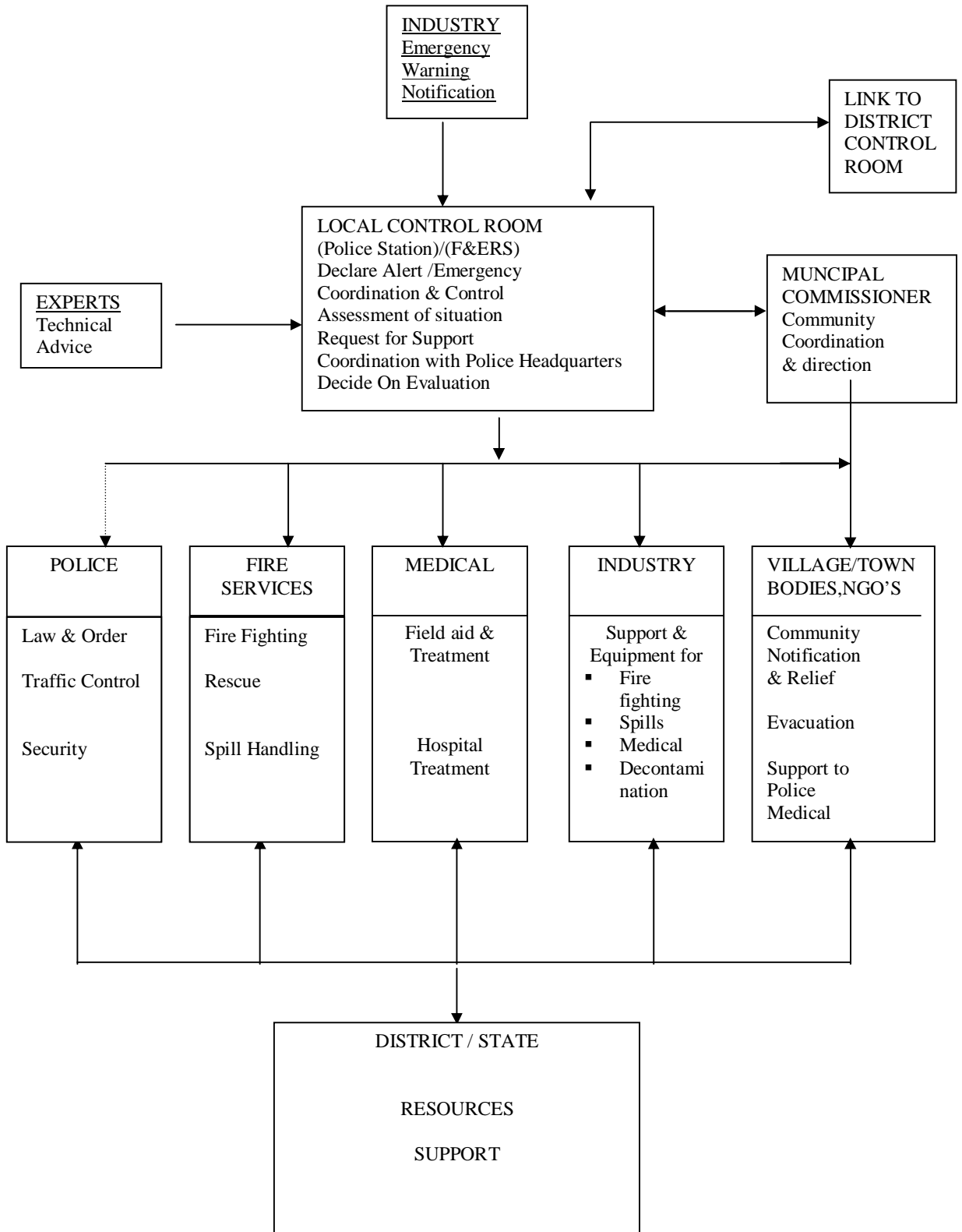
During the emergency : It is the implementation of the operational plan corporation as a “ reflex response ‘ to reduce casualties and damage to property.

After emergency : It is phase that involve restoring normalcy and assessing the damage.
It is also necessary to carry out a critique of the causes of the accident to avoid repetition of similar occurrences.

MATERIAL SAFETY DATA SHEET

Computerised ECC of Fire & Emergency Response Station of District & Police Control Room should have MSDS of all the Hazardous Chemicals in the District. Also All Emergency Response team leaders should have access to MSDS.

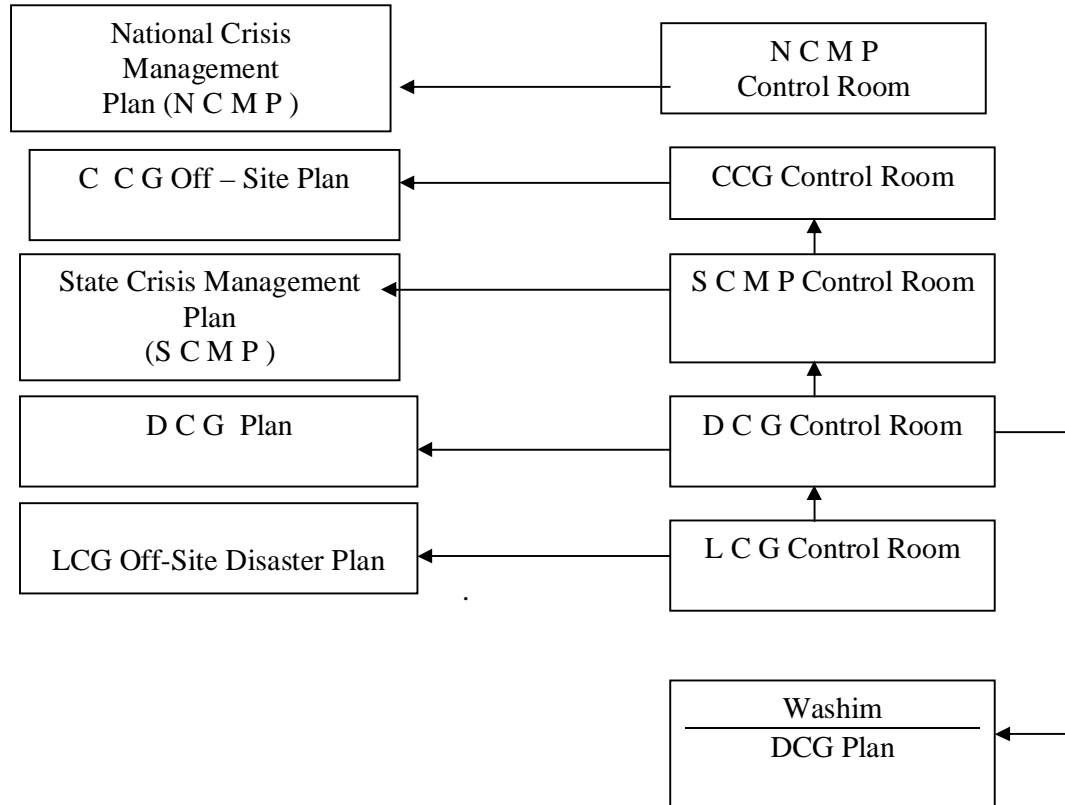
11. COMMAND STRUCTURE OF DCG



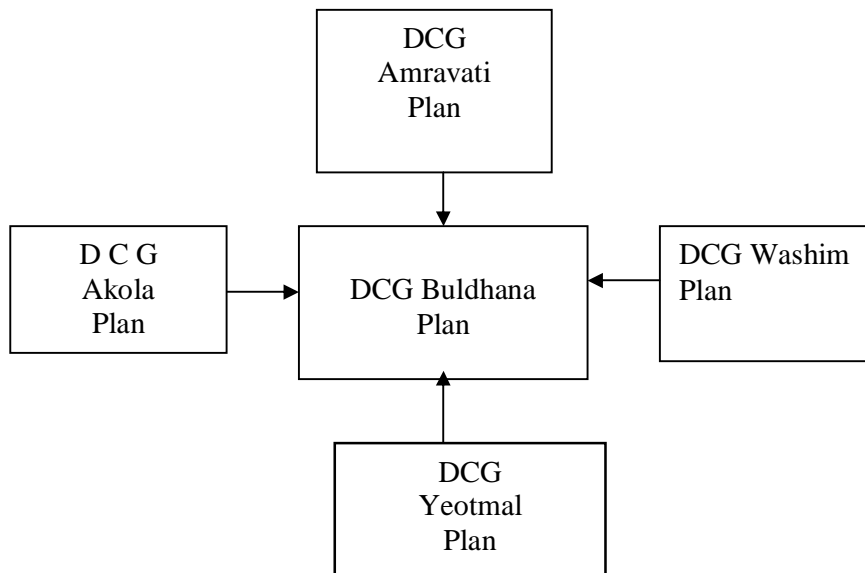
Off-Site Emergency Response Structure

12.COORDINATION OF PLAN

RELATIONSHIP TO OTHER PLANS.



INTEGRATION OF PLANS



13. INSTRUCTION ON PLAN USE :

A.9.1 Who should read this plan.?

This plan is developed basically for the agencies under the State Govt. in understanding their roles in case of on emergency. Also the LCG and the Industries are expected to be clear in their roles and relationship concerning Disaster.

A.9.2 When this plan be used ?

This plan should be used for pre-incident planning and disaster. It should be used for guidance and clarification, where particular agency has a responsibility. For the catastrophic emergency this plan shall be used in conjunction with Akola City & Akola District Area Plan.

14 RESPONSE FUNCTIONS

INITIAL NOTIFICATION OF RESPONSE AGENCIES.

	Name of Agencies	Telephone No.
i.	24 Hours LCG Control Room	100/07262-242315
ii.	Buldhana Municipal to Notify Area Public	07262-242892
	Official and other response personnel	
iii.	DCG Control Room	242315
iii.	SCG control Room	022-22027990
iv.	CCG Control Room	
v.	Other Agencies in community	
	Service in Telephone Roster.	
	(Fire Brigade,)	101

Any industry, personnel Contractors and visitors shall follow the procedures as below after discovering or witnessing an accident that involves:

- Fire and / or explosion
- Personal injury
- Release of hazardous material and / or waste
- Any emergency situation that could impact human and safety and / or the environment.
- Substantial property loss.

Incident Discovery

- i. In case of emergency :
- ii. Dial **100** immediately
- iii Give your name, location, and a concise description of the emergency (e.g. fire, Personal injury, toxic gas release etc.)

- iv. Notify / alert the personnel in the immediate area of danger.
- v. If personal Safety and health is not assured, do not attempt to enter the site
- vi. By this time the emergency response team will reach the site.

Notification :

During an emergency, the command post or the first responder at site shall notify the emergency control centre about severity of incident. Accordingly the ECC shall deploy resource to manage the incident. After that ECC shall issue all the internal and external notification to various agencies and shall send the call out that are contingent on the nature of the incident.

15 DIRECTION AND CONTROL

ORGANISATION ROLES & RESPONSIBILITIES

CRISIS MANAGEMENT GROUP - CMG

This is the apex body for crisis management and is headed by the District Collector. The District Collector is assisted by member as under.

Superintendent of Police
 Chief Officer Buldhana Municipal Council
 Dean Govt. Medical College / Civil Surgeon at Civil Hospital.
 Joint Director, Industrial Safety & Health, Akola.
 Chief Fire Officer, Buldhana Municipal Council
 Deputy Controller, Civil Defence.
 Commandant Home Guards
 District Information Officer
 Regional Officer, Pollution Control Board.
 Representative of the Industries
 District Health Officer
 Dy.RTO Buldhana
 Experts in Industrial Safety & Health
 Chair Person, LCG

The chairman may co-opt any other officer depending upon the situation, For each member of the CMG there is an alternate member. The telephone number and address and of each member are given in list.

The tasks of the CMG are as under:

1. To exercise board control over emergency operations.
2. To give guidance on matter of basic policy.
3. To provide official information and instruction to the public.
4. During normal times review the operational preparedness and take appropriate measures to rectify the defects.
5. To co-ordinate inter zone emergency response.

The duties of the CMG members are given as below :

1. **District Collector**
 - i. As Chairman of CMG implement plan
 - ii. Exercise board control on emergency operations.
 - iii. Give guidance / decision on matters of basic policy
 - iv. Review operational preparedness of Corporation emergency machinery.
 - v. Hold periodic mock drills / training exercise to ensure optimum operational preparedness. If necessary, invoke help from the Army, the Air Force, the Government and any private industries in the area of District.
 - vi. Develop Off-Site scenarios based on On-Site Plans of the industries.
 - vii. Relief Operation

2. **Superintendent of Police**
 1. Maintain law and order
 2. Regulate traffic
 3. Control entry to the emergency area
 4. Security arrangements at each industrial unit.
 5. Protect vital installations.
 6. Assist in warning public about the emergency
 7. Assist in evacuating and sheltering.
 8. Protect evacuated area.
 9. Assist emergency services in the performance of their duties.

3. **Dean Govt. Medical College / Civil Surgeon / District Health Officer**
 1. First aid arrangement and availability of On-Site requirements of industries.
 2. set up mobile First Aid Posts at Assembly Points
 3. Mobilisation of emergency medical and health service at Causality Clearance Centres and Base Hospitals.
 4. Public Health Service at Reception Centres
 5. Medical supply of antidotes, special medicines and life saving drugs.
 6. Corpse disposal service.
 7. Co-opt voluntary organisation like Rotary Clubs & Lions Clubs.
 8. Prepare Plan for Health & Medical
 9. Training to Medical team & Hospital staff for emergency response.

4. **Joint Director Industrial Safety & Health, Akola**
 1. Ensure On-Site Plans of Industries are vetted and approved as per Act.
 2. Visit industries to see that safety norms are being followed.
 3. Ensure development of On-Site Plans, Examination of risk evaluation study and Safety Audit
 4. Ensure frequency of Safety Audit and Fire Drills & Mock Drills.
 5. Assist the Municipal Commissioner in developing off- Sites Scenarios
 6. Ensure Safety Education, Safety awareness, Discussion along with MARG
 7. Pre-emergency & Post emergency Task.
 8. Member Secretary of the DCG Akola.

5. Chief Fire Officer, Buldhana

1. Mobilisation of all fire fighting units from various source.
2. Training of fire service personnel in chemical disaster operations
3. Stocking of special fire fighting agents and equipment for chemical emergencies
4. Adequacy of fire fighting / control measure at each industrial location.
5. Work out Mutual Aid Arrangement in the cluster.
6. Prepare Plan for Human Service required for the emergency response
7. Formulate Chain of Command among the Fire Fighters.
8. Prepare Plan for Response Personal safety.
9. Prepare Plan for Fire & Rescue.
10. List out Tasks of the Fire Fighters.

6. District Information Officer:

The information officer, a member of the command staff is responsible for the formulation and release of information about the incident to the news media and other appropriate agencies and organisations.

- Obtain briefing from incident commander.
- Contact the jurisdiction agency to co-ordinate public information activities.
- Establish single incident information center whenever possible.
- Arrange for necessary work space, materials, telephones, and staffing.
- Prepare initial information summary as soon as possible after arrival.
- Observe constrains on the release of information imposed by incident commander.
- Obtain approval for release from incident commander.
- Release news to news media and post information in command post and other appropriate locations.
- Attend meetings to update information releases.
- Arrange for meetings between media and incident personnel.
- Provide escort service to the media and VIP's.
- Provide fire retardant clothing for media and VIP's
- Respond to special requests for information.
- Maintain and Submit all records and logs.

7. Regional Officer, Maharashtra Pollution Control Board.

1. Monitor extent and quantum of pollution during the crisis
2. Declare hazardous area safe for re-occupation by population.
3. Prepare Plan for the Containment & Clean-up
4. Prepare Plan for On-going incident assessment.

8. Asst. Regional Transport Officer, Buldhana.

1. Ensure strict enforcement of regulations laid down improve safety in transportation of hazardous substances.
2. Organise transportation arrangement for evacuation.
3. Ensure TREMCARD is available in the Tankers transporting Hazardous Chemicals.
4. Divert Tankers transporting Hazardous Chemicals in association with Traffic Police in case of Disaster, Ganesh Chhaturthi/Chhaturdashi, any other festivals or Mass gathering to safer transport Route.
5. Train Tanker drivers in respect of the Hazards during the Chemicals transportation in consultation with MARG.

9. INCIDENT COMMANDER

The Incident Commander is responsible for incident activities including the development and implementation of strategic decisions and for approving the ordering and releasing of resources.

- Obtain incident briefing from prior incident commander
- Assess incident situation.
- Conduct initial briefing
- Activate elements of the incident command system
- Brief command staff and section chiefs.
- Ensure planning meetings are conducted.
- Approve & authorize implementation of incident action plan.
- Determine information needs and inform command personnel of needs.
- Coordinate staff activity
- Manage incident operations
- Approve requests for additional resources and requests for release of resources.
- Approve the use of trainees on the incident
- Authorise release of information to new media.
Ensure incident Status Summary is completed and forwarded to Emergency Control Center (ECC) and dispatch Center(s)
- Approve Plan for demobilisation.

10. Local Crises Group Chair person / Member Secretary

- Act as a Alternate Leader, Liasion Officer, Agency Chief, in disaster.
- Check in at the incident command post. Ensure that all agency resources have completed check-in.
- Obtain briefing from liasion officer or incident commander.
- Establish working location. Advise agency personnel on the incident that the agency representative position has been filled.
- Attend planning meetings as required.

- Provide input on use of agency resources if no resource use advisors are assigned.
- Co-operate fully with incident commander and general staff on agency's involvement at the incident.
- Oversee the well being and Safety of agency personnel assigned to incident.
- Advise liaison officer of any special agency needs or requirements.
- Determine, if any special reports or documents are required.
- Report to agency dispatch or headquarters on prearranged schedule.
- Ensure that all agency personnel and/or equipment is properly accounted for and released prior to your departure.
- Ensure that all required agency forms, reports, and documents are completed prior to your departure from the incident.
- Have debriefing session with liaison officer incident commander prior to departure.

11. **GENERAL MANAGER TELECOM :**

The Communication unit officer under the direction of the Chief Fire Officer Buldhana is responsible for developing plans for the effective use of incident communications equipment and facilities, installing & testing of communication and equipment, supervision of the Incident communications Centre, distribution of communication equipment to incident personnel, and the maintenance and repair of communications equipment.

- Obtain briefing from Chief Fire Officer, Buldhana
- Determine unit personnel needs.
- Advise on communication capabilities and / or limitations.
- Prepare and implement the Incident Radio Communications Plan.
- Ensure the Incident Communications Center and Message Center are established.
- Set up the telephone and public address systems.
- Establish appropriate communication distribution and/or maintenance locations within the base and/or map.
- Ensure Communications systems are installed and tested.
- Ensure an equipment accountability system is established.
- Ensure personal portable radio equipment from cache is distributed per radio plan.
- Provide technical information as required on :
 - Adequacy of communication system currently in operation.
 - Geographic limitation on communications systems
 - Equipment capabilities.
 - Amount and types of equipments available
 - Anticipated problems in the use of communication's equipment.

13. **DEPOT MANAGER MSRTC BULDHANA**

- Ensure availability of Buses in case of evacuations.

14. **Superintending Engineer MSEDCL BULDHANA**

- Ensure electricity supply to all MAH units, streets, Police stations, Fire brigades, Emergency Control Center & Other Offices of emergency Response Personnel.

15. DISTRICT SUPPLY OFFICER BULDHANA.

He is responsible for determining feeding requirements at all incident facilities, menu planning, determining cooking facilities required and general maintenance of the food service areas.

16. Dy. Engineer MIDC BULDHANA.

- Report to and obtain briefing and special instructions from Municipal Commissioner AMC.
- Participate in the development of the Incident Action Plan, and review general control objectives including alternative strategies presently in effect.
- Collect and validate water resource information within the incident actions.
- Prepare information on available water resources.
- Establish water requirements needed to support fire suppression actions.
- Compare incident control objectives as stated in the plan with available water resources and report inadequacies or problems to Municipal Commissioner AMC.
- Participate in the preparation of Incident Action Plan when requested.
- Respond to requests for water Information.
- Collect and transmit records and logs to documentation unit at the end of each operational period.
- Maintain and Submit all records and logs.

16. COMBATING DISASTER

16.1 FIRST RESPONDER ON SCENE

The first senior official responding to an Emergency is the incident Commander and begins implementing the incident command system. All emergency responders and their communications are co-ordinated and controlled through the incident commander. As more senior official arrive the position of incident commander is passed up a previously established line of authority.

The first responder at the scene of a hazardous materials emergency should complete the task necessary to protect public health and responder safety, the environment, and the property. The order in which the following tasks are completed is incident priorities.

- * Evaluate potential hazards to determine if the release or threaten release is an emergency.
- * Isolate the Scene and deny entry.
- * Establish control zones.
- * Identify spilled material or threatened release without subjecting responders to contamination.
- * Look for any casualties and identify other essential site conditions.
- * Implement Incident Command System, establish a command post, and identify a staging area for incoming resources.
- * Identify additional resources for operations beyond the capability of on-scene units.
- * Notify appropriate response and reporting agencies.
- * Designate a knowledgeable safety officer prior to engaging in operational activities.
- * Rescue victims from the hot zone using appropriate personal protective equipment.
- * Provide emergency decontamination to victims exposed to material having the potential for secondary contamination of emergency medical personnel.
- * Determine necessary public protection action (evacuation or sheltering in place).
- * Initiate control and containment within capabilities of available resources and equipment.

16.2 WARNING SYSTEM

A good warning system is one of the most important pre-requisite of the emergency management system to save lives, prevent injuries and mitigate losses. As soon as incident commander determines that it is necessary to warn people of a threat to public safety, a strategy appropriate to the situation will be developed and immediately implemented to ensure coverage of the affected area. The dissemination of warning shall be effected by the MAH Factories.

Types of Warning :

Warning signal will be given as under :

- **DISASTER WARNING** : Maximum credible loss scenario from the industry or transportation. The warning signal shall be high pitched long wailing siren followed by short wailing siren.
- **ALL CLEAR** : Long continuous note

Dissemination of warning by the Factories

Depending on the nature of the hazard, the size of the population of the area threatened and the time available to react, one or more of the following methods would be used to warn the public.

- Outdoor warning siren
- Public addressed system (Vehicle mounted) with the police
- Remote public address system
- Siren
- Mass media i.e. Radio and Television
- Door-to-door visits by Civil defence personnel using mask and relaying pre-recorded cassette messages.
- Telephone calls to sensitive locations like schools, organizations and institutions having a large number of employees.

In case of an toxic gas emanating from present area on to the neighbouring area due to prevailing wind direction, the information will be relayed to the district Collectorate for warning the likely affected population under their jurisdiction .

16.3 EMERGENCY PROCEDURE

In a chemical hazards disaster management because of varying wind direction and speed throughout the year, it is imperative to work out the emergency procedures in advance for each probable scenario of each industry for different months of the year to reduce the response time to the barest minimum.

A sample outline for one of the disaster scenario is given in the following section :

(ACTION DESIRED : A similar emergency procedures for all maximum probable disaster scenario for different months of the year should be developed by the responsible authority.)

Emergency Procedure for Scenario no. 1

Scenario

Toxic gas release of Chlorine. in the month of February with the most likely wind direction at 270⁰ morning as MCL Scenario.

Assumption

Release of 900 KG Chlorine due to total failure of one toner. The danger zone as given in MCL Scenario no.1 is 3.08 Km downwind. effects of release.

Chlorine requires careful handling due to its chemical and toxic properties. It is extremely irritating to mucous membrane / eye and respiratory tracks. Results in chronic pulmonary oedema. Concentrations of 50 ppm are dangerous for even short exposures. Administer Oxygen as first aid and hospitalise. At the point of release, toxic exposure will be fatal.

Within a radius of 3.08 Km all vulnerable resources shall be subjected to a exposure to a concentration of 293 ppm and may result in Systematic damage or serious / leather health effects.

Emergency Response :

- The ECR will sound the disaster warning signal to the likely affected population through Siren System.
- On-Site powerful deluge system / water curtain to prevent spread of toxic could will be supplemented by fire services in Buldhana.
- No medical resource shall be affected by the danger zone.
- The flow of casualties shall be to nearby hospital

The traffic will need to be diverted along by pass road.

- The security personnel doing above jobs would need the personal protection equipment.
- In view of short notice, warning and lethality of exposure to toxic fumes, the people must leave their houses, on hearing the warning siren at right angles to the wind direction.
- Evacuation commander will organise Assembly Points which also acts as reception centers.

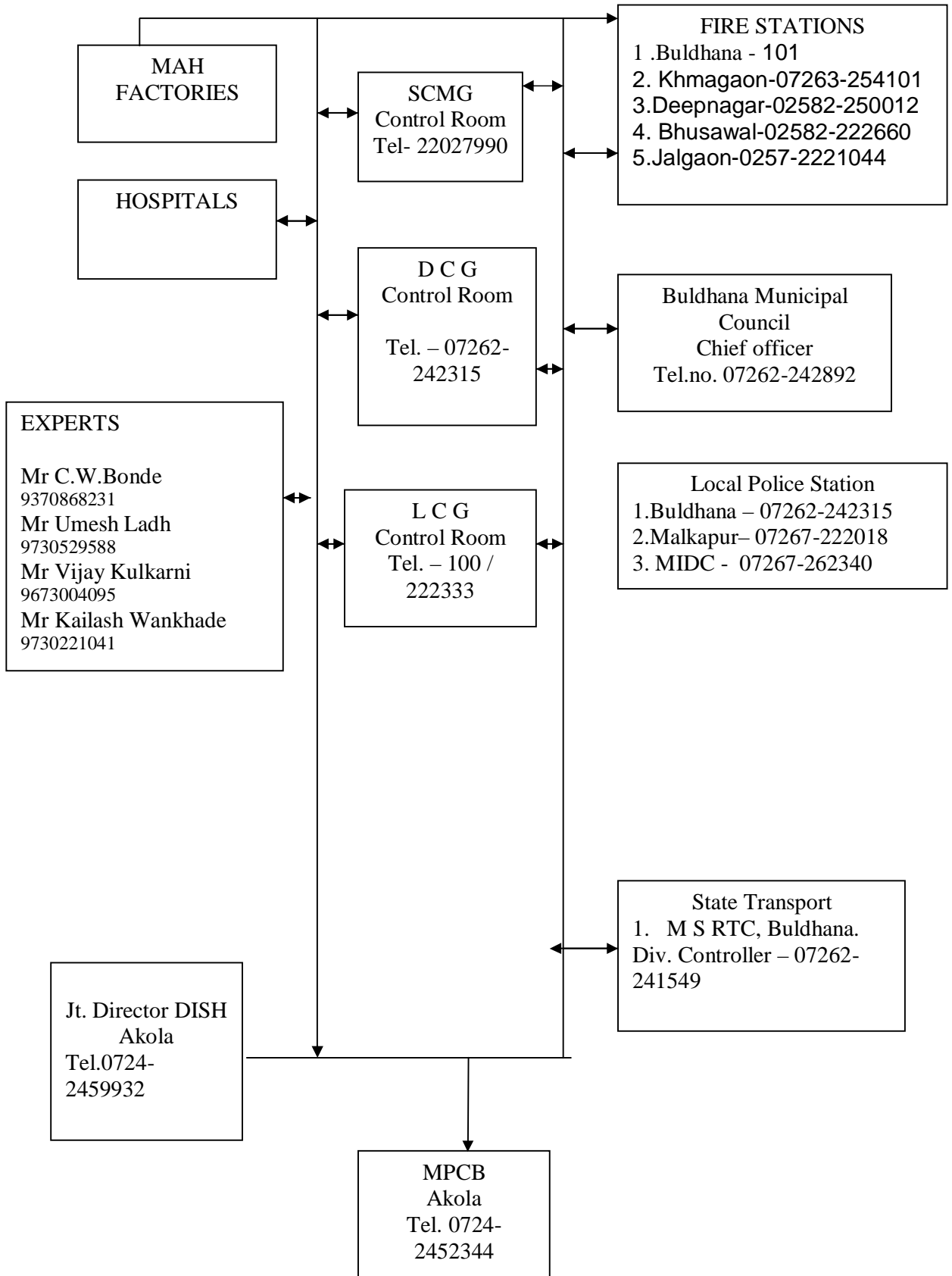
Evacuation Commander shall also arrange for water and first aid for temporarily displaced persons.

- All police personnel entering danger zone must wear personal protective equipment. In addition they must undergo training on preventive measures, in order to offer advice to the population.

CAUTION

This emergency procedures is very brief and would require modifications based on actual meteorological data, the amount of chlorine gas vaporized and other conditions at the time of toxic gas release.

17. COMMUNICATION AMONG RESPONDERS
AREA COMMUNICATION CHART



18. PERSONAL PROTECTION OF CITIZENS

- As Chairman of CMG & LCG District Collector shall depute one Deputy Collector as alternate leader.

PLANNING TEAM

- ❖ Deputy Collector - Incharge
- ❖ DCP **BULDHANA.**
- ❖ Civil Surgeon, Civil Hospital, Buldhana
- ❖ District Health Officer, Buldhana
- ❖ Executive Engineer MIDC/PWD Buldhana
- ❖ Asst.RTO Buldhana
- ❖ District Information Officer, Buldhana
- ❖ Assistant Director, Industrial Safety & Health, Akola
- ❖ Depot Manager MSRTC **BULDHANA.**

These team members shall prepare detailed contingency plan considering the following factors as a base:

- a) Vulnerable zones where Evacuation could be necessary and method for notifying these places
- b) Provisions for precautionary Evacuation
- c) Methods for controlling traffic flow and providing alternate traffic routes.
- d) Shelter location and other provisions for evacuations.
- e) Agreements with near by jurisdictions to receive evacuees.
- f) Agreements with Hospitals outside the local jurisdictions.
- g) Protective shelter for relocated populations.
- h) Reception and care of evacuees.
- i) Re-entry procedures.
- j) A system of working and advising the public protection and on expedient means to reduce ventilator.
- k) Relocation
- l) Water supply protection- to avoid contamination
- m) Sewage system protection : to avoid public Health threat Environment problems.

1. EVACUATION PLAN

In a disaster situation, evacuation from hazardous areas may be the most effective way to obviate casualties. It is a complex exercise requiring multi-disciplinary inputs. A comprehensive and co-ordinating preplanning is necessary to implement orderly evacuation of population. The weather conditions obtained through the meteorological department would dictate to a large extent the area to be evacuated.

On hearing the disaster warning the population should quickly move to the assembly area as announced on the public address system and should wait for the transportation facility. If assembly area is not announced than they should move out of the threatened area at the right angle to the prevailing wind away from the industrial area. Those personnel who can move out of their homes are advised to stay indoors and cover their noses with the wet cloth.

Following steps would be taken before the crisis by the District Collector :

- Public information and education on measures for chemical hazards.
- Installations of siren or Remote public address system in likely affected area.
- Formulations of detailed contingency plan of evacuation.
- Working out evacuation plan of sensitive areas like Jail prisoners, Mental/other hospitals etc.

Limitations

While in many cases evacuation is a needed life saving measure, it is not always necessary or practical. Lack of time is often the single most important limitation on the effectiveness. Large evacuation takes very long time to execute even if they are well planned in advance. The toxic cloud may pass through an area before everybody can get out when people are outside their homes, attempting to evacuate.

Keeping the area situation into account, it may be possible to stress more on the In Place Protection and attempting to reduce the air flow into their shelter. Public education on the protection provided by a structure should be a part of preparedness activities.

19. EMERGENCY PREPAREDNESS

19.1. Introduction :

The purpose of this is to document the ongoing planning and maintenance components of the emergency plan. In particular following areas are addressed.

- Emergency Response Team Organisation
- Training
- Personal Protective Equipment
- Medical Surveillance
- Equipment Maintenance
- Mock Drills and Emergency Simulation Operation
- Record Keeping

The response capabilities shall be maintained sufficient to mitigate the incidents involving fire, toxic gas release, medical and rescue emergencies and/or situations beyond the scope of normal operations. This volume is to be reviewed and updated on a regular basis to assure consistency with assignments and procedures.

19.2 EMERGENCY RESPONSE TEAM ORGANIZATION

Organisation would have established an emergency response team that is organised trained and capable of responding to fire, hazardous materials, and other emergency in the area. The attached structure presents response team, and corresponding training level. The District Collector will ensure that emergency response programme is implemented before, during and after emergencies. The organisational structure provides the following management and operational functions.

- Implementation of emergency response training program.
- Established management roles within the team that directly relate to ICS functions that are activated during an emergency; and
- Designation of emergency response functions and levels of responsibility that are the basis for establishing training requirements.

19.3 TRAINING (Recommendations)

LEVEL	EMERGENCY RESPONSE TEAM	TRAINING
	Fire and Safety Supervisor	Emergency Response Supervisor 8
	Fire and Safety Asst. Supervisor	Emergency Response Training Supervisor 8
	Emergency Operations Center Manager	7
	Emergency Response Chiefs / Specialists Primary Response Medical Rescue	6
	Specialists Fire and safety Fire Hazmat	5
	Emergency Response Crew	4
	Assistants	3
	Maintenance Personnel	2
	Administrative Staff & Contractors	1

Emergency Response Team Functions

The following table summarizes the responsibilities of emergency team members.

Emergency Response Team Function level	ICS Roles	ER Training
ER Supervisor	Incident Commander Field IC	8
Supervisor, ER training	IC, Field IC Fire Officer	8
Fire & safety Supervisor	Safety officer	8
Fire & safety shift Supervisor	Asst. Officer	8
ECC Managers	Command staff,	7

	Planning / Finance Chief	
ER Chiefs	Operation Chief	6
ER Specialists	Branch Officers	5
ER Crew	Asst. under Branch officers	4

Training Requirements

The training program shall be established so as to provide emergency response team members with training that is commensurable with their assigned duties. The training programme shall be comprised of eight training levels; Level 1 to Level 8. The levels correspond with increasing technical and supervisory responsibilities. The next describes the programme in detail.

DRILLS AND SIMULATION EXERCISES

The regular drills and simulation exercises is a progressive commitment to ensuring that the personnel, organisational structure, and resources identified in the area plan can function to achieve the most favourable outcome in the event of real accident.

19.4 TRAINING PROGRAMME

The specific objective of the training programme shall be as under :

- Define levels of training required for all personnel within the ICS including awareness training for citizens
- Designate the duration and frequency of all training courses.
- Assure attendance and proficiency of personnel
- Design and schedule tabletop exercises and drills to assess response capabilities to a variety of potential incidents.
- Maintain compliance status of all personnel with designated training level requirements develop a computerised training record keeping system to achieve this objective.

Training Levels

The wide variety of the jobs within ICS requires a range of awareness and expertise to cope with potential emergencies. Training levels have therefore designed to provide a tailored curriculum for defined levels of response capabilities, which are designed for each individual depending on his or her specific job description and stated emergency role.

A brief description of each training and its applicability to a defined emergency response role is provided below.

LEVEL .1 AWARENESS.

A fundamental level of emergency information and / or training addressing site-specific evacuation procedure, general safety considerations, and other basic information for personnel for who would not be likely to encounter or be actively involved in an emergency situation.

LEVEL 2 MAINTENANCE STAFF.

Designed for personnel who are likely to be exposed to an emergency situation; personnel at this level would not be actively engaged in offensive mitigation activities. In addition to maintenance staff, engineering personnel and long term contractors are included in this training level

LEVEL 3 OPERATIONAL SUPPORT STAFF

Designed for personnel who may provide operational support during an emergency.

This training level provides the advanced level of awareness in fire control and provides for basic training for both fire and hazardous materials emergency response activities. Personnel trained at this level, however are not considered to be certified to conduct work that requires fully encapsulated protective clothing.

Emergency Response Team.

The Emergency Response Team is responsible for handling all types of emergencies including fire, hazardous materials, and medical / rescue incidents. All Personnel are issued clearly identifiable response clothing and equipment to distinguish them from other personnel during emergency activities. The various training levels are discussed below.

LEVEL 4 Emergency Response Crew

The basic level of training required for the Emergency Response Team which emphasize fire and hazardous materials response capabilities.

LEVEL 5 Specialists

Due to the technical nature of emergencies which may occur following specialists training is developed to provide training over above that is included in level 4

- Health and safety issues
- Fire apparatus, aerial operations
- General Hazmat training plus specific training for the toxic gases being handled in the area

LEVEL 6 Supervisors

The Personnel at this level are trained for advanced ICS training, Emergency medical training for basic life support, rescue training in addition to level 5 training.

LEVEL 7 ECC Managers

Training focuses on the managing an emergency using the ICS, documentation and notification procedures, and communicating effectively with outside and corporate resources, the media and the public.

LEVEL 8 Instructors

Individuals at this training level are the most highly proficient managers like senior Fire and safety Personnel who would receive additional training to improve their effectiveness as instructors.

19.5 PERSONAL PROTECTIVE EQUIPMENTS / CLOTHING.

It is the policy of the management to ensure the personnel safety and limit the exposures of hazardous materials during the emergency response. The PPE programme for emergency response encompasses the selection, use and maintenance of the PPE before, during and after an emergency response.

Scope

The major components of the proposed PPE programme for emergency response shall include routine care, use during a disaster, and post - disaster procedures.

- The ongoing activities provide a solid foundation for effective emergency preparedness and for ensuring that personnel are properly trained and equipment for response. These activities shall include.
 - ◆ Inventory control
 - ◆ Calibration
 - ◆ Maintenance
 - ◆ Fit Testing
 - ◆ Training
 - ◆ Record keeping.
- The activities during Response shall be proper selection and use of equipment through training and guidance from the Incident Safety Officer. This shall include.
 - ◆ Assessment of Ambient conditions.
 - ◆ Selection of PPE
 - ◆ Operation of PPE
- The activities after Response provides for decontamination in accordance with standard procedures. The activities shall include.
 - ◆ Decontamination
 - ◆ Disposal of Cartridges
 - ◆ Maintenance and repair.

Responsibility and Implementation

The fire and safety officer shall be responsible for implementing the PPE programme for emergency response and co-ordinating the activities of various departments in administrating the programme. The ultimate effectiveness of this programme lies with each responder understanding, recognising, and controlling hazards. Implementation of programme includes following responsibilities.

- Review and prepare the written procedures.
- Conduct and document audits as deemed necessary to determine compliance.
- Maintain written records for program evaluation.
- Assist in determining conditions requiring respiratory equipment.
- Select proper respiratory equipment.
- Assure that response personnel are properly fit tested for respirators.
- Assist in training of personnel in use of respiratory protective equipment.

19.6 EQUIPMENT MAINTENANCE

ER equipment shall be maintained to ensure that they are effective and field ready. All the record shall be kept for their fitness.

The table showing the frequency of maintenance the equipment should be kept ready.

19.7 RECORD KEEPING

Record keeping plays an integral role in the administration of the emergency preparedness plan. Record are maintained to document the status of the various points of this section..

20.LEVEL OF RESPONSE BASED ON INCIDENT SEVERITY

The following chart summarizes who and what are involved in three typical emergency conditions. Information about the three response levels should be provided to special facilities (e.g. school district, private schools, day care centers, hospital, nursing homes, industries detention centres)

Response Level	Description	Contact.
A. Potential Emergency Condition	An incident of threat of a release which can be controlled by the first response agencies and does not require evacuation of other than the involved structure or the immediate out door area. The incident is confined to a small area and does not pose an immediate threat to life or property.	Fire Department Emergency Medical Services Police Department Central Municipal Commissioner LCG,DCG,RTO District Collector
II. Limited Emergency Condition	An incident involving a Greater hazard or larger area which poses a potential threat to life of property and which may require a limited evacuation of the surrounding area.	All Agencies in Level I HAZMAT team EOC Staff Public Works Department Health Department Red Cross Rotary Club SCG Control Room State Police, Public Utilities
III. Full Emergency Condition	An incident involving a severe hazard or a large area which poses an extreme threat to Life and property and will probably require a large scale evacuation or an incident requiring the expertise or resource of country, State Central, or private agencies Organisations.	All Level I and II Agencies plus the following as needed Mutual Aid Fire, Police. Emergency Medical Services SCG & CCG Control Room Maharashtra Agency Director Health Service MPCB

21. PUBLIC INFORMATION / COMMUNITY RELATIONS.

21.1 Planning Team

- ❖ Public Relation Officer District Collector Office
- ❖ District Information Officer
- ❖ Representative Of TV & Radio
- ❖ Editor, Lokmat, Deshonnati, sakal

21.2 Factors

- Method to educate the public in possible emergencies.
- Method for keeping the public informed.
- List of radio and T. V. contacts.

Comment : District Collector office should develop a public information programme to educate citizens about safety procedures during an incident. This programme could include pamphlets; newspaper stories; periodic radio and television announcements and programme for schools, hospitals, and homes for the aged.

It is important to provide accurate information to the public in order to prevent panic. Some citizens simply want to know what is happening. Other citizens may need to be prepared for possible evacuation or they may need to know what they can do immediately to protect themselves. Because information will be needed quickly, radio and television are much more important than newspapers in most hazardous materials release. In less urgent cases, newspaper articles can provide detailed information to enhance public understanding of accidental spills and procedures for containment and cleanup. One person should be identified to serve as spokesperson. It is strongly recommended that the individual identified have training and experience in public information, community relations, and / or media relations. The spokesperson can identify for the individuals who have specialised knowledge about the event. The chain of command should include this spokesperson. Other members of the response team should be trained to direct all communications and public relations to this one person.

22. RESOURCE MANAGEMENT.

The primary responsibilities for addressing emergencies originated from any place within the jurisdiction lies with the Incident Commander with support available through a mutual aid from neighbouring areas if required and with other companies in the area. This section provides a summary of resources available to support emergency responses within the area, and outlines procedures for accessing personnel and equipment.

22.1 MANPOWER

The emergency response organisation for the area includes fire and safety staff, management, and operating and maintenance personnel and other necessary staff. The emergency response team will be trained and are available at any time to support emergency response activities. Primary response, positions and responsibilities are described in this manual as above. The availability of emergency response support personnel is dependent is on the time of a day that an emergency occurs. During regular day shifts, sufficient manpower support is available.

22.2 Planning Team

- ❖ Chief Fire Officer
- ❖ Dy RTO Buldhana
- ❖ Executive Engineer PWD
- ❖ District Health Officer / Civil Surgeon, Buldhana.
- ❖ Deputy Controller of Civil Defence Buldhana.
- ❖ SP Buldhana
- ❖ Experts
- ❖ Depot Manager MSRTC

These team shall prepare the document needed for Resource Management. The Following **Factors** should be considered for the Planning.

- ◆ List Of Personnel needed for Emergency response
- ◆ Training programs including schedules for training for LCG Emergency response and Medical personnel.
- ◆ List of Vehicles needed for Emergency response.
- ◆ List of Equipment (heavy & PPE).
- ◆ Fund arrangement for response Equipment & personnel.

22.3 FIRE & RESCUE

Planning Team

- ❖ Chief Fire Officer

Factors for Planning

- ❖ Chain Of Command among Fire Fighters.
- ❖ List of available Support System.
- ❖ List of all Task for Fire Fighters
- ❖ Training to Fire Fighters in safety procedures when to approach the incident.
- ❖ Availability of MSDS of Hazardous Chemicals
- ❖ Communications to E.C.C.

The following fire stations are available for the district

Call 1 0 1 ↓

- Buldhana Fire station -
- Khamgaon Fire station-
- Deepnagar Fire station
- Bhusawal Fire Station.
- Jalgaon Fire Station

22.4 HEALTH & MEDICAL

Planning Team

- ❖ Chief Medical Officer, Buldhana
- ❖ Civil Surgeon, Buldhana.
- ❖ District Health Officer, Buldhana
- ❖ Doctors in the Area

The Following **factors** should be considered for Planning.

- ❖ Provisions for Ambulance Support.
- ❖ Provisions for Hospital Support & Treatment
- ❖ Summoning procedures of Medical Personnel
- ❖ Training to Medical Team & Hospital Personnel regards to Health Hazards of the Chemical & their Anti-dotes.
- ❖ Continuity in supply of Anti-dotes & Drugs
- ❖ List of the Hospitals /Chemist Shops
- ❖ Training for Decontamination & treating persons exposed to hazardous Chemicals.
- ❖ Protective actions recommendations for sanitation, water supply, recovery & re-entry.

AMBULANCE SUPPORT

Call 1 0 8

In the area there are many ambulance services available with private hospitals, political parties, local clubs, industries etc. The list of all the ambulance available with their phone numbers and addresses is included (**ACTION DESIRED** : It is desired that one Ambulance Control Room like fire brigade be opened up with a three digit phone number for ambulance services, which in turn will contact the relevant ambulance service with respect to equipments and distance from the site)

HOSPITAL SUPPORT

In the area there exists PHC, government hospitals and private hospitals.

22.5 HUMAN SERVICE

Planning Team

- ❖ Municipal Council –Chief Officer
- ❖ Chief Medical Officer
- ❖ District Health Officer, Buldhana
- ❖ Civil Surgeon, Buldhana.
- ❖ District Supply Officer - Food & Milk Supply
- ❖ Executive Engineer PWD

Following **Factors** should be considered for the Planning

- ❖ List of Agencies providing Human service
- ❖ List of Human service Tasks

The Municipality Administration uses a wide variety of contractors to support routine operations and maintenance activities. Virtually any contractor service is also available to support emergency responses, especially during restoration and recovery operations. All contractor personnel will be briefed at the site prior to participation in an emergency response. The briefing will address PPE, the Chemicals involved and duties to be performed. All appropriate health and safety precautions provided to emergency responding staff shall apply to Contractor personnel.

Access to contractor support is obtained through the Public Works Department. The technical service group is also available to provide contractor engineering and testing support as needed. Zonal Leader of MARG will be able to give list of contractors.

22.6 TRANSPORT SUPPORT

The Akola district and the MSRTC are having well organised network of the public transport. In case of emergency it is possible to obtain the services of Thane State Transport and Best within shortest possible time. Many buses are also available from major industries, contractors etc.

[ACTION DESIRED : The transport officer to find out the availability of maximum no. of transport vehicles (buses, Trucks etc.) within 30 minutes of notice]

22.7 Public Works Planning Team

- City Engineer
- Executive Engineer PWD
- Executive Engineer MIDC
- Regional Officer MPCB

Factors for Planning

- Describe Chain Of Command for the permanence of Public Work action in an Emergency.
- List of Task during Disaster to help containment & Clean-up

N. B. The resources under public works are requisitioned by Chairman of DCG.

22.8 OTHERS

EMERGENCY CONTROL CENTER

An emergency control centre is the place from where the operations for handling and controlling the emergencies is directed and co-ordinated. It is manned by the Incident Commander and assisted by other key persons. It is equipped with adequate means of communication to areas inside and outside the factory.

The emergency control centre is identified as the District Collector's office. An alternate emergency control centre in case of main emergency control centre affected by the MIA office located within the industrial area.

The ECC shall maintain continuous contact with the command post through out the duration of the incident, and will serve as the focal point of all external communications with mutual aid, regulatory agencies, the public and the media. During the moderate to catastrophic incident all planning, technical and administrative support will be provided to the IC through District Collectorate office.

The main emergency control centre shall be equipped with following resources :

1. Internal & External telephones.
2. Radio communication.
3. Public Address System.
4. Personal protective equipment.
5. Reference material including all the On-Site plan and related procedures.
6. Off-Site emergency control manuals.
7. General layout plan.
8. Material Safety Data Sheets.
9. TREMCARD booklet in English / Local language.
10. Standard instructions to Drivers for handling transport emergencies.
11. Map of surrounding area.
12. General office support including computer capabilities, telefax and copy machines.
13. List of equipment as per annexure to handle initial alarm by first response team.

22.9 COMMUNICATION

The key to the management of disaster lies in an efficient reliable communications system. The effectiveness of responses to the On-Site and Off-site emergency plans, requires an efficient communications system to alert.

- People inside the factory.
- Key factory personnel outside normal working hours.
- Off-site emergency Authorities and Services.
- Neighbouring industries in the area as well as public in the likely danger zone.

The communication system for On-Site emergency response would be handled by the respective industry. However, the Off-Site communication network would be co-ordinated by ECC. The emergency operations would follow the principles of communication control given below.

- Communication to respond to chain of command and control in handling emergency.
- Communications to be reliable and foolproof by building redundancy .
- Communications to ensure quick passage of information, as well as uninterrupted flow of orders / instructions.
- All DCG Members shall be provided with Cellular (Mobile) Phones.

INTERNAL & CORPORATE COMMUNICATION

The communications of declaration of a major hazard situation is by siren or by Public Address System.

Simultaneously the announcement to be made on Public Address System explaining the nature of hazard its location, location of Emergency control center & actions required to be taken .

Communications between IC, SIC & other personnel should be through radio / telephones or through personal talks or through the services of messengers with written & signed messages.

(ACTION DESIRED : It is described that the three digit telephone number to be allotted to Emergency Control Center and hotlines exists between two neighbouring industries for quick mutual aid.)

22.10 MEDIA

Media Personnel : All media personnel present at the site shall be specifically authorised by IC or his design. Under no circumstances shall media personnel; be permitted at the Command post or within the operating area of the response without an escort.

News Release : If the emergency attracts the interest of the media, or if notification of the citizen through the media is warranted, the Management Policy Group shall approve any and all statements prepared for release to the public, and information officer will issue the statement.

Public Agencies : Public Agencies shall be notified as required. The liaison officer and Information officer assigned to ECC will co-ordinate all contacts with public agencies.

22.11 CRISIS GROUP under Chemical Accident (EPPR) 1996

As per this Rules Central, State, District & Local Crisis Groups are formed. These groups will be main resources in future. The functions of these groups mentioned as below :

1. Functions of the Central Crisis Group
 - i). The Central Crisis Group shall be the apex body to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents.

- ii) Without prejudice to the functions specified under sub-rule (1), the Central Crisis Group shall
 - a) Continuously monitor the post accident situation arising out of a major chemical accident and suggest measures for prevention and to check recurrence of such accidents.
 - b) Conduct post accident analysis of such major chemical accidents and evaluate responses.
 - c) Review district Off-Site emergency plans with a view to examine its adequacy in accordance with the Manufacture Storage and Import of Hazardous Chemical Rules and suggest measures to reduce risks in the Industrial pockets.
 - d) Review the progress report submitted by the State Crisis Group.
 - e) Respond to queries addressed to it by the State Crisis Group and the District Crisis Group.
 - f) Publish a State-wise list of experts and officials who are concerned with the handling of chemical accidents.
 - g) Render in the case of a chemical accident in a State all financial and infra-structural help as may be necessary.

2. Functions of State Crisis Group

- i) The State Crisis Group shall be the apex body in the State to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents.
- ii) Without prejudice to the functions specified under sub-rule (1), State Crisis Group shall, -
 - a) 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 Chemicals, Rules and forward a report to the Central Crisis Group once in 3 months.
 - b) Assist the State Government in managing chemical accidents at a site.
 - c) Assist the State Government in the planning preparedness and mitigation of major chemical accidents at a site in the State.
 - d) Continuously monitor the post accident situation arising out of a major chemical accident in the State and forwards a report to the Central Crisis Group.
 - e) Review the progress report submitted by the District Crisis Groups.
 - f) Respond to queries addressed to it by the District Crisis Groups.
 - g) Publish a list of experts and officials in the State who are concerned with the management of chemical accidents.

3. Functions of District Crisis Group

- 1. The District Crisis Group shall be the apex body in the District to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents.
- 2. Without prejudice to the functions specified under sub-rule (1), District Crisis Group shall, -
 - (a) Assist in the preparation of the district off-site emergency plan.

- (b) 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.
- (c) Assist the district administration in the management of chemical accident at a site lying within the district.
- (d) Continuously monitor every chemical accident.
- (e) Ensure continuously information flow from the district to the Centre and State Group regarding accident situation and mitigation efforts.
- (f) Forward a report of the chemical accident within fifteen days to the State Crisis Group.
- (g) 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.

4. Functions of the Local Crisis Group :

1. The Local Crisis Group shall be body in the industrial pocket to deal with chemical pocked to deal with chemical accident and co-ordinate efforts in planning preparedness and mitigation of a chemical accident.
2. Without prejudice to the functions specific under sub-rule (1) 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 personnel involved in chemical accident management.
 - (d) Educate the population, likely to be affected in a chemical accident about the member and existing preparedness in the area.
 - (e) Conduct at least one full scale mock-drill of a chemical accident at a site every six month and forward are port to the District Crisis Group.
 - (f) Respond to all public injuries on the subject.

22.12 RESPONSE PERSONNEL SAFETY

Planning Team

- ❖ Chief Fire Officer - Incharge
- ❖ Deputy Controller Civil Defence BULDHANA.
- ❖ SP BULDHANA.

These Members should prepare Plan for Response Personal Safety considering the following **Factors**

- Standard operating procedure for entering and leaving sites as per On-Site plan shall be adopted.
- Accountability for personnel entering and leaving the sites shall be done by concerned officials.
- Decontamination procedures: Shall be developed as per On-Site Plan & Hazards posed.

- Recommended safety and health equipment
- Personal safety precautions.
- List the Equipment appropriate to various degrees of Hazards
- Training to the Emergency Responders in use of Safety equipment.
- Immediate Long Term Health Hazards to Emergency Responders.
- Insurance coverage of Emergency Responders
- Medical Surveillance

All the first responders including Key personnel and operators shall be subjected annual medical checking for their fitness to act during emergency as per their responsibility.

Similar all the responders who has taken part in combating the disaster shall be sent for complete medical check up for assessing the effects of inhalation of toxic gases or other effects.

22.13 ONGOING INCIDENT ASSESSMENT

Planning Team

- ❖ Regional Officer MPCB Akola – Incharge
- ❖ District Weather Monitoring Chief
- ❖ Dy.Executive engineer MIDC
- ❖ NGO Environment Protection
- ❖ Food Inspector

These team shall prepare a Plan to Monitor the release considering the following factors

FACTORS

<u>Action</u>	<u>Responsibility</u>
• Field monitoring teams	BMC, MPCB,
• Provision for environment assessment, biological monitoring and contamination surveys.	BMC, MPCB.
• Food / water controls.	MIDC / BMC.

Comment : After the notification that a release has occurred, it is crucial to monitor the release and assess its impact, both on and off site. A detailed log of all sampling results should be maintained. Health officials should be kept informed of the situation. Often the facility at which the release has occurred will have the best equipment for this purpose.

District Collector / LCG should describe who is responsible to monitor the size, concentration and movement of leaks, spills and releases and how they will do their work. Decisions about response personnel safety, citizen protection (whether indoor or through evacuation) and the use of food and water in the area will depend upon on accurate assessment of spill or plume movement and concentration. Similarly, decisions about containment and cleanup depend upon monitoring data.

22.14 LAW ENFORCEMENT

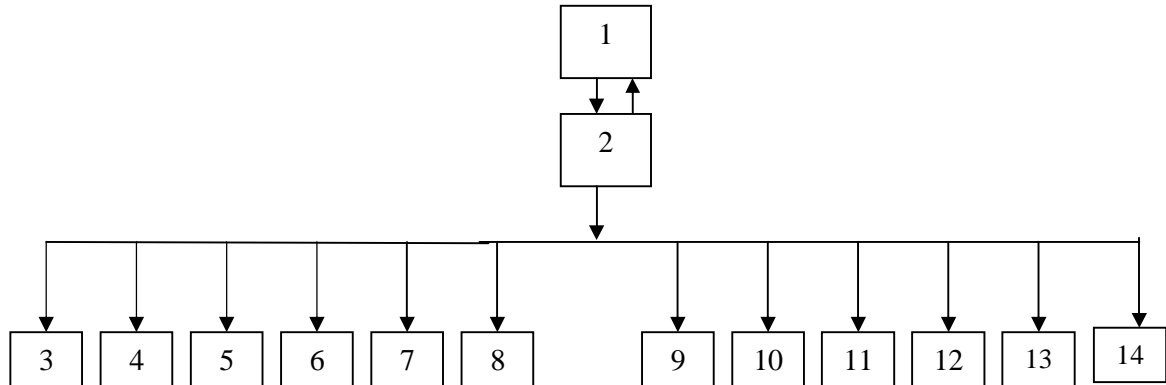
Planning Team

- ❖ District Collector, District Collector BULDHANA.& Chairman District Crisis Group – Incharge
- ❖ Municipal Chief Officer BMC & Chairman LCG
- ❖ Joint Director DISH, Akola & Member Secretary DCG
- ❖ Asst Director DISH, Akola & Member Secretary LCG
- ❖ Superintendent Of Police, BULDHANA..
- ❖ Regional Officer MPCB Akola
- ❖ Civil Surgeon, Buldhana.
- ❖ Chief Fire Officer, Buldhana.

Factors for Planning

- ❖ Chain Of Command for Law Enforcement Officials
- ❖ List of all Tasks for Law Enforcement Personnel

CHAIN OF COMMAND



SR.NO.	AUTHORITY	FUNCTION
1	District Collector, Buldhana.	Overall I/C of District
2	Chief Officer BMC	Overall I/C of BMC Area
3	Police Commissioner / Supdt. Police, BULDHANA.	Rescue, Transport & Relief
4	Additional Collector	Alternate Leader & I/C Evacuation
5	District Information Officer	Public Information
6	Chief Fire Officer	Manpower, Fire & Rescue & Response Personal Safety
7	District Health Officer / Civil Surgeon	Health & Medical
8	City Engineer, BMC	Public Works
9	Regional Officer MPCB, Akola	On-going Incident Assessment & Containment/Clean-up
10	General Manager, Telecom BULDHANA	Communication
11	Commandant Home Guards	Rescue
12	Deputy Controller Civil Defence	Rescue
13	Asst.RTO, BULDHANA	Transport Routes
14	Asst.Director, DISH Akola	Updating & Testing of the Plan

23. CONTAINMENT AND CLEANUP

Planning Team

- ❖ Regional Officer MPCB – Incharge
- ❖ C M O BMC
- ❖ Dy. Executive Engineer MIDC/PWD
- ❖ Chief Fire Officer
- ❖ Dy. RTO Buldhana
- ❖ District Agriculture Officer
- ❖ Expert From Industries
- ❖ S. P. /Dy S.P. BULDHANA
- ❖ Representative of Transport Contractors.

23.1 TECHNIQUES FOR SPILL CONTAINMENT AND CLEANUP

FACTORS

<u>Actions</u>	<u>Responsibility</u>
<ul style="list-style-type: none"> • Containment and mitigation actions • Cleanup methods. • Restoration of the surrounding environment. 	<p>BMC, LCG. DISH, MPCB, CCE, RTO. BMC.</p>

Comment : District Collector office / LCG will typically emphasize the containment and stabilisation of an incident; State regularity agencies can focus on cleanup details. CCG can provide assistance during the cleanup process. It is the releaser's legal and financial responsibility to clean up and minimise the risk to the health of the general public and workers that are involved. CCG & MOEF other government officials should monitor the responsible party cleanup activities.

A clear and succinct list of containment and cleanup countermeasures should be prepared for each hazardous material present in the community in significant quantities. This section should co-ordinated with the section on "Response Personnel Safety" So that response teams are subject to minimal danger. Planners should concentrate on the techniques that are applicable to the hazardous material and terrain area. It may be helpful to include sketches and details on how cleanup should occur for certain area where spill are more likely.

N.B. Deciding the location of Hazardous Waste Disposal Site is duty of the Govt.

It is important to determine whether a fire should be extinguished or allowed to burn. Water used in fire fighting could become contaminated and then would need to be contained or possibly treated. In addition, some material may be water- reactive and pose a greater hazard when in contact with water. Some vapours may condense into pools of liquid that must be contained and removed. Accumulated pools may be recovered with appropriate pumps, hoses, and storage containers. Various foams may be used to reduce vapour generation rates. Water sprays for fog may be applied at down wind points away from "cold" pools to absorb vapours and / or accelerate their

dispersal in the atmosphere (Sprays and for might not reduce an explosive atmosphere). Volatile liquids might be diluted or neutralised.

If a toxic vapour comes to the ground on crops, on playgrounds, in drinking water or other places where humans are likely to be affected by it, the area should be tested for contamination. Appropriate steps must be taken if animals (including fish and birds) that may become part of the human food chain are in contact with a hazardous material. It is important to identify in advance what instruments and methods can be used to detect the materials in question.

Restoration of the area is a long-range project, but general restoration steps should appear in the plan. Specific consideration should be given to the mitigation of damages to the environment.

23.2 RESOURCES FOR CLEANUP AND DISPOSAL

FACTORS

<u>Action</u>	<u>Responsibility</u>
• Cleanup / disposal contractors and services provided.	BMC, PWD, MIDC.
• Cleanup material and equipment.	--Do--
• Communication equipment.	--Do--
• Provision for long-term site control during extended cleanups.	--Do--
• Emergency transportation (e.g. aircraft, vehicles, boats)	--Do--
• Cleanup personnel.	BMC, PWD, MIDC.
• Personal protective equipment.	BMC, MARG, LCG.
• Approved disposal sites.	BMC, MIDC.

Comment : This section is similar to the yellow pages of the telephone book. It provides plan users with the following important information :

- ◆ What types of resources are available (public, and privates);
- ◆ How much is stockpiled;
- ◆ Where it is located (address and telephone number); and
- ◆ What steps are necessary to obtain the resources.

Organisations that may have resources for use during a hazardous materials incident include:

- ◆ Public agencies (e.g. fire, police, public works, public health, agriculture, fish and game);
- ◆ Industry (e.g. chemical producers, transporters, stores, associations, spill cleanup contractors, construction companies);
- ◆ Spill / equipment co-operatives; and
- ◆ Volunteer groups (ham radio operators, vehicles clubs).

Resource availability will change with time, so keep this section of the plan up-to-date.

Hazardous materials disposal may exceed the capabilities of smaller cities and towns ; in such cases, the plan should indicate the appropriate State and / Govt. of India Agency that is responsible for making decisions regarding disposal.

Disposal of hazardous materials or wastes is controlled by a number of Central and State laws and regulations. MPCBI regulate waste disposal and it is important that this section reflect the requirements of these regulations for On-Site disposal, transportation and Off-Site disposal. The plan should include an updated list of Hazardous waste disposal facilities for possible use during an incident.

24. DOCUMENTATION AND INVESTIGATIVE FOLLOW-UP

24.1 FACTORS

- List of required reports.
- Reasons for requiring the reports.
- Format for reports.
- Methods for determining whether the response mechanism worked properly.
- Provision for cost recovery.
- Follow up action to avoid similar disaster in future.

Comment: This section indicates what information should be gathered about the release and the response operation. Key response personnel could be instructed to maintain an accurate log of their activities. Actual response costs should be documented in order to facilitate cost recovery.

It is also important to identify who is responsible for the post-incident investigation to discover quickly the exact circumstances and cause of the release. Critiques of real incidents, if handled tactfully, allow improvements to be made based on actual experience. The documentation described above should help this investigation determine if response operations were effective, whether the emergency plan should be amended, and what follow-up responder and public training programs are needed.

N.B. The Following Members of this Plan shall enquire all technological disasters & transport disasters & report to LCG

- ❖ Chief Fire Officer BMC
- ❖ Jt. Chief Controller of Explosives Office Address : CGO complex, CBD Belapur, Navi Mumbai. Tel No. 022 – 7575946.
- ❖ Regional Officer MPCB Akola
- ❖ SP BULDHANA, Asst. RTO BULDHANA

24.2 PROCEDURE FOR TESTING AND UPDATING PLAN

POTENTIAL MEMBERS OF PLANNING TEAM :

- ❖ Chairman Local Crisis Group – Incharge
- ❖ Asst Director Industrial Safety & Health & Member Secretary Local Crisis Group
- ❖ Chief Fire Officer BMC
- ❖ Dy S.P. Buldhana.
- ❖ Deputy Controller Civil Defence Buldhana
- ❖ Regional Officer MPCB Akola
- ❖ Chief Medical Officer BMC
- ❖ Civil Surgeon Buldhana.
- ❖ District Health Officer Buldhana
- ❖ Certifying Surgeon
- ❖ Asst.RTO Buldhana
- ❖ Technical Experts in District
- ❖ NGO
- ❖ District Information Officer Buldhana.

- ❖ Representative of TV/Radio
- ❖ Editor of Lokmat /Sakal
- ❖ Superintendent Agriculture Officer Buldhana.
- ❖ Executive Engineer PWD/MIDC

TESTING THE PLAN

Factors

- ❖ Provision For Regular Table Top, Functional, Mock & Full Scale exercises
- ❖ Organisation Incharge Of the Exercise
- ❖ Types of the Exercise
- ❖ Frequency of Exercise

DRILLS AND SIMULATION EXERCISES

The regular drills and simulation exercises is a progressive commitment to ensuring that the personnel, Organisational structure, and resources identified in the area plan can function to achieve the most favourable outcome in the event of real accident. The terms used in this exercise are defined as:

Orientation Seminars : The orientation seminar is an informal activity which focuses on training and familiarizations with roles, procedures, responsibilities, and personalities in the management plan. The general purpose is for participants to review plans and procedures in a low stress no “ real-time environment with little or no attempt at any simulation.

Tabletop exercise : The tabletop exercise provides a specific simulation exercise whose focus is on reviewing the plans and procedures unique to the situation. This exercise makes sure that all the participants have reviewed the plan details in an interactive fashion.

Functional Exercise : The exercise is designed to taste or evaluate individual function. Each function is exercised separately. As far as possible the functional exercises should be held near the site.

Full Scale exercise : This is done by simulating an event.

Exercise Cycle

The exercise cycle is a calendar of events reflecting a series of exercise that moves the area in the direction towards preparedness. A good exercise cycle is updated regularly to account for changes in the area plan. An recommended exercise cycle may look as below.

Exercise Type	Purpose	Participants	Time	Incharge
Orientation	Review Plan	Planning Team Members	Half Yearly	District Collector
Tabletop	Review Co-ordination	Emergency Management staff & Responders	Half Yearly	Chief Fire Officer AMC assisted by CMO AMC
Orientation	Evacuation procedures	Emergency Management Staff & responders, community leaders	Half yearly	Chief Fire Officer AMC
Tabletop	Risk Communication	Emergency Management Staff, Information Officer, Media	Half Yearly	Public Relation Officer, Collector office assisted by District Information Officer
Functional	Simulated evacuation	Media	Yearly	Public Relation Officer, Collector office assisted by District Information Officer
Full Scale	Simulated toxic gas release	All emergency response system personnel and volunteers	Half Yearly	District Collector

Exercise Momentum

Motivation and enthusiasm are the keys to success in any important endeavour and emergency planning is no exception. Individually and collectively the LCG has to maintain their commitment and to be aggressive in the community to carry the message of preparedness.

Keeping the momentum going requires a creative Exercise program that is well timed and constructed so that participants are reinforced with more realistic perception of risks and consequences of chemical disasters. Following are some of the points which may be kept in mind for keeping the momentum going.

- ❖ Information and discussion about incidents happening in other area
- ❖ Field trips in a group of two or three to high risk areas to see, first hand, the source of risk and to get the mental picture of what could go wrong.
- ❖ Exchanging views with other area for various operations.
- ❖ Regular address of the District Collector/AMC Municipal Commissioner to LCG members.
- ❖ The BMC Chief Officer to take initiative and get the busy LCG members to come some of their meetings.

RECORD KEEPING :

Record keeping plays an integral role in the administration of the emergency preparedness plan. Record are maintained to document the status of the various points of this section.

Following three types of records are suggested as a part of the Disaster preparedness plan.

Responder-Specific Records that pertain to individual responder, such as training required and completed, refresher course completed, medical surveillance information and respiratory fit testing.

Equipment – Specific Documentation of equipment inspection, calibration and testing.

Programmatic : Documentation and records of program activities and implementation such as safety meeting and drills, and records of incidents

❖ **Procedure for evaluating performance, making changes to plans, and correcting identified deficiencies in response capabilities as necessary.**

Any emergency plan must be evaluated and kept up-to-date through the review of actual responses, simulation exercises, and regular collection of new data. Effective emergency

Preparedness requires periodic review and evaluation and the necessary effort must be sustained at the community level. Plans should reflect changes in the economy, land use, permit waivers, available technology, response capabilities, hazardous materials present, Central and state laws ,local laws and ordinances, road configurations, population change emergency telephone numbers, and facility location. This section describes key aspects of appraisal and provides specific guidance for maintaining an updated hazardous materials emergency plan.

- Plan review and approval are critically important responsibilities of the planning team. This section discusses the various means by which a plan can be reviewed thoroughly and systematically.
- Internal Review

The Planning team, after drafting the plan, should conduct an internal review of the plan. It is not sufficient merely to read over the plan for clarity or to search for errors. The plan should also be assessed for adequacy and completeness. Individual planning team members can use these questions to conduct self review of their own work and the team can assign a committee to review the total plan. Once the team accomplishes this internal review the plan should be revised in preparation for external review.

- External Review :

External review legitimises the authority and fosters community acceptances of the plan. The review process should involve elements of peer review, upper level review, and community input. The Planning team must devise a process to receive, review and respond to comments from external reviewers.

➤ Peer Review

Peer review entails finding qualified individuals who can provide objective reviews of the plan. Individuals with qualifications similar to those considered for inclusion on the planning team should be selected as Peer reviewers.

Examples of appropriate individuals include :

- ❑ Responsible authorities from Govt. agencies
- ❑ College Professors & Safety Professionals from Hazardous Industries & Consultants familiar with hazardous materials response operations; and
- ❑ A concerned Citizens groups.

➤ Upper Level Review

Upper Level review involves submitting the plan to an individual or group with oversight authority or responsibility for the plan. Upper level review should take place after peer review and modification of the plan.

➤ Community Input :

Community involvement is vital to success throughout the planning process.

At the plan appraisal stage, such involvement greatly facilitates formal acceptance of the plan by the community. Approaches that can be include:

- ❑ Community Workshops
- ❑ Publication of Notice
- ❑ Public Meetings
- ❑ Invited reviews
- ❑ Advisory Councils

These activities do more than encourage community consensus building. Community outreach at this stage in the process also improves the soundness of the plan by increased public input and expands public understanding of the plan and thus the effectiveness of the emergency response to a hazardous materials incident.

➤ State /Central Review :

After local review and testing through exercises a community may want to request review of the plan by State and or Central officials. Such as a review will depend upon the availability of staff resources. District Crisis Group set up in accordance with Chemical Accidents (Emergency Planning & Preparedness) Rules 1996 are to submit a copy of the Off-Site Disaster Plan to the State Crisis Group for review to ensure co-ordination of the plan with emergency plans of other planning Districts. Central Crisis Group may review and comment upon an Off-site Disaster Plan.

- Plan approval : The planning team should indentify and comply with any local or State requirements for formal plan approval. It may be necessary for local officials to enact legislation that gives legal recognition to the emergency plan.

24.3 UPDATING THE PLAN

Factors

- ❖ Title and Organisation of responsible person(s)
- ❖ Change notification procedures
- ❖ How often the plan should be audited and what mechanisms will be used to change the plan

Comment : Responsibility should be delegated to someone to make sure that the plan is updated frequently and that all plan holders are informed of the changes. Notification of changes should be by written memorandum or letter; the changes should be recorded in the RECORD OF AMENDMENTS page at the front of the completed plan.. Changes should be consequently numbered for ease of tracking and accounting.

Following are examples of information that must regularly be checked for accuracy :

- ❖ Identify and phone numbers of response personnel
- ❖ Name, quantity, properties, and location of hazardous materials in the community. (If new hazardous materials are made, used, stored, or transported in the community, revise the plan as needed)
- ❖ Facility maps
- ❖ Transportation routes.
- ❖ Emergency services available
- ❖ Resource availability

KEEPING THE PLAN UP-TO-DATE

All emergency plans become outdated because of social, economic, and environmental changes. Keeping the plan current is a difficult task, but can be achieved by scheduling reviews regularly. As noted in section above the plan itself should indicate who is responsible for keeping it up-to-date. Outdated information should be replaced, and the results of appraisals exercises should be incorporated into the plan. The Following techniques will aid in keeping abreast of relevant changes.

- ❑ Establish a regular review period- yearly
- ❑ Test the plan through regularly scheduled exercises.
- ❑ Publish a notice and announce a comment period for plan review and revisions.
- ❑ Maintain a list of individuals, agencies, and organisations that will be interested in participating in the review process.
- ❑ Make one reliable organisation responsible for Co-ordination of the review and overall stewardship of the plan.
- ❑ Include a “Record of Amendments and Changes” Notice in the plan
- ❑ Include a “When & Where to Report Changes” notice in the Plan
- ❑ Make any sections of the plan that are subject to frequent changes either easily replaceable. So that old material may be crossed out and new data easily written in.

The Organisation responsible for review should do the following :

- ❑ Maintain a list of Plan holders based on the original distribution list
- ❑ Check all telephone numbers, persons named with particular responsibilities, and equipment locations and availability
- ❑ Distribute Changes. Changes should be consecutively numbered from ease of tracking.
- ❑ Attend any Plan Critics meetings & Issue Changes as may be required.
- ❑ Integrate changes with other related plans.

Incident Review

When a hazardous materials incident does occur, a review or critique of the incident is a means of evaluating the plan's effectiveness. Recommendations for conducting a incident review are :

- ❑ Assign responsibility for incident review to the same organisation that is responsible for plan update the planning team
- ❑ Conduct the review only after the emergency is under control and sufficient time has passed to allow emergency respondents to be objective about the incident.
- ❑ Use questionnaires, telephone interviews, or personal interviews to obtain comments and suggestions from emergency respondents. Follow up non-respondents.
- ❑ Identify plan and response deficiencies items that were overlooked improperly, identified, or were not effective.
- ❑ Convene the Planning team to review comments and make appropriate plan changes.
- ❑ Revise the plan as necessary . Communicate personal or departmental deficiencies informally to the appropriate person or department. Follow up to see that deficiencies are corrected.

25. Incident Information Summary

Following is the format of incident information Summary.

- i. Date and time :
- ii. Name of person receiving call :
- iii. Name and telephone number of on -scene contact :
- iv. Location :
- v. Near populations. :
- vi. Nature (e.g. Leak explosion, spill, VCE) :
- vii. Time of release :
- viii. Possible health effects /medical emergency information.:
- ix. Number of dead or injured where dead / injured are taken.:
- x. Name of material (s) released; if known :
- xi. Characteristics of material (e.g. Colour, smell, physical effects):
only if readily detectable. :
- xii. Present physical state of the material (i.e. gas liquid, solid) :
- xiii. Total amount of material that may be released. :
- xiv. Other hazardous materials in area. :
- xv. Amount of material released so far / duration of release :
- xvi. Whether significant amounts of the material appear to be
entering the atmosphere, nearby water, storm drain, or soil.:
- xvii. Direction, height, colour , door of any vapour clouds or plumes.:
- xviii. Weather conditions (wind direction and speed) :
- xix. Local terrain conditions. :

Comment :-

Initial information is critical. Answers to some of these question may be unknown by the caller, but it is important to gather as much information as possible very quickly in order to facilitate decisions on public notification and evacuation. Some questions will apply to fixed facility incidents and others will apply only to transportation incidents. Some questions will apply specifically to air releases, while other questions will gather information about spills onto the ground or into water. Identification numbers, shipping manifests and placard information are essential to indentify any hazardous materials involved in transportation incidents, and to take initial precautionary and containment steps.

26. Fire Brigade office contact details

Sr. No.	Name / Place	Telephone No.
01	Buldhana Fire station	101
02	Khamgaon Fire station	07263-254101
03	Deepnagar Fire Station	02582-250012
04	Bhusawal Fire Station	02582-222660
05	Jalgaon Fire Station	0257-2221044

27. HAZMAT RESPONSE VAN (Proposed)

Keeping in view of the major accident prone areas in the jurisdiction namely Akola district, a specialised HAZMAT team and van for road accidents shall be located at strategic point like District Collector office to respond to transportation emergencies as well as assistance to industries with limited resource. Equipment stored in HAZMAT van are special and specifically tailored to the road accidents hazards. HAZMAT team members from part of van equipment as one entry. Details of HAZMAT van equipment and HAZMAT kit are mentioned below.

The HAZMAT van will be driven to the scene of the accident by the incident commander or Field Incident Commander.

During a minor emergency, the command post will serve as the primary point of control for management, communication and implementation of counter measures. During a moderate, major or catastrophic emergency, the command post will be supplemented by Emergency Control centre described in the next section.

For all types of emergency, the HAZMAT team will maintain following resources in the HAZMAT van to support emergency command post duties in addition to items as mentioned in appendix

- * A functioning radio
- * Copies of this document ; MSDS sheets of all the chemicals used in the area; and other references as needed ; and
- * A response folder containing copies of checklists and work sheets to assure compliance with applicable procedures and to facilitate incident documentation.

The command post shall be located upwind to assure a working environment safe from the effects of the incident. However the command post shall be close enough to the incident to permit observations and control of the site and ongoing operations. The command post serves as the point of perimeter control for the emergency. All access to and from the site is coordinated through the command post.

1 PROTECTIVE CLOTHING

Chemical protective suits for SCBA
 Splash apron (neoprene / butyl) large
 Proximity apron
 Acid suits
 Neoprene 14" gloves
 Viton 11" gloves
 Butyl 14" gloves
 Natural rubber gloves
 Surgical gloves
 High voltage lineman's gloves
 TYVEK coverall
 Raingear (Jacket, Pants)
 Overall, abanda, TYVEK material, non-sparking zipper
 High visibility vests
 Goggles (Polycarbonate lens)
 Hard-hats with headband suspension
 Face shield (full) 10 x 19 x 0.060
 Boots (neoprene, steel toe and modsole)
 Boot cover
 Safety harness
 Ear protectors
 Turnout pants / jacket (large)

2. BREATHING APPARATUS

Positive pressure self - contained breathing apparatus
 Spare cylinder
 Full face cartridge type respirator
 Cartridges GMC - H G, C, GMP, GMC - S
 B9 five - minute escape mask
 Three cylinder cascade with manifold

3. LEAK CONTROL EQUIPEMNT

Bungs (for 55 gallon drum)
 Drum gaskets (55 gallon)
 Epoxy kit (plug and dike series p-200)
 Caulking compound (plug and dike 48p)
 Patch Kit (assorted patches) (plug and dike 24 - R, 16 - R, 8 - R)

4. MISCELLANEOUS

Duct 2-x300 tap
 Teflon thread 1" * 300 tape
 Barricade 3 / 4" * 50 yds (red & white stripped) tape
 Friction 3 / 4" * 300 tape
 Electrical 1" * 300 tape
 Box sealing / packing (paper with glue backing) tape
 Masking 1" * 300'
 Pipe pieces, assorted
 Pipe union, assorted
 Pipe caps, assorted
 Hose clamps, assorted
 Saddle clamps, assorted
 Couplings (galvanised), assorted
 Hand cleaner (waterless)
 Flashlight (NS)
 Large wheel chock
 Wooden stakes (18")
 Electric flares (NS)
 Reflective triangles

5. ABSORBENT AND CONTAINERS

Absorbent Pads (3 M type 1557 - 3 / 8" * 36") (50 per bale)
 Plastic can liners / bags (55 gallon)
 Recovery drum sets 30,555,85 gallon
 Diatomaceous earth 3 cu. ft. bag
 Sponges 2" * 4" * 6"
 Nylon Salvage Covers (vinyl laminated nylon) 12" * 16"

6. NEUTRALISING AGENTS

Acid neutralising agent (neutrasorb 100 = box) (neutrasol 2 - 1 / 2 gallon
 container / carton)
 Neutraliser Neutrakit
 Chlorox

7. TOOLS AND HARDWARE

Square end, assorted sizes
 Flathead, assorted sizes
 Phillipshead, No.2 - 8, No.4 - 8 wrenches
 Hex Key / Allen, assorted sizes
 Crescent Adjustable, assorted sizes
 Basen - adjustable (4")
 M70 pipe, assorted sizes

Bung - universal (NS)
 Drum (standard) 17 - 1 / 2" length
 Socket ratchet 3 / 4" drive
 Socket 3 / 4" drive, assorted sizes
 Socket ratchet 1 / 2" drive 14 piece set 7 / 16" thr 1 - 1 / 2"
 Socket ratchet 1 / 2" drive
 Standard combination box / open end, assorted sizes
 Metric combination wrenches open / box 5 -25mm
 Bits, assorted sizes
 Drill (electrical) 1 / 2" chuck
 Drill set , assorted sizes (short length)
 Drill set , assorted sizes (large diameter)
 Slip joint 8" length 1" jaw
 Needle nosed 8", 6" plastic covered handles
 Vise grip (straight jaw) 10" Battery
 Vise brush 10" (NS)
 Curved claw 16oz
 Straight claw 16oz (fibreglass handle)
 Putty knife
 paint brushes, 3", 4" polyester bristle
 Tape measure 3/8-x100' steel tape
 Folding ruler (wooden) 6'
 Pipe wire (4')
 Welding kit two stage oxy-acetylene welding outfit with say-fuel thumb
 wheel torch
 Wood chisels, assorted size blade (plastic handle)
 Cold chisels, assorted size blade
 Hacksaw 10"-12" adjustable
 Hacksaw blades 12 (24 teeth / inch high speed design 5 per package)
 Keyhole saw
 Pipe cutters 1/8"-2"
 Pry bar, assorted sizes
 Safety line 7/32-x100' roll (16" metal)
 Broom, push 24" heads (long wooden handle)
 Lantern lights (battery type)
 Battery jumpers cables (8'-10')
 Drum dollies for 55 gallon drum
 Chemical bucket (5 gal) butyl
 Rubber
 Dust pans(standard 12 " plastic)

8. MONITORING EQUIPMENT

Combustible gas and oxygen detector and calibration kit (Ranges : 0-100%,
 LEL 0-5PPM, 0-24% Oxygen)
 CO-indicator
 Multi gas detector kit (extension hose, air current, kit tubes) (Draeger CH304)
 0-13 Range, Battery
 pH paper (0-14) (Hydrin, 1/2 * 50 with dispenser) Water sample test kit (standard)

Chromium test set
 Fluorescent dye (red, green)
 Ultraviolet light, hand held, 100 volts.
 Indication wind system AC, DC recording cup and vane anemometer with meter
 Telescopic mast

9. MEDICAL FIRST AID

Extinguisher capable of handling Class A,B, C and D fires (No.20)
 First Aid kit (36 units)
 Resuscitator (B, W, S, CPR Portable with aspirator P/N 900-002-111-01
 Wood fire blankets.

10. OXYGEN TRAUMA, FIRST AID BOX, EMERGENCY BOX KIT

- a. Oxygen Cylinder
- b. Burn sheets
- c. Rescue Blankets
- d. Oxygen breathing kit
- e. Instant Glucose
- f. Paramedic Scissors
- g. Bandage Scissors
- h. Forceps
- i. Suction Unit & Stat stick
- j. Ring cutter
- k. Cervical collar (3 sizes)
- l. Eye pads
- m. Tourniquets
- n. Multi-Trauma Dressings
- o. Adaptic Dressing
- p. Flexible Bandages
- q. Pocket Masks / Eye-Wash Bottle
- r. Orthopaedic stretcher.
- s. Bag mask resuscitator
- t. Mouth- to-mask
- u. Portable respirator
- v. Ophthalmic solution
- w. Bold-pressure equipment
- x. Gloves
- y. Portable lamps / Torches

11. MISCELLANEOUS

- | | |
|--|---------------------------------|
| a. Portable flood lights (500 4 nos.) | g. Portable Foam Extinguisher |
| b. Telescopic flood light | h. Portable D.C.P. extinguisher |
| c. Emergency suits (4 nos.) | i. Two way radio |
| d. SCBA - 4 nos. | j. Hydraulic cutter |
| e. Hatler Battery operated | k. Hydraulic spreader |
| f. Hydraulic pump unit (Portable) | |

28. LIST OF HOSPITAL, AMBULANCE AND BLOOD BANKS

LIST OF HOSPITALS (Public & Private)

Sr No	Name of Hospital	Telephone No
1	Government Hospital Buldhana	07262-242423
2	Civil Hospital Malakpur	07267-222443
3	Dr Suhas Borale Malakapur	07267-223133
4	Chaitanya Hospital Near Tahsil Office Buldhana	07262-242719
5	Chiranjiv Hospital Jambharun Road Buldhana	07262-244617
6	Kadam Accident Hospital Buldhana	07262-244946

Ambulance

Sr No	Name Of Service Provider	Telephone No
1	Government Hospital Buldhana	07262-242500/242423
2	Civil Hospital Malakapur	07267-222443
3	Kadam Accident Hospital Buldhana	07262-244946/ 9860341902

BLOOD BANKS

Sr No	Name	Telephone No
1	Babashed Topale Memorial Blood Bank Akola	0724-2420214
2	Indian Red Cross Society Blood Bank Jalgaon	0257-2226233

29. CRANE SERVICES

Suppliers Of Heavy Duty Cranes

Sr. No.	Name	Location	Telephone
1	-	-	-

Important Contacts in case of Emergency

District Collector	07262 242307
Res. Deputy Collector	07262 242411
CEO Zilla Parishad	07262 242309
Superintendent of Police	07262 242395
District Information Officer	07262 242341
District and Session Judge	07262 242310
District Health Officer	07262 242338
Civil Surgeon	07262 242423
Tahsildar Buldhana	07262 242283
Tahsildar Jalgaon Jamod	07266 221426
Tahsildar Sangrampur	07266 232226
Sub Divisional Officer Buldhana	07262 242391
Sub Divisional Officer Mehkar	07268 224532
Sub Divisional Officer Malkapur	07267 222122
Sub Divisional Officer Khamgaon	07263 252045
Sub Divisional Officer Jalgaon Jamod	07266 221429

30.ANTIDOTES COMMONLY USED AGAINST SPECIFIC AGENT

Specific Agent	Symptoms Requiring Treatment	Antidote	Dosage
Acetaminophen (Tylenol ®, Nebs#)	Hepatotoxicity (hepatocellular necrosis)	Z-acetylcysteine	Oral : 140 mg/kg initial dose followed by 70 mg/kg every 4 hours for 17 doses.
Anticholinergic agents	Central and/or peripheral anticholinergic symptoms and at least one of the following Hypertension Hallucinations Convulsions Coma Arrhythmias	Physostigmine	Adults : 1 or 2 mg IV slowly (1mg/Minute,) Repeat in 20 minutes if no Reversal. Then 1 to 2 mg IV for recurrent Symptoms. Children : 0.5 mg IV (0.5 mg/minute), Readminister at 5-minute intervals to Maximum of 2 mg if symptoms persist, Repeat with lowest effective trial dose if life-threatening symptoms recur.
Cholinergic agents Physostigmine Neostigmine Pyridostigmine Pilocarpine Bethanechol Methacholine	Cholinergic crisis Diaphoresis Lacrimation Bronchial secretions Excessive urination and Defecation Convulsions Fasciculations	Atropine sulfate	Adults : 2 mg IV Children : 0.05 mg/kg Iv Repeat until Cessation of secretions
Cyanide (potassium cyanide,hydrocyanic acid,laetrile,nitroprusside sodium)	Cyanosis Cardiopulmonary arrest Convulsions Coma	Sodium nitrite Then Sodium thiosulfate	Adults : 300 mg IV (10 ml of 3% solution) Children : Dose based on serum hemoglobin Adults : 12.5 grams IV (50 ml of 25% Solution) Cobalt E.D.T.A
Ethylene glycol	Acidosis Oxalate crystals in urine	Ethanol	Loading dose : 600 mg/kg (1 ml absolute alcohol = 790 mg) IV in D5 W over 15 minutes. Maintenance dose : To maintain blood Level of 100 mg percent. It varies Depending on drinking history of patient.

Specific Agent	Symptoms Requiring treatment	Antidote	Dosage
Neuroleptic agents Haloperidol (Haldol #) Loxapine succinate (Loxitane #) Molindone (Moban #) Phenothiazines Chlorpromazine (Thorpromazine #) Fluphenazine (Prolixin #) Thioridazine (Mellaril #)	Extrapyramidal symptoms: Dystonia Dyskinesia Oculogyric crisis Parkinsonian symptoms	Diphenhydramine Or Benztropine	25 to 50 mg IV, IM or 1 to 2 mg IV, IM
Iron salts (ferrous sulfate, ferrous gluconate)	Hypotension Shock Coma (free serum iron present)	Deferoxamine	Shock and/or Coma : 15 mg/kg/hour IV For 8 hours. Absence of Shock or coma but SI TIBC : 90 mg/kg IM every 8 hours* 3 doses
Methanol	Acidosis Methanol blood level Exceeding 20 mg%	Ethanol	Loading dose : 600 mg/kg/(1 ml absolute alcohol = 790 mg) IV in D2W over 15 minutes. Maintenance Dose : To maintain blood level of 100 mg percent. Varies depending on drinking history of the patient.
Methemoglobin-Producing agents Nitrates/nitrites Phenazopyridine Phenacetin	Methemoglobinemia (30%)	Methylene blue	1 to 2 mg/kg IV (0.1 to 0.2 ml/kg) of 1 percent solution. Note : Contraindicated in methemoglobinemia secondary to sodium nitrite in cyanide poisoning.

31. FORMAT FOR COMMENTS

To make any specific comments and/or suggestions for Plan improvement following format can be used.

Format For Comments

To,
The Member Secretary
Local Crisis Group, Vinod Bhava,
In front of MSEB power house
Gaurakshan road Akola
Tel.No.0724-2459932

Name of the Department/Agency :
Address :

Contact Name :
Phone Number :
Fax Number :

Suggestions for Plan improvement :

Errors or inaccuracies noted in this plan :

Signature :

Date :

32. General Guidelines in Disaster

(Personal Protection of Citizens)

- Keep calm
- Don't Panic
- Cover mouth and Nose with wet cloth
- Don't spread rumour
- Don't crowd at incident sight
- Walk fast at right angle to the wind direction
- Close doors and windows in case of toxic gas release
- Turn off LPG gas incase of inflammable Gas leakage
- Keep phone lines clear
- Inform Police & Fire brigade
- Follow direction from proper authority
- Keep the road clear
- Give way to Emergency vehicles immediately

33. Safety Precautions

(Response Personal Safety)

APPROACH CAUTIOUSLY FROM UPWIND.

Resist the urge to rush in; others cannot be helped until the situation has been fully assessed.

SECURE THE SCENE.

Without entering the immediate hazard area, isolate the area and assure the safety of people and the environment, keep people away from the scene and outside the safety perimeter. Allow enough room to move your own equipment.

IDENTIFY THE HAZARDS .

Placards, container labels, shipping documents and / or expert persons on the scene are valuable information sources. Evaluate all available information and consult the recommended MSDS to reduce immediate risks.

ASSESS THE SITUATION .

Consider the following

- Is there a fire, a spill or a leak?
- What are the weather conditions?
- What is the terrain like ?
- Who/what is at risk: people, property or the environment ?
- What actions should be taken: Is an evacuation necessary ?

Is diking necessary ? What resources(human and equipment) are required and are readily available ?

- ❖ What can be done immediately ?

OBTAIN HELP :

Advise your ECC notify responsible agencies and call for assistance from qualified personnel.

DECIDE ON SITE ENTRY :

Any efforts made to rescue persons, protect property or the environment must be weighed against the possibility that you could become part of the problem. Enter the area only when wearing appropriate protective gear (see the MSDS on protective clothing and equipments)

RESPOND :

Respond in an appropriate manner. Establish a command post and lines of communication. Rescue casualties where possible & evacuate if necessary. Maintain control of the site. Continually re-assess the situation & modify the response accordingly. The first duty is to consider the safety of the people in the immediate area, including your own.

ABOVE ALL :

Don't walk into or touch spilled materials. Avoid inhalation of fumes, smoke & vapours, even if no dangerous chemicals are known to be involved. Don't assume that the gases or vapours are harmless because of lack of smell – odourless gases or vapours may be harmful.

34. Water Reactive Chemicals (Containment & Clean-up)

Serial No.	Name of the Chemical	Toxic Vapour Produced
1	Methyldichlorosilane	HCL
2	Methytrichlorosolane	HCL
3	Tricholorosilane	HCL
4	Calcium Phosphide	PH3
5	Aluminium Phosphide	PH3
6	Lithium Amide	NH3
7	Magnesium Aluminium Phosphide	PH3
8	Sodium Phosphide	PH3
9	Stannic Phosphide	PH3
10	Stannous Chloride	HCL
11	Lithium Hypochloride	CL2,HCL
12	Potassium /Sodium Cyanide	HCN
13	Zinc Phosphide	PH3
14	Acetyl Bromide	HBR
15	Acetyl Chloride	HCL
16	Aluminium Bromide	HBR
17	Aluminium Chloride	HCL
18	Antimony Pentafluoride	HF
19	Calcium Hypochlorites	CL2, HCL
20	Phosphorus PentaChloride	HCL
21	Phosphorus Pentasulphide	H2S
22	Thionyl Chloride	HCL, So2
23	Acetyl iodide	HI
24	Sulpherdiochloride	SO2, SO3, & HCL
25	Chlorine dioxide, Hydrade	CL2

35.MATERIAL SAFETY DATA SHEET (MSDS)

Sr. No.	Chemical
1.	Ammonia MSDS\NH3_gas.pdf
2.	Chlorine MSDS\chlorine.pdf
3.	Ethanol MSDS\Ethanol.pdf
4.	Hydrogen MSDS\hydrogen.pdf
5.	Ammonium Nitrate MSDS\Ammonium Nitrate.pdf
6.	Barium Nitrate MSDS\Barium nitrate.pdf
7.	Sulphur MSDS\Sulphur.pdf
8.	Potassium Nitrate MSDS\Potassium Nitrate.pdf
9.	Hexane MSDS\Hexane.pdf