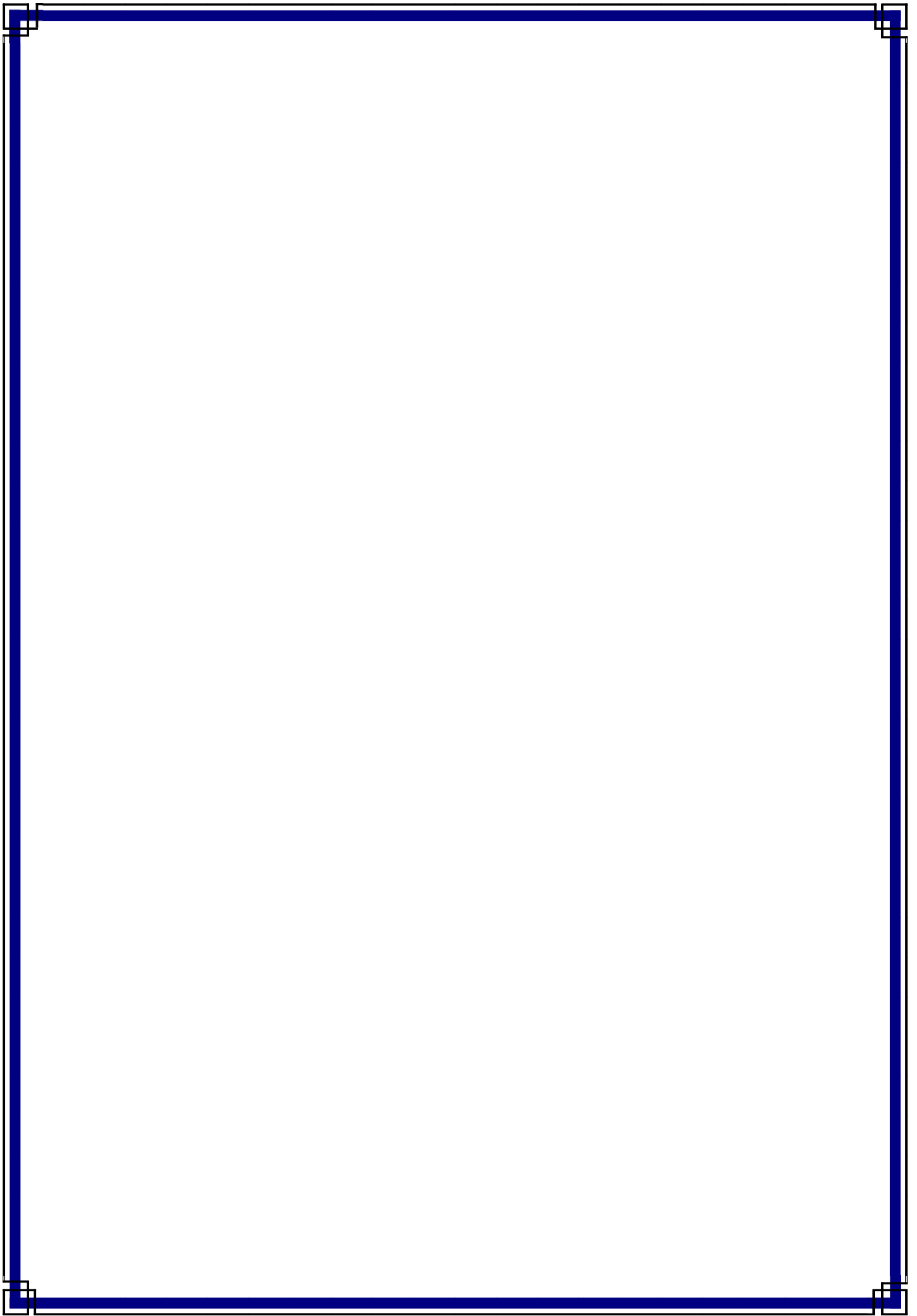


OFFSITE EMERGENCY PLAN FOR BHAVNAGAR DISTRICT OF GUJARAT STATE

EDITION NUMBER: 01

EDITION DATE: 2026



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Edition History

Table 1 **Edition History**

EDITION NUMBER	DATE OF EDITION	NAME OF THE DISTRICT COLLECTOR FOR DEA	NAME OF THE FACTORY INSPECTOR IN CHARGE OF THE DISTRICT
01	2026	SHRI MANISHAKUMAR BANSAL, IAS. DISTRICT MAGISTRATE & COLLECTOR, BHAVNAGAR	MR. N.K.PATEL, ASS. DIRECTOR INDUSTRIAL SAFETY & HEALTH, BHAVNAGAR

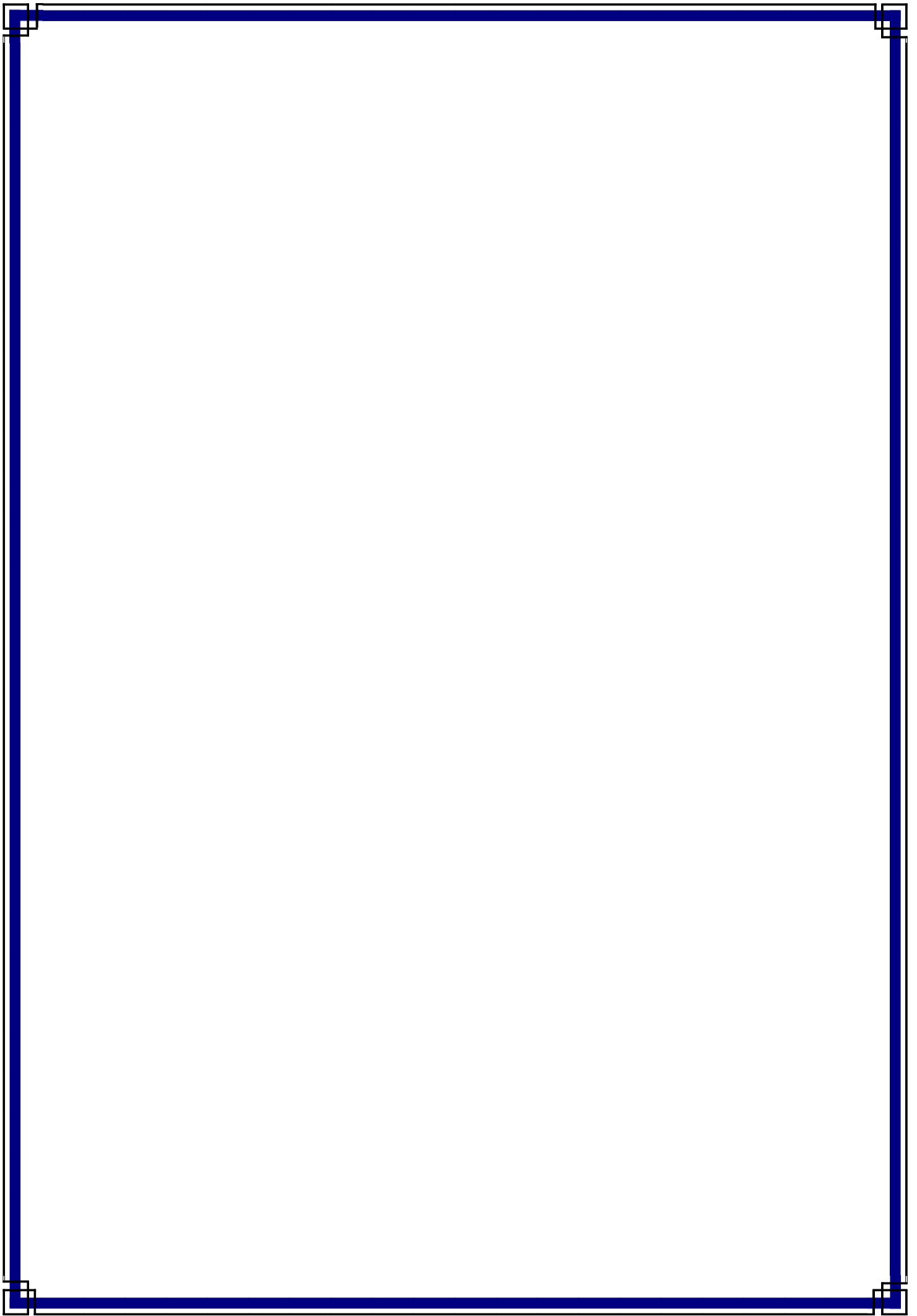
Directory of Key Responders in the District

Table2 DirectoryofKey Responders

SR.	AUTHORITY	NAMEOFCURRENT OFFICEHOLDER	ADDRESS (O, R)	TELEPHONE(O,R,M)	EMAIL
1.	DISTRICT COLLECTOR (ORDEA) CHAIRMAN	SHRI MANISHKUMAR BANSAL, IAS	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782428822 (O)+912782521666 (M)9978406206	collector- bav@gujarat.gov.in
2.	(ALTERNATE) RESIDENT ADDITIONAL COLLECTOR, BHAVNAGAR	SHRI N.D.GOVANI	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782421881 (O)+912782427756 (M)9978405178	add-collector- bav@gujarat.gov.in
3.	MUNICIPAL COMMISSIONER MEMBER	SHRI NARENDRAKUMAR MEENA, IAS	BHAVNAGAR MUNICIPAL CORPORATION	(O)+912782439900 (O)+912782510532 (M)9978404500	comm-bmc@gujarat.gov.in
4.	ALTERNATE DY.MUNICIPAL COMMISSIONER	SHRI M.C.PATEL	BHAVNAGARM UNICIPALCOR PORATION	(O)+912782439292 (M)9925224646	dmca.bmcgujarat@gmail.co m
5.	DDO,BHAVNAGAR MEMBER	SHRI HANUL CHAUDHARI, IAS	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)0278-2426810 (M)9978406231	ddo-bav@gujarat.gov.in
6.	SUPERINTENDENTOF POLICE Member	SHRI NITESH PANDEY IPS	OFFICE OF SUPERINTENDENT OF POLICE, BHAVNAGAR	(O)02782520050 (M)9978405067	sp-bav@gujarat.gov.in
7.	MAMLATDAR,DISASTER CONTROL	SHRI A.D.KUBAVAT	DISTRICT DISASTER MANAGEMENT CONTROL ROOM BHAVNAGAR	(E)+91278 1077 (O)+912782521554 (O)+912782521555 (M)9426902111	dismgmt- bav@gujarat.gov.in
8.	FIRE DEPARTMENT CHIEF FIRE OFFICER MEMBER	SHRI PRADYUMANSINH JADEJA CHIEF FIRE OFFICER	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424814 (O)+912782424815 (M)9727712177	cfo-bmc@gujarat.gov.in
9.	(ALTERNATE) DIVISIONALFIRE OFFICER	MR.P.R.JADEJA	MAINFIRESTATION, BHAVNAGAR	(O)+912782424878, (M)9825204004	cfo-bmc@gujarat.gov.in
10	CHIEF DIST.HEALTH OFFICER(CDHO) MEMBER	DR.KOKILABEN SOLANKI	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)+912782423665 (M)9727779662	cdho.health.bhavnagar@g mail.com
11	ASISTANT DIRECTOR, I. S.H., BHAVNAGAR MEMBER SECRETARY	MR.N.K.PATEL	JILLA SEVASADAN-2, 3 RD FLOOR, DISH OFFICE,BHAVNAGAR	(O)+912782428473 (M)9427508476	astdish-bav@gujarat.gov.in
12	DEPUTY CONTROLLER, CIVIL DEFENCE,	DR.CHINTAN VAISHNAV	DISASTERCELL, COLLECTOROFFICE,	(O)+912782521554 (M)8980035034	cdbn04@gmail.com

	BHAVNAGAR		BHAVNAGAR		
13	POLLUTION CONTROL BOARD (REGIONAL OFFICER)	SHRI MANISH BARAD	MOKDHAJI CIRCLE, GHOGHARD, SARDARNAGAR, BHAVNAGAR.	(O)+912782566108 (M)8140944711	ro-gpcb- bhav@gujarat.gov.in
14	REGIONAL TRANSPORT OFFICER MEMBER	SHRI RUTVIJA DANI	SARDAR PATEL CIRCLE, GADHECHIVADALA, BHAVNAGAR	(O)02782424004 (M)9723759293	rto-trans- bhv@gujarat.gov.in
15	A) TECHNICAL EXPERTS MEMBER	MR SHAKTIDAN ROHADIYA (DY.MANAGER, FIRE AND SAFETY) NIRMA LTD	KALATALAV BHAVNAGAR	(M)8980026351	nirma-kalatalav@gmail.com
16	B) TECHNICAL EXPERTS MEMBER	V.V.SHAH (A.G.M.S.H.E.) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9099069056	nirma-kalatalav@gmail.com
17	C) TECHNICAL EXPERTS MEMBER	MR AMITMAHETA (V.P.) SUMITOMO CHEMICAL INDIA LTD	RUVPARI ROAD BHAVNAGAR	(M)9426743350	bharat.sathiya@sumichem.co.in
18	D) TECHNICAL EXPERTS MEMBER	MR BHRUGURAJZALA (H.S.E.) RENAISSANCE INDUSTRIES	VARTEJ GIDC , BHAVNAGAR	(M)9913999988	renaissanceindustriesfac@gmail.com
19	INDUSTRIES REPRESENTATIVE MEMBER	MR D.G.JAKHADE (UNIT HEAD) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9825019963	nirma-kalatalav@gmail.com
20	INDUSTRIES REPRESENTATIVE MEMBER	MR NITIN PANDEY IOCL BOTTLING PLANT	TAGDI, BHAVNAGAR	(M)9453016084	pandeynitin@indianoil.in
21	INDUSTRIES REPRESENTATIVE MEMBER	MR S. R. SINGH ARCHITORGANO SYS LTD	NARMAD, BHAVNAGAR	(M)6351275128	sales@architorg.com
22	TRADE UNION REPRESENTATIVE MEMBER	MR. VIDHYADHAR RAHANE (GENERAL SECRETARY) A.S.S.R. AND G.W. ASSOCIATION	ALANG, BHAVNAGAR	(O)02842235035	—
23	DISTRICT INFORMATION OFFICER MEMBER	MR R.S. CHAUHAN	BEHIND COLLECTOR'S OFFICE, MOTIBAGH, BHAVNAGAR.	(O)02782424994 (O)02782422919 (M)9537409098	cdmo-bav@gujarat.gov.in
24	WESTERN RAILWAY BHAVNAGAR	MR. DINESH VERMA RAILWAY MANAGER	CENTRAL RAILWAY STATION BHAVNAGAR	(O)02782445475 (M)9724097000	drm@bvp.railnet.gov.in
25	PETROLEUM AND EXPLOSIVE SAFETY ORGANISATION MEMBER	DR. R. VENUGOPAL JOINT CHIEF CONTROLLER OF EXPLOSIVES – VADODARA	8 TH FLOOR, YASHKAMAL BUILDING, SAYAJIGANJ, VADODARA	(O)02652225159	rvenugopal@explosives.gov.in

26	PASCHIM GUJARAT VIJ COMPANY LIMITED CIRCLE OFFICE, BHAVNAGAR MEMBER	SHRI Y.R.JADEJA CHIEF ENGINEER	"VIJSEVASADAN",OLDPOWE RHOUSECOMPOUND,CHAV DIGATE,BHAVNAGAR	(O)02782522922 (O)02782524924(M)9879203840	sebvn.pgvcld@gebmil.com
27	PRANT OFFICER, BHAVNAGAR		COLLECTORATE BUILDING,GROUND FLOOR,MOTIBAUG, BHAVNAGAR	(O)02782428701 (M)7567010346	po-bav@gujarat.gov.in
28	PRANT OFFICER, MAHUVA	SHRI SUSMITHA EPPALAPALLY (I.A.S.)	TALUKA SEVA SADAN, NH-51,VADLI, MAHUVA,BHAVNAGAR	(O)02844222765 (M)7567010268	sdm-mahuva- bav@gujarat.gov.in
29	PRANT OFFICER, PALITANA	MR.ANKIT PATEL	TALETIROAD,OPP. PALITANAHIGH SCHOOL,PALITANA, DIST.BHAVNAGAR- 364270	(O)02848243350 (M)7567010276	sdm-pali- bav@gujarat.gov.in
30	PRANT OFFICER, SIHOR	SHRI BHUMIKA KORIYA	OFFICEOFDEPUTY COLLECTOR, BHAVNAGAR-SHIHOR ROAD,DIST. BHAVNAGAR	(O)02846222103 (M)7567010355	po-shihor- bav@gujarat.gov.in
31	PRANT OFFICER,TALAJA	SHRI JAYKUMAR RAVAL	ROYALCHOWKADI, TALAJA-BHAVNAGAR N.H.NO.8-E,TALAJA	(O)02842222260 (M)7567010274	po-talaja- bav@gujarat.gov.in
32	SUPERINTENDENT SIR TAKHTASINHJI GENERAL HOSPITAL, BHAVNAGAR	DR. ASHOK VALA	KALANALA, BHAVNAGAR	(O)02782423250 (M)9898141114	ms.health.bhavnagar@ gmail.com
33	NCC COMMANDING OFFICER ,BHAVNAGAR	GROUP CAPT.MANISH MAHAJAN	608B,CRESCENT BUILDING,CRESCENT CIRCLE,KRISHNA NAGAR,BHAVNAGAR	(O)02782516893 (M)9667533505	air.bvng@nccindia.nic.i n



1. Enforcement of Plan

1.1 Statement by the District Collector (or the DEA)

The Effects of a major accident in an industrial set up are not always restricted to the boundaries of the industrial unit. They may spill over to surrounding and the environment in vicinity. Major accident hazardous unit and transportation of hazardous chemical are posed to major emergency involving release of acutely flammable, explosive, poisonous or toxic chemicals. The efforts towards the awareness, preparedness and responding action are good indication of industrial approach to handle and control the emergency.

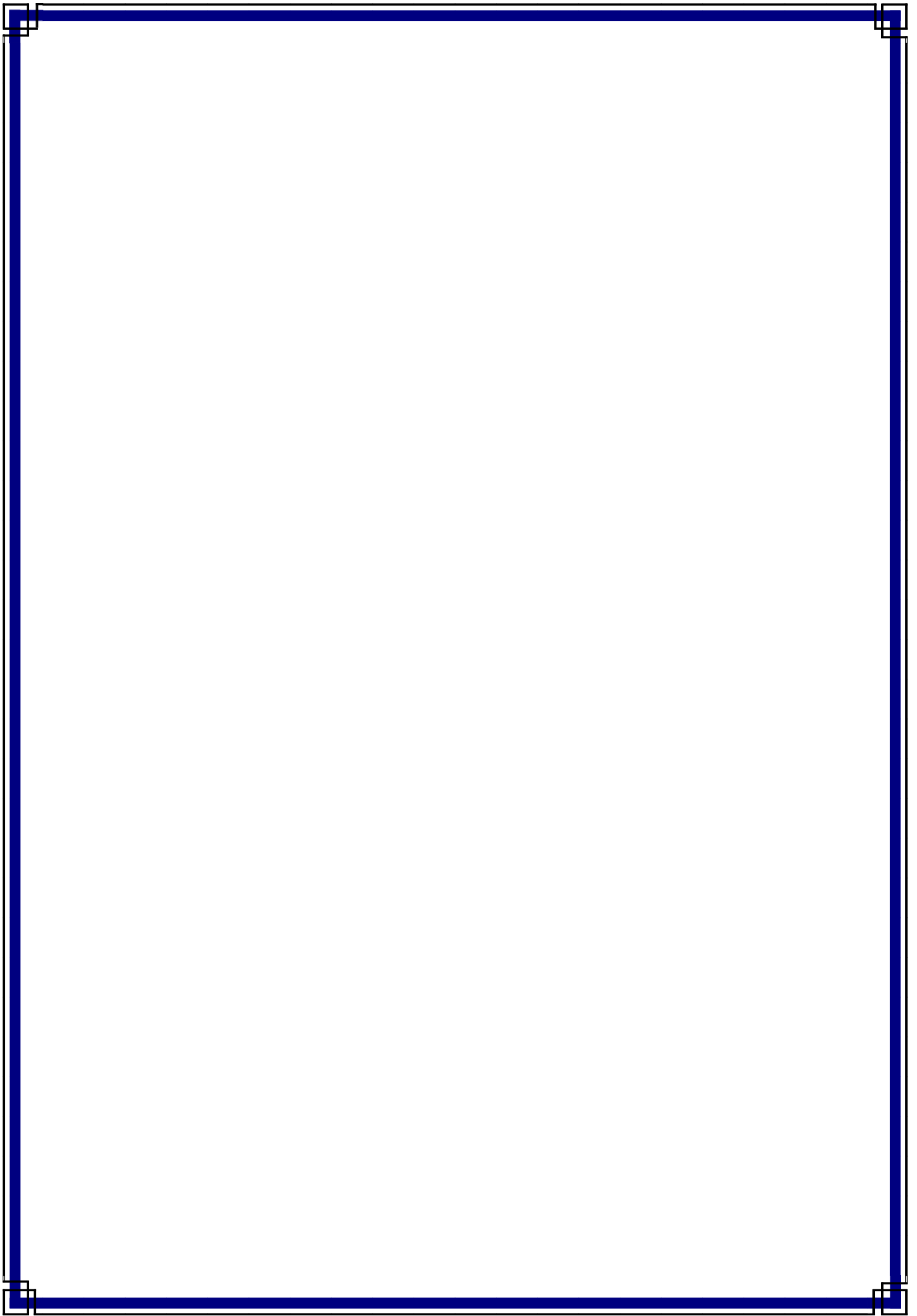
The document provides a statutory structure for handling and controlling major emergencies posed by hazardous chemicals. The updating and review of the existing plan is continual process. Therefore, it is decided to update the exiting off site emergency plan to incorporate new information.

I appeal to all members of concerned departments, organisations, agencies etc. to prepare their own action plan by constituting workable task-face to handle & control such industrial emergency by adequate resources at their own level based on this document. It is also mentioned that such resources shall be maintained in working conditions to meet any industrial or transportation emergency at any odd time also.

Thanks all members of committee, who have contributed valuable inputs in preparation of this plan. I express sincere thanks to Shri. M.A. Menat, Assistant Director - Industrial Safety & Health, Bhavnagar District and his colleagues, who put immense efforts in preparation of this document.

“This document has been prepared in close cooperation with the local authorities and with the support of MAH installations in the area. I, hereby, declare the plan to be effected”.

SHREE MANISHKUMAR BANSAL, IAS
Chairman D.C.G.,
District Collector & DM,
BHAVNAGAR



1.2 Statement by the Officer Appointed to Carry Out the Maintenance and Upkeep tasks of the Plan (See Section 6.1 of Part a)

The activities of storage and transportation in huge quantities of hazardous chemicals are increasing day by day. Systematic approach is required to tackle any emergency due to hazardous chemicals. Government authorities and emergency services are required to prepare themselves and be in a state of readiness at all times to limit the consequences of any such emergency to protect the people and the environment. The process of updating and reviewing of exiting off-site industrial emergency plan is necessary to incorporate change, amendments, and statutory requirements as well such certain guidelines issued by various authorities.

The various statutory provisions as well as guidelines issued by MoEF - New Delhi in June 2011 and by different authorities as well as information provided by MAH units in the District are considered to prepare this plan.

1. The Factories Act 1948(1987) and The Gujarat Factories Rules 1963 (2004)
2. The Disaster Management Act 2005 and Disaster Management Rules 2006
3. The Gujarat State Disaster Management Act 2003
4. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules-1996 (2000).
5. Manufacture, Storage and Important of Hazardous Chemicals Rules 1989(2000)
6. APELL; Awareness and preparedness for Emergency at Local Level –Chemical Emergency Prevention, Preparedness & Response (1995)-National Response Team- National Safety Council, Mumbai.
7. Major Accident Hazards Control and Techniques. CLI - Mumbai.
8. Planning Off Off-Site Response For Chemical Hazards –Circulated by Environmental and forest Department, New Delhi.
9. Major Hazard Control – I. L. O. Geneva
10. The guideline on the preparation on Off-Side Emergency Plan issues by Director- Industrial Safety & Health, Gujarat State,

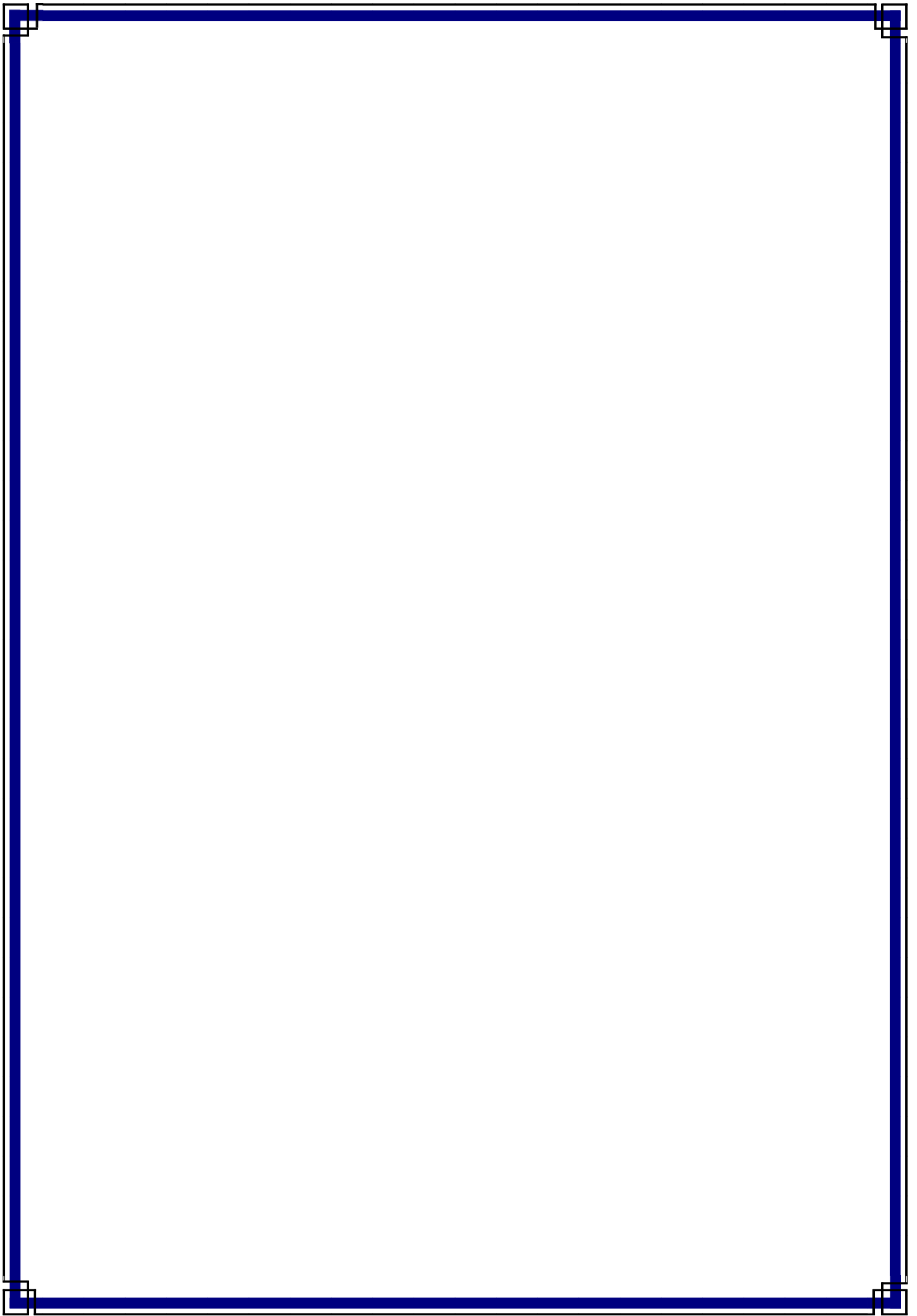
I am thankfully for extending valuable guidance provided by Director - Industrial Safety & Health; Gujarat State. Further, I am thankfully for positive response extended by Shri V.B.Kikani and Shri N.A Baldaniya , Industrial Safety And Health officer of the Bhavnagar office.

“I take responsibility for the maintenance and upkeep of the plan and shall: Possess Master Copy of this Plan and ensure at all times that it is up-to-date

- Ensure distribution of the latest plan in soft copy to the key responders
- Maintain signatures of the responders in the Master Copy of the plan
- Communicate changes in the plan to all the possessors of the plan (see Annex. 3)
- Initiate revision of plan whenever it is due

And perform other tasks that may needed for up-to-date maintenance and sufficiency of this plan”

Shri N.K.PATEL,
Member Secretary DCG,
Assistant Director Industrial Safety & Health,
BHAVNAGAR



2. Introduction, Use and Control of Off-site Emergency Plan

2.1 Background to Off-site Emergency

Manufacture, storage and use of hazardous substances pose a serious risk to industry, people in the neighbourhood and the environment. Accidental release of hazardous chemicals, which are flammable, explosive or toxic, may lead to emergencies. Depending upon the nature of the substance and magnitude of the release, emergency could either be confined within the industry (On-site Emergency) or could transgress the boundary of the industry and affect the public in the neighbourhood in which case it would be an Off-site Emergency. The Off-site emergency Plan is a document detailing how emergencies relating to a possible major accident involving a hazardous chemical in an industry, which may have ramifications outside the boundary walls of that industry will be dealt with.

The rule 14(1) of MSIHC Rules read with Schedule 5 requires the District Authorities to prepare an Offsite Emergency Plan in consultation with the Director industrial safety and health, Gujarat state (Chief Inspector of Factories) and assistance from the Chief Controller of Explosives.

The details to be furnished in the Off-site Emergency Plan are given in Schedule 12 of the Rules. These are:

- The type of accidents and release to be taken into account.
- Organizations involved including key personnel and responsibilities and liaison arrangements between them.
- Information about the site including likely locations of dangerous substances, personnel and emergency control rooms.
- Technical information such as chemical and physical characteristics and dangers of the substances and plant.
- Identification of the facilities and transport routes.
- Contact for further advice e.g. meteorological information, transport, temporary food and accommodation, first aid and hospital services, water and agricultural authorities.
- Communications links including telephones, radios and standby methods.
- Special equipment including fire fighting materials, damage control and repair items.
- Details of emergency response procedures.
- Notification to the public.
- Evacuation arrangements.
- Arrangements for dealing with the press and other media interests.
- Long term clean up.

Transportation of hazardous chemical by Road, Rail, Port or Pipeline may pose a threat to the population and environment. Such accidents also belong to the category of off-site emergency. The definition of major chemical accident includes accidents during transportation vide rule 2(f) of the CA (EPPR) Rules.

2.2 Off-site Emergency

The chemical release, fire, explosion or spillage in an industrial unit including isolated storages that may have ramifications outside the boundary of that particular industrial unit or such a chemical release, fire, explosion or spillage during the transportation of hazardous chemicals by road or by pipeline, all of which may pose a threat to life and property of public at large, is a situation qualifying to be an offsite emergency. With the declaration to this effect by the DEA.

2.3 Off-site Emergency Plan and its Use

Off-site Emergency Plan foresees the possible emergency scenarios leading to Off-site Emergency Plan. The following are the use of Off-site Emergency Plan

2.3.1 Pre-Emergency Use

- The plan identifies the resources required for dealing with likely emergencies and draws attention to additional resources that may be required.
- The plan helps to inform the necessary authorities and stake-holders of their responsibilities during the emergency.

2.3.2 During Emergency Use

The plan gives the procedures to be executed by various roles during the off-site emergency for its control and mitigation.

The plan serves as a ready-reckoned for all vital and factual information that is required during emergency.

2.3.3 Post-Emergency Use

The plan gives procedures for prevention of damage in the long term that may arise as effect of an emergency.

The plan lays for review of emergency to draw necessary observations and lessons for self-enrichment of plan for future emergencies.

2.4 Scope of Off-site Emergency Plan

The Off-site Emergency Plan applies to the entire district. The Off-site Emergency Plan compiles all the possible emergency scenarios pertaining to industrial or transportation hazards that may arise within the district boundaries and provides for the response mitigation of the same. The inter-relationship Off-site Emergency Plan is depicted in the diagram below...

M.A.H. FACTORIES IN BHAVNAGAR DISTRICT

```
graph TD; Root[M.A.H. FACTORIES IN BHAVNAGAR DISTRICT] --> Box1[ARCHIT ORGANOSYS LTD.  
SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, BHAVNAGAR]; Root --> Box2[SUMITOMO CHEMICAL INDIA LTD.  
6/2, RUVAPARI ROAD, BHAVNAGAR]; Root --> Box3[INDIAN OIL CORPORATION LIMITED  
( L.P.G. BOTTLING PLANT )  
TAGADI, GHOGHA, BHAVNAGAR]; Root --> Box4[NIRMA LIMITED (SODA ASH)  
KALA TALAV, BHAVNAGAR]; Root --> Box5[RENAISSANCE INDUSTRIES  
PLOT NO. 104, 105, GIDC, VARTEJ, BHAVNAGAR]; Root --> Box6[SHIP RECYCLING IND. ASSOCIATION (INDIA)  
AT POST-ODARAKA, VIA-TANSA, BHAVNAGAR]; Root --> Box7[SUNFIRE PETROCHEMICALS (P) LTD.  
SURVEY NO. 34, VILL. VADIA, SIHOR, BHAVNAGAR]; Root --> Box8[AGROCEL INDUSTRIES PRIVATE LIMITED  
SURVEY NO. 442 443 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD, BHAVNAGAR];
```

**ARCHIT
ORGANOSYS LTD.**

**SURVEY NO.
228/1-A, PAIKI 7 &
PAIKI 2, VILLAGE-
NARMAD,
BHAVNAGAR**

**SUMITOMO
CHEMICAL INDIA
LTD.**

**6/2, RUVAPARI
ROAD,
BHAVNAGAR**

**INDIAN OIL
CORPORATION
LIMITED
(L.P.G. BOTTLING
PLANT)**

**TAGADI,
GHOGHA,
BHAVNAGAR**

**NIRMA LIMITED
(SODA ASH)**

**KALA TALAV,
BHAVNAGAR**

**RENAISSANCE
INDUSTRIES**

**PLOT NO. 104,
105, GIDC,
VARTEJ,
BHAVNAGAR**

**SHIP RECYCLING
IND. ASSOCIATION
(INDIA)**

**AT POST-
ODARAKA, VIA-
TANSA,
BHAVNAGAR**

**SUNFIRE
PETROCHEMICALS
(P) LTD.**

**SURVEY NO. 34,
VILL. VADIA,
SIHOR,
BHAVNAGAR**

**AGROCEL
INDUSTRIES
PRIVATE LIMITED**

**SURVEY NO. 442
443 444 & 452/3
NR. VILL. AVANIA
GHOGHA ROAD,
BHAVNAGAR**

2.5 Declaration of Off-site Emergency and Enforcement of Plan

The responsibility and the power of declaring the off-site emergency in the district vests with the DEA. In his absence, the responsibility and power vests with the authority appointed in lieu of the DEA. The declaration of emergency shall be made via Annexure 1.

2.6 Possessors of the Off-site Emergency Plan and the Maintenance Officer of the Plan

The copy of the off-site plan must be possessed by all the responders who contribute in the off-site planning process or in mitigation response. The list of all the possessors of the off-site plan is as following: The District Collector (or the DEA) is responsible for the maintenance and upkeep of the Off-site Emergency Plan. He may designate one officer to carry out the tasks pertaining to this role. This officer should be indicated in the 'Remarks' column of the table above.

Table 3 Possessors of Off-Site Emergency Plan
Directory of Key Responders in the District

Table2 DirectoryofKey Responders

SR.	AUTHORITY	NAMEOFCURRENT OFFICEHOLDER	ADDRESS (O, R)	TELEPHONE(O,R,M)	EMAIL
1.	DISTRICT COLLECTOR (ORDEA) CHAIRMAN	SHRI MANISHKUMAR BANSAL, IAS	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782428822 (O)+912782521666 (M)9978406206	collector- bav@gujarat.gov.in
2.	(ALTERNATE) RESIDENT ADDITIONAL COLLECTOR, BHAVNAGAR	SHRI N.D.GOVANI	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782421881 (O)+912782427756 (M)9978405178	add-collector- bav@gujarat.gov.in
3.	MUNICIPAL COMMISSIONER MEMBER	SHRI NARENDRAKUMAR MEENA, IAS	BHAVNAGAR MUNICIPAL CORPORATION	(O)+912782439900 (O)+912782510532 (M)9978404500	comm-bmc@gujarat.gov.in
4.	ALTERNATE DY.MUNICIPAL COMMISSIONER	SHRI M.C.PATEL	BHAVNAGARM UNICIPALCOR PORATION	(O)+912782439292 (M)9925224646	dmca.bmcgujarat@gmail.co m
5.	DDO,BHAVNAGAR MEMBER	SHRI HANUL CHAUDHARI, IAS	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)0278-2426810 (M)9978406231	ddo-bav@gujarat.gov.in
6.	SUPERINTENDENTOF POLICE Member	SHRI NITESH PANDEY IPS	OFFICE OF SUPERINTENDENT OF POLICE, BHAVNAGAR	(O)02782520050 (M)9978405067	sp-bav@gujarat.gov.in
7.	MAMLATDAR,DISASTER CONTROL	SHRI A.D.KUBAVAT	DISTRICT DISASTER MANAGEMENT	(E)+91278 1077 (O)+912782521554	dismgmt- bav@gujarat.gov.in

			CONTROL ROOM BHAVNAGAR	(O)+912782521555 (M)9426902111	
8.	FIRE DEPARTMENT CHIEF FIRE OFFICER MEMBER	SHRI PRADYUMANSINH JADEJA CHIEF FIRE OFFICER	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424814 (O)+912782424815 (M)9727712177	cfo-bmc@gujarat.gov.in
9.	(ALTERNATE) DIVISIONAL FIRE OFFICER	MR.P.R.JADEJA	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424878, (M)9825204004	cfo-bmc@gujarat.gov.in
10	CHIEF DIST.HEALTH OFFICER(CDHO) MEMBER	DR.KOKILABEN SOLANKI	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)+912782423665 (M)9727779662	cdho.health.bhavnagar@g mail.com
11	ASISTANT DIRECTOR, I. S.H., BHAVNAGAR MEMBER SECRETARY	MR.N.K.PATEL	JILLA SEVASADAN-2, 3 RD FLOOR, DISH OFFICE,BHAVNAGAR	(O)+912782428473 (M)9427508476	astdish-bav@gujarat.gov.in
12	DEPUTY CONTROLLER, CIVIL DEFENCE, BHAVNAGAR	DR.CHINTAN VAISHNAV	DISASTER CELL, COLLECTOR OFFICE, BHAVNAGAR	(O)+912782521554 (M)8980035034	cdbvn04@gmail.com
13	POLLUTION CONTROL BOARD (REGIONAL OFFICER)	SHRI MANISH BARAD	MOKDHAIJI CIRCLE, GHOGHARD, SARDARNAGAR, BHAVNAGAR.	(O)+912782566108 (M)8140944711	ro-gpcb- bhav@gujarat.gov.in
14	REGIONAL TRANSPORT OFFICER MEMBER	SHRI RUTVIJA DANI	SARDAR PATEL CIRCLE, GADHECHIVADALA, BHAVNAGAR	(O)02782424004 (M)9723759293	rto-trans- bhv@gujarat.gov.in
15	A) TECHNICAL EXPERTS MEMBER	MR SHAKTIDAN ROHADIYA (DY.MANAGER, FIRE AND SAFETY) NIRMA LTD	KALATALAV BHAVNAGAR	(M)8980026351	nirma-kalatalav@gmail.com
16	B) TECHNICAL EXPERTS MEMBER	V.V.SHAH (A.G.M.S.H.E.) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9099069056	nirma-kalatalav@gmail.com
17	C) TECHNICAL EXPERTS MEMBER	MR AMITMAHETA(V.P.) SUMITOMO CHEMICAL INDIA LTD	RUVPARI ROAD BHAVNAGAR	(M)9426743350	bharat.sathiya@sumichem. co.in
18	D) TECHNICAL EXPERTS MEMBER	MR BHRUGURAJZALA(H.S. E.)RENAISSANCE INDUSTRIES	VARTEJ GIDC ,BHAVNAGAR	(M)9913999988	renaissanceindustriesfac@g mail.com
19	INDUSTRIES REPRESENTATIVE MEMBER	MR D.G.JAKHADE (UNIT HEAD) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9825019963	nirma-kalatalav@gmail.com
20	INDUSTRIES REPRESENTATIVE MEMBER	MR NITIN PANDEY IOCL BOTTLING PLANT	TAGDI, BHAVNAGAR	(M)9453016084	pandeynitin@indianoil.in

21	INDUSTRIES REPRESENTATIVE MEMBER	MR S. R. SINGHARCHITORGANO SYS LTD	NARMAD,BHAVNAGAR	(M)6351275128	sales@architorg.com
22	TRADE UNION REPRESENTATIVE MEMBER	MR.VIDHYADHARRAHA NE (GENRALSECRETARY) A.S.S.R.ANDG.W.ASSO CIATION	ALANG,BHAVNAGAR	(O)02842235035	—
23	DISTRICT INFORMATION OFFICER MEMBER	MR R.S.CHAUHAN	BEHIND COLLECTOR'S OFFICE, MOTIBAGH, BHAVNAGAR.	(O)02782424994 (O)02782422919 (M)9537409098	cdmo-bav@gujarat.gov.in
24	WESTERN RAILWAY BHAVNAGAR	MR. DINESH VERMA RAILWAY MANAGER	CENTRALRAILWAYSTATION BHAVNAGAR	(O)02782445475 (M)9724097000	drm@bvp.railnet.gov.in
25	PETROLEUM AND EXPLOSIVE SAFETY ORGANISATION MEMBER	DR.R.VENUGOPALJ OINTCHIEFCONTR OLLEROFEXPLOSI VES – VADODARA	8 TH FLOOR,YASHKAMALBILDIN G,SAYAJIGANJ,VADODARA	(O)02652225159	rvenugopal@explosives.gov .in
26	PASCHIM GUJARAT VIJ COMPANY LIMITED CIRCLE OFFICE, BHAVNAGAR MEMBER	SHRI Y.R.JADEJA CHIEF ENGINEER	"VIJSEVASADAN",OLDPOWE RHOUSECOMPOUND,CHAV DIGATE,BHAVNAGAR	(O)02782522922 (O)02782524924(M)9879203840	sebvnpvgvcl@gmail.com

27	PRANT OFFICER, BHAVNAGAR		COLLECTORATE BUILDING,GROUND FLOOR,MOTIBAUG, BHAVNAGAR	(O)02782428701 (M)7567010346	po-bav@gujarat.gov.in
28	PRANT OFFICER, MAHUVA	SHRI SUSMITHA EPPALAPALLY (I.A.S.)	TALUKA SEVA SADAN, NH-51,VADLI, MAHUVA,BHAVNAGAR	(O)02844222765 (M)7567010268	sdm-mahuva-bav@gujarat.gov.in
29	PRANT OFFICER, PALITANA	MR.ANKIT PATEL	TALETIROAD,OPP. PALITANAHIGH SCHOOL,PALITANA, DIST.BHAVNAGAR- 364270	(O)02848243350 (M)7567010276	sdm-pali-bav@gujarat.gov.in
30	PRANT OFFICER, SIHOR	SHRI BHUMIKA KORIYA	OFFICEOFDEPUTY COLLECTOR, BHAVNAGAR-SHIHOR ROAD,DIST. BHAVNAGAR	(O)02846222103 (M)7567010355	po-shihor-bav@gujarat.gov.in
31	PRANT OFFICER,TALAJA	SHRI JAYKUMAR RAVAL	ROYALCHOWKADI, TALAJA-BHAVNAGAR N.H.NO.8-E,TALAJA	(O)02842222260 (M)7567010274	po-talaja-bav@gujarat.gov.in
32	SUPERINTENDENT SIR TAKHTASINHJI GENERAL HOSPITAL, BHAVNAGAR	DR. ASHOK VALA	KALANALA, BHAVNAGAR	(O)02782423250 (M)9898141114	ms.health.bhavnagar@gmail.com
33	NCC COMMANDING OFFICER ,BHAVNAGAR	GROUP CAPT.MANISH MAHAJAN	608B,CRESCENT BUILDING,CRESCENT CIRCLE,KRISHNA NAGAR,BHAVNAGAR	(O)02782516893 (M)9667533505	air.bvng@nccindia.nic.in

2.7 Review and Amendment of Plan

The Off-site Emergency Plan shall be distributed to all people listed in Annexure 2. It shall be the duty of the District Collector (or the DEA) to ensure distribution of up-to-date copy of this plan to all people listed in Annexure 2. It shall also be the duty of all authorities listed in Annexure 2 to see to it that they receive an up-to-date copy of subsequent versions of the plan. This Off-site Emergency Plan is a dynamic document and must at all times reflect the ground realities by changing when these change. For this purpose, the Off-site Emergency Plan is set to expire after a period of 2 years from the date on which it is affected. A new version of the plan shall be prepared, released and distributed before the expiry of the current version. Should there be any major changes such as upcoming of new industrial units, identification of new hazards among others or an instance of an off-site emergency the Off-site Emergency Plan shall be revised even before its due expiry. Should there be any minor changes such as changes in person(s) holding particular authorities, changes in phone numbers among others, these shall be communicated to all the possessors of the Off-site Emergency Plan via Annexure 3 by the DEA(district emergency authority). The stakeholders of the plan undergoing change in positions or having changed their phone numbers should inform the same to the DEA via Annexure 4.

2.8 Dovetailing of On-site Emergency Plans with this Plan

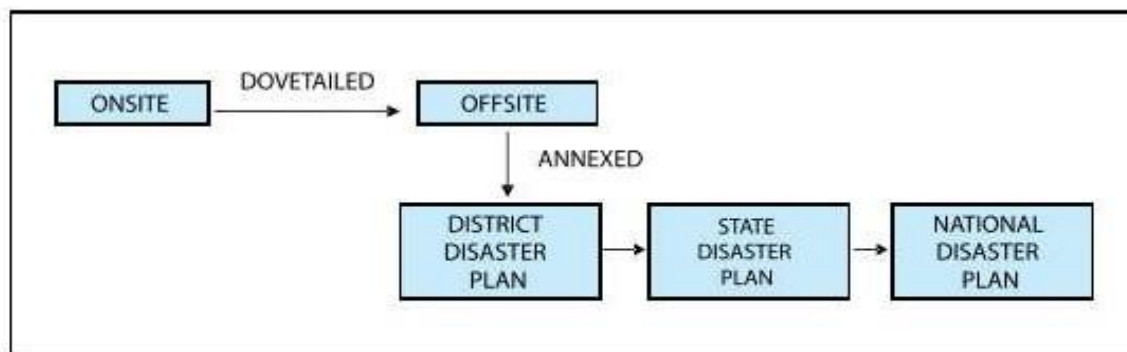
This Off-site Emergency Plan is put use when an industrial on-site emergency is expected to or has already transcended the boundaries of the industrial unit. It is necessary that the actions enlisted in the on-site plan are consistent with the plan of action in this Off-site Emergency Plan. For this purpose it is necessary for the MAH units to ensure that their plans agree to and is consistent with the Off-site Emergency Plan. The dovetailing to this effect needs to be ensured in the following areas among others:

- Communication to the District Authorities/Agencies (see Chapter 8: Emergency Scenarios)
- Line of command (See Chapter 7: Organisation of Roles)

2.9 Annexing of this Plan with District Disaster Management Plan

The offsite plan should be annexed to the district disaster management plan.

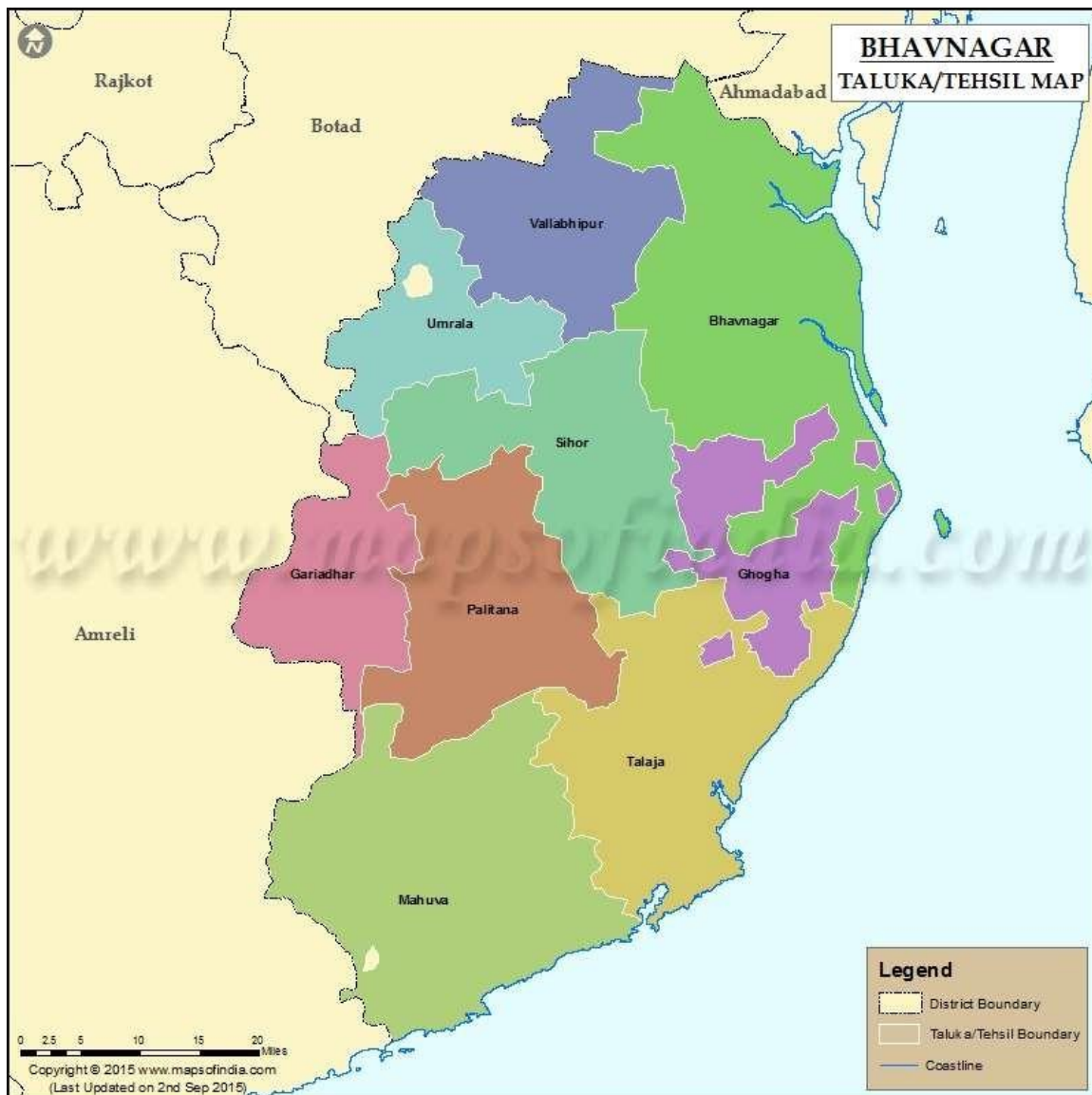
The diagram below shows the relation of offsite plan with in the schema of disaster management plans.



The Onsite Plans and Offsite Plans are chemical disaster plans as stipulated in the MSIHC Rules, 1989. The District Disaster, State Disaster and National Disaster Plans are general disaster plans as stipulated in the Disaster Management Act, 2005.

3. District Profile

3.1 Map of District



3.2 Description of Map and other Geographic Information

Bhavnagar was founded in 1723 AD by Bhavsinhji Gohil and was named after its founder and ruler. It was capital of Bhavnagar State which was the first princely state to merge with the democratic Indian Union in 1948.

Bhavnagar District is situated in the eastern part of Saurashtra between 21°46' North and 72°09' East longitude. It is one of the major coastal districts of Gujarat, the place shares its borders with Ahmedabad and Botad on the North, Rajkot & Amreli on the West and on the East & South is Gulf of Cambay.

Bhavnagar is the sixth largest city of Gujarat, and the third largest city in Saurashtra region. Bhavnagar is also known for pioneering and laudable efforts in the fields of rural child as well as liberal women's education. Bhavnagar is also known as the cultural capital of Saurashtra. The renowned Central Salt & Marine Chemical Research Institute (CSMCRI) at Bhavnagar is the only Marine Chemical Research Institute in India.

With a vibrant historical past, Bhavnagar presents an aura of rich Gujarati culture. The place has some distinct tourist places which receive huge number of footfalls every year. There are temples, parks and other sites which are a must watch for the travelers. The colorful Gujarati culture unfurls in front of the visitors gradually as one goes out on a sightseeing. Some of the important tourist spots include: Jain temples in Saurashtra hills, Blackbuck National Park, Takhteshwar Temple, Nilambag Palace, Victoria Park, Barton Library, Gandhi Smriti Library are famous tourist destinations in Bhavnagar.

Industrial development in Bhavnagar district could be attributed to the presence of a large number of diamond cutting and polishing units, salt and marine chemicals, plastics, ship breaking and recycling industries. Bhavnagar stands second in diamond cutting & polishing industry after Surat. Bhavnagar is the largest producer of salt with 34,500 tons of salt being produced annually in the district. And at Alang, Bhavnagar is having the largest ship recycling yard in the world, recycling about 40 % of the salvaged ships of the world. This has also helped developing supporting industries, such as Oxygen & LPG bottling plants, re-rolling mills and induction furnaces.

3.3 Demographic Information

The district is divided into 11 Talukas namely Jesar, Vallabhipur, Bhavnagar, Umralla, Bhavnagar city, Ghogha, Sihor, Gariyadhar, Palitana, Talaja and Mahuva .

All the important places in the district are well connected by road. National Highway No.8E passes through the district connecting it to Junagadh & Amreli are accessible to all other Indian cities through proper rail, road and air linkages, the place is one of the most easily reachable district of Gujarat.

In 2011, Bhavnagar had population of 2,877,961 of which male and female were 1,490,465 and 1,387,496 respectively. There was change of 16.53 percent in the population compared to population as per 2001. In the previous census of India 2001, Bhavnagar District recorded increase of 19.31 percent to its population compared to 1991.

The initial provisional data suggest a density of 288 in 2011 compared to 247 of 2001. Total area under Bhavnagar district is about 9,980 sq.km. Bhavnagar is located at an elevation of 74 ft from mean sea level.

3.4 Meteorological Information

Climate of Bhavnagar is moderate with hot summers and mild winters. This city of Gujarat, located on the eastern coast of Saurashtra, experiences summer from April to June and winter between the months of November and February. The maximum temperature recorded during summer months is 44 °C while the minimum temperature is 24 °C. And in the winter season maximum temperature rises up to 32 °C and minimum temperature comes down to 15 °C.

It is noteworthy that Bhavnagar is situated on the coastal fringe of Saurashtra; therefore, it remains humid throughout the year. Bhavnagar receives intermittent rainfall between the months of July and September. Average rainfall of the district is 605 mm. River Shetrunji, Ranghola and Kalubhar are main rivers caters the water requirement in the district.

Rivers and water resources:-

Principal river of the district are Shetrunji ,Kalubhar ,Malan,Deri , Bagad and Gheli. Shetrunji dam has been constructed on Shetrunji river at Rajasthali village Palitana.

Table 4 Meteorological Information

SR.	PARAMETER	MAXIMUM	MINIMUM
1	2	3	4
1.	TEMPERATURE	43.0 DEG C	12.0 DEG C
2.	HUMIDITY	85%	32%
3.	WIND-VELOCITY	12.33 KM / HR	4.1 KM / HR

The data pertaining to the table 5 may be obtained from the local meteorological department. The meteorological department shall provide the necessary data available for the district.

3.5 Important Activities/Events/Festive Events in District

Table 5 List of Important Events in the District

SR.	EVENT NAME	DATE	LOCATION	POPULATION INVOLVED	REMARKS
1	2	3	4	5	6
1.	ROAD SAFETY WEEK	1 ST TO 7 TH JANUARY	ALL INDUSTRIES & TRAFFIC DEPT.	LARGE NUMBERS OF PEOPLE INVOLVE	
2.	NEW YEAR'S DAY	1 ST JANUARY	ALL INDUSTRIES	- D0 -	
3.	REPUBLIC DAY	26 TH JANUARY	ALL INDUSTRIES & GOV. ORGANISATION	- D0 -	
4.	NATIONAL SAFETY DAY	4 TH MARCH	ALL INDUSTRIES	- D0 -	
5.	FIRE SERVICES DAY	14 TH APRIL	ALL INDUSTRIES	- D0 -	
6.	LABOUR DAY	1 ST MAY	ALL INDUSTRIES	- D0 -	
7.	WORLD ENVIRONMENT DAY	5 TH JUNE	ALL INDUSTRIES	- D0 -	
8.	INDEPENDENCE DAY	15 TH AUGUST	ALL INDUSTRIES, GOV. ORGANISATION & GENERAL PUBLIC	- D0 -	

Table 6 Natural Disaster History

SR.	NATURAL DISASTER NAME AND LOCATION	DESCRIPTION, MAGNITUDE AND EFFECTS	REMARKS
1	2	3	4
1.	EARTHQUAKE-2001	THE 2001 GUJARAT EARTHQUAKE OCCURRED ON JANUARY 26, 2001, AT 08:46 AM LOCAL TIME AND LASTED FOR OVER TWO MINUTES. THE EARTHQUAKE REACHED A MAGNITUDE OF BETWEEN 7.6 AND 7.7 ON THE MOMENT MAGNITUDE SCALE. THE QUAKE KILLED AROUND 20,000 PEOPLE, INJURED ANOTHER 167,000 AND DESTROYED NEARLY 400,000 HOMES. THERE WERE FEW RESIDENTIAL APARTMENTS COLLAPSED AND REPORTED. THERE WAS NO SIGNIFICANT DAMAGE REPORTED IN DISTRICT.	
2.	TAUKTAE CYCLONE May - 2021	THE CYCLONE MADE LANDFALL IN THE REGION OF SAURASHTRA BETWEEN DIU AND RAJULA AND WEAKENED TO A VERY SEVERE CYCLONIC STORM. WIND SPEEDS OF APPROXIMATELY 150 TO 175 KILOMETRES PER HOUR. NEARLY 67 PEOPLE WERE KILLED IN GUJARAT, WHILE NEARLY 55,384 HOMES WERE DAMAGED. OVER 2,400 VILLAGES WITNESSED POWER SUPPLY FAILURES. THE DISTRICTS OF JUNAGADH, GIR-SOMNATH, BHAVNAGAR, AND AMRELI WERE BATTERED BY HEAVY RAINFALL AND WINDS AROUND 100 KM/H BY NOON OF MAY 17.	

4. Identification of Hazards

4.1 Introduction to Hazards

Hazard is the existence of a situation that can potentially lead to disaster. The offsite emergency plan identifies the hazards that can lead to a chemical disaster. The hazards identified are primarily the MAH installations including isolated storages. However hazards are not restricted to MAH installations alone. Therefore, identification of hazards other than those at MAH installations is important as well. This chapter identifies the hazards in the district.

4.2 MAH Unit Installations

All MAH units including isolated storages have been listed and detailed in the table below:

Table 7 Information on MAH unit Installation

SR.	MAH UNIT NAME WITH ADDRESS	ACTIVITY CARRIED OUT	HAZARDOUS CHEMICALS HANDLED WITH QUANTITY (ALL CHEMICALS THAT MAKE THE UNIT MAH)	DISASTERS LIKELY	CONTACT PERSON NAME # (OCC, FM.SI) WITH PHONE- NUMBERS (O,R,M)	REMARKS
1	2	3	4	5	6	7
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA- DIST-BHAVNAGAR	CHLORINE	90 MT	TOXIC RELEASE	MR ARCHITBHAI K AMIN (Factory Manager) 9909017735 ALTERNATE:- Mr. Kapil Parmar H.R. Manager (M) 7878152525	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	EPN (EPICHLORO HYDRINE)	2 MT	FIRE, EXPLOSION AND TOXIC RELEASE	Dr. Amit Mehta (Factory Manager) (M): 9426743350 E-mail : bharat.sathiya@sumichem.co.in ALTERNATE:- Mr. Bhadresh Trivedi Safety Officer (M) 9427503264	Currentl y below M.A.H. quantity .
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	LPG	1850 MT	FIRE, EXPLOSION	MR AJAY GAUTAM (Occupier) 9797568567 (M): 9453016084 E-mail : pandeynitin@indianoil.in ALTERNATE:- Mr. V.A. Chauhan Senior Manager	

					(M) 9727774147	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST- BHAVNAGAR	CHLORINE	372 MT	FIRE, EXPLOSION AND TOXIC RELEASE	Mr. D. G. Jhakde (Factory Manager) (M): 9825019963 E-mail : nirma-kalatalav@gmail.com ALTERNATE:- Mr. Shaktidan Rohadiya Safety Officer (M) 8980026351	
		AMMONIA	12 MT			
		HYDROGEN	200 M ³			
		BROMINE	16 MT			
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	CHLORINE	13 MT	TOXIC RELEASE	Mr. Bhururajsinh Zala (Factory Manager) (M): 9913999988 E-mail : renaissanceindustriesfac@gmail.com ALTERNATE:- Mr. Hirenbbhai V. Parmar Accountant (M) 9408548181	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSA, DIST-BHAVNAGAR	LPG	90 MT	FIRE, EXPLOSION	Mr. Pravinbbhai Bagadiya (Factory Manager) (M) : 8141418090 E-mail :- accsria93@gmail.com ALTERNATE:- Mr. Mansukhbhai Gohel Supervisor (M) 9662646776	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST:- BHAVNAGAR-364 240.	LPG	60 MT	FIRE, EXPLOSION	Mr. Pradip Chaurasiya (Occupier) (M) : 9377553439 E-mail : pkchourasia@gmail.com ALTERNATE:- Mr. Nareshbbhai Rajaniya In-charge (M)6351978251	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	BROMINE	66 MT	TOXIC RELEASE	Mr. Summit kakkar (Factory Manager) (M): 7861870694 E-mail : sumit.kakkar@agrocel.net ALTERNATE:- Mr. Vishal Mulani Safety Officer (M) 9033804727	

Map Locations of M.A.H. Units:-

1. ARCHIT ORGANOSYS LTD., SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR



Sumitomo chemical
India Limited
Sumitomo chemical
India limited

Regional Science
Centre Bhavnagar
રોજીયોનલ
સાયન્સ સેન્ટર...

Shree Khodiyar
Mata Mandir
શ્રી ખોડીયાર
માતા મંદિર

Shree Bajrangdasbapa
Arogyadham

Bhavnagar
ભાવનગર

Lock Gate
લોક ગેટ

Jat Vasahat Talav

Akwada
અકવાડા

Tarsimiya Part
તરસીમિયા
પાર્ટ

Adhwada
અધવાડા

Borta Lake

Iscon The Fern Resort
& Spa, Bhavnagar

Gyanmanjari
Innovative University
ગ્યાનમંજરી
ઇનોવેટીવ...

Vartej
વર્તેજ

Nari
નારી

CHITRA GUJARAT
INDUSTRIAL
DEVELOPMENT
CORPORATION
ચિત્રા ગુજરાત
ઇન્ડસ્ટ્રીયલ
ડેવલપમેન્ટ
કોર્પોરેશન

BLOCK 14
બ્લોક 14

KALIYABID
કલિયાબિડ

BE

36

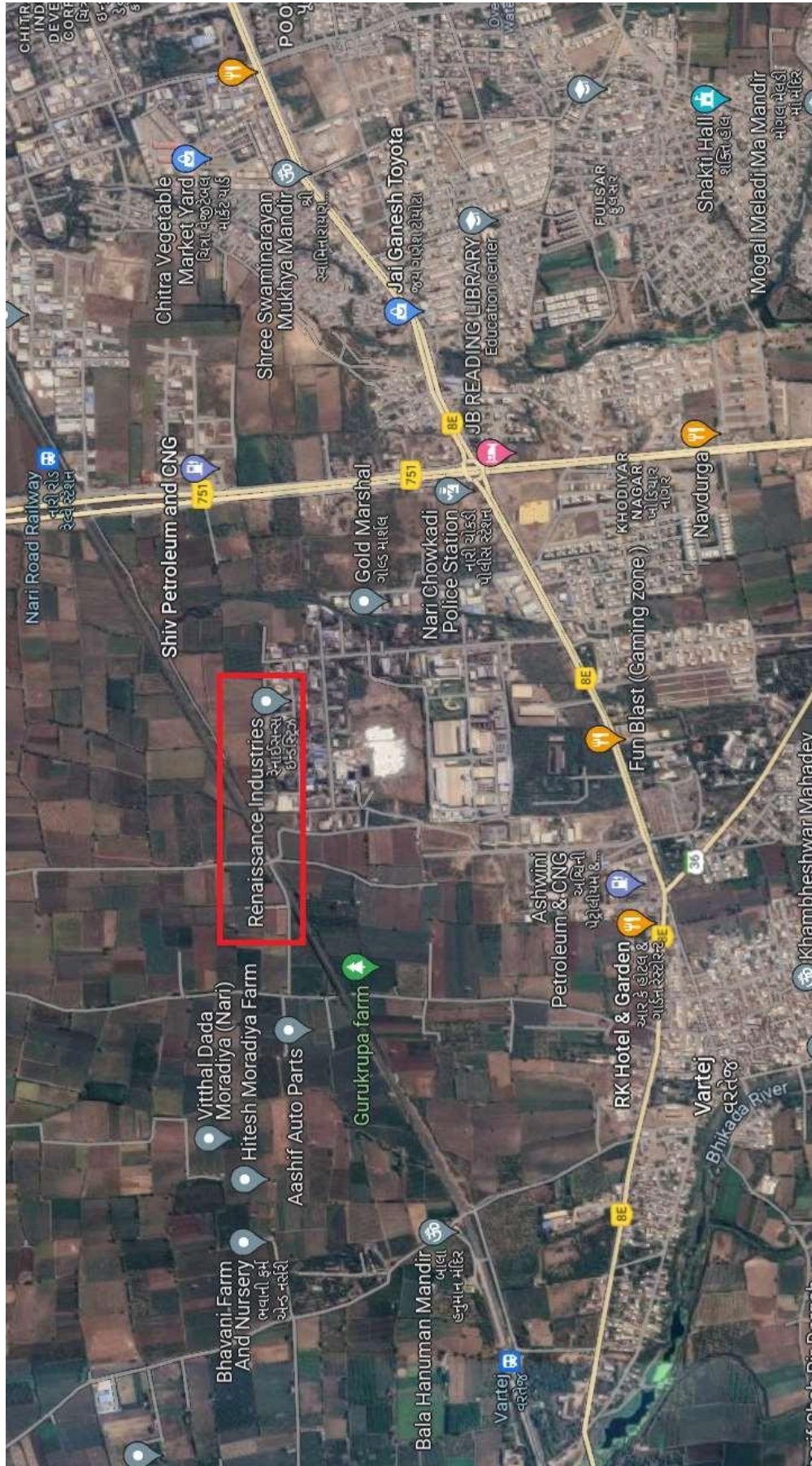
3. INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT), TAGADI, GHOGHA, BHAVNAGAR.



4. NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR



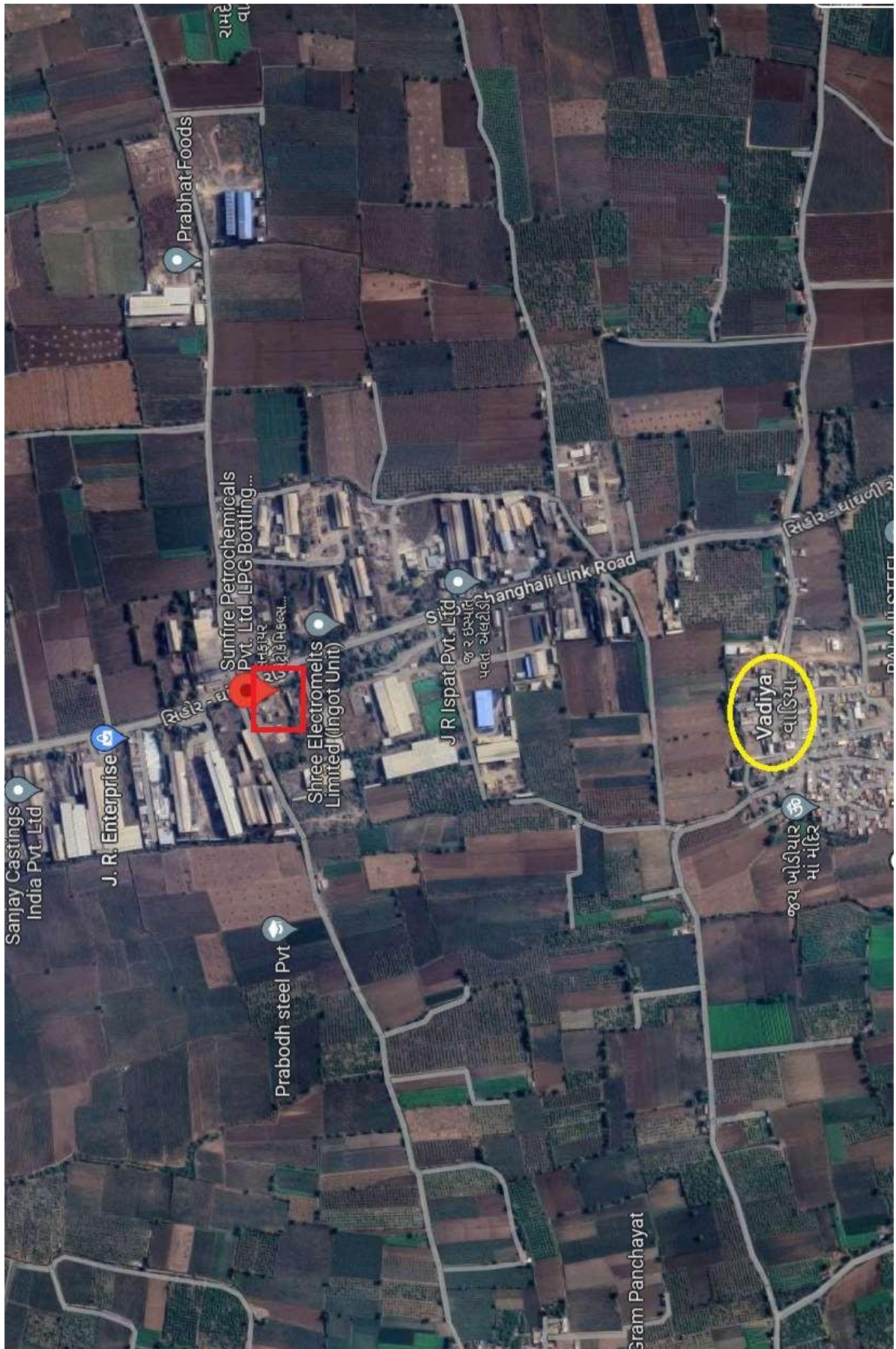
5. RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR



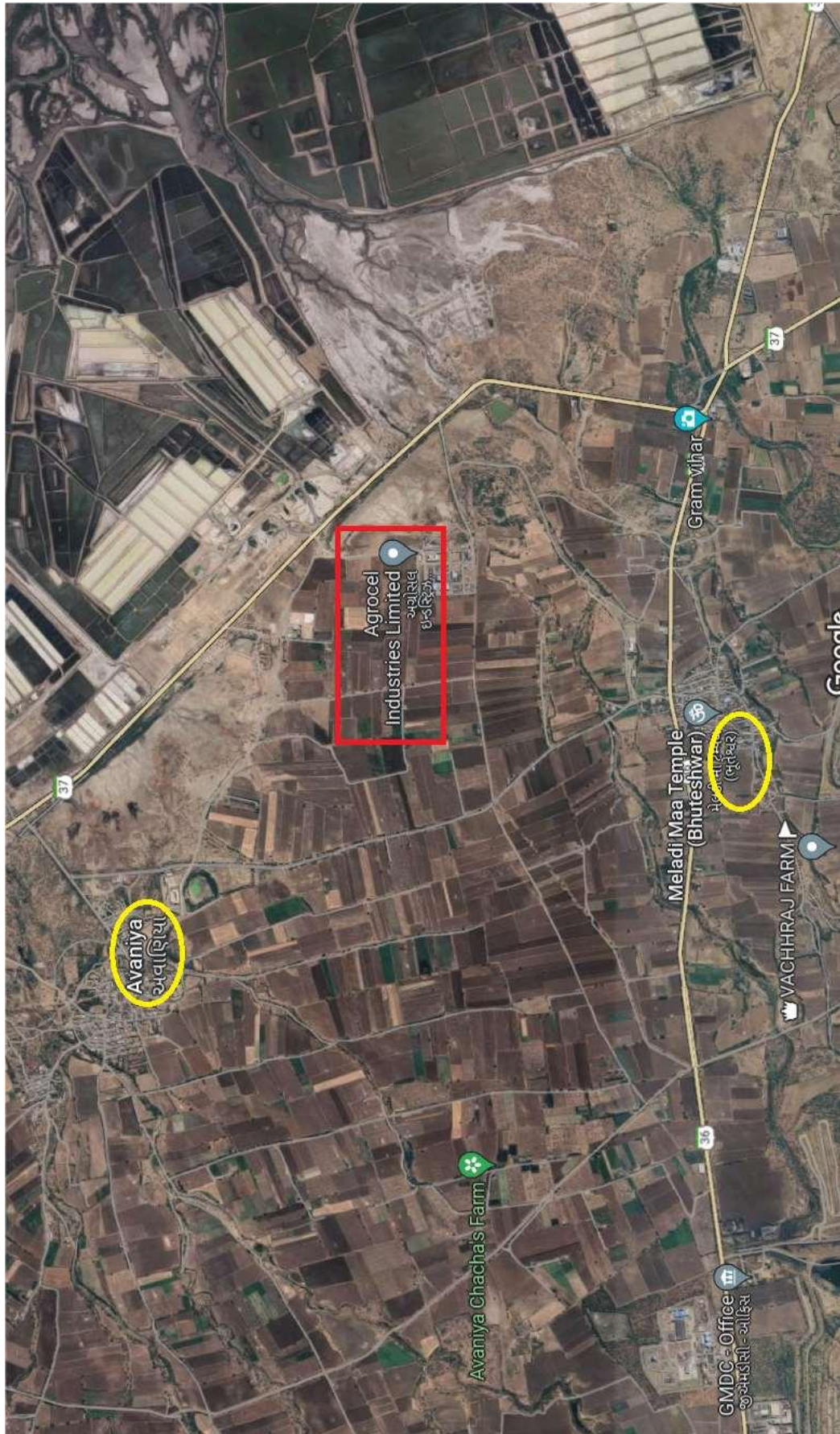
6. SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSa, DIST-BHAVNAGAR



7. SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.-: BHAVNAGAR - 364240.



8. AGROCEL INDUSTRIES PRIVATE LIMITED, SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR



4.3 Transportation of Hazardous Goods

Table 8 Information on Hazmat Transportation by Road

SR.	M.A.H. UNIT NAME	ROAD NO. FROM- TO	DETAILS OF HAZARDOUS CHEMICALS FLOW WITH QUANTITY	VILLAGES / TOWNS ENROUTE
1		2	3	4
1	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST- BHAVNAGAR	NH HIGHWAY – 751, 48) AND	CHLORINE BROMINE AMMONIA	BHAVNAGAR – BHARUCH – SURAT – MAHARASTRA
		NH HIGHWAY – 751, 147-A, 27	CHLORINE BROMINE AMMONIA	BHAVNAGAR – KACHCHH
2	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA- DIST-BHAVNAGAR	BHAVNAGAR LOCAL ROADS	CHLORINE	KALATALAV
3	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	NH HIGHWAY – 751, 48	EPN (EPICHLORO HYDRINE) AMMONIA	BHAVNAGAR TO AHMEDABAD AND VADODARA
		NH HIGHWAY – 751, 147-A, 27	SOLVENT	BHAVNAGAR - KACHCHH
4	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	NH HIGHWAY – 151 A, SH HIGHWAY – 25	L.P.G.	JAMNAGAR – RAJKOT – BABRA – SIHOR
5	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	BHAVNAGAR LOCAL ROADS	CHLORINE	KALATALAV TO VARTEJ
6	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSI, DIST-BHAVNAGAR	NH HIGHWAY – 151 A, SH HIGHWAY – 25	L.P.G.	JAMNAGAR – RAJKOT – BABRA – SIHOR
7	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.- BHAVNAGAR-364 240.	NH HIGHWAY – 151 A, SH HIGHWAY – 25	L.P.G.	JAMNAGAR – RAJKOT – BABRA – SIHOR
8	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	NH HIGHWAY – 751, 8E, 147A, 27, 41, 341	BROMINE	BHAVNAGAR – LIMBDI – DHANGDHRA – SAMKHYALI - BHUJ

Table 9 Information on Hazmat transportation by rail

SR.	STRETCH FROM -TO	LENGTH	DETAILS OF HAZARDOUS CHEMICALS FLOW WITH QUANTITY	STATIONS ENROUTE	REMARKS
1	2	3	4	5	6
			-NIL-		

Table 10 Information on Hazmat transportation by Water

SR.	STRETCH FROM -TO	LENGTH	DETAILS OF HAZARDOUS CHEMICALS FLOW WITH QUANTITY	COASTAL AREAS ENROUTE	REMARKS
1	2	3	4	5	6
			-NIL-		

Table 11 Information on Hazmat transportation by pipeline

SR.	PIPELINE STRETCH FROM-TO	COMPANY NAME WITH ADDRESS AND PHONE:- NUMBER	LENGTH	DETAILS OF HAZMAT FLOW WITH QUANTITY	VILLAGES / TOWNS / VULNERABLE POINTS ENROUTE	REMARKS
1	2	3	4	5	6	7
		-NIL-				

5. Identification of Emergency Scenarios and Delineation of Vulnerable Zones

5.1 Introduction to Emergency Scenarios and Vulnerable Zones

Emergency Scenarios Major industrial hazards are generally associated with the potential for toxic chemical release, fire or explosion

Events involving release of toxic materials

- Slow or intermittent release of toxic substance from a leaking valve,
- Rapid release for limited duration due to fracture of pipe leading to a toxic cloud which may travel or dissipate,
- Massive release of toxic substance due to failure of large storage or process vessel or uncontrolled chemical reaction.
- Loss of containment for a plant threatened by a fire Events involving spillage of flammable liquids or loss of containment of flammable gases
- Confined spillage
- Unconfined spillage

Major fires with no danger of explosion Hazards from high levels of thermal radiation and smoke, for example:

- Pool fire,
- Flash fire,
- Jet fire etc
- Explosion
- Explosion Events

Hazards from blast waves, flying debris, high level of thermal radiation. Serious emergencies that can be envisaged are

- Confined explosions,
- Unconfined vapour cloud explosion,
- BLEVE

Assessment of possible incidents is to be carried out for each MAH installation, in terms of:

- The quantity of hazardous material which could be released
- The rate of release
- Effects of such a release
- Thermal radiation from a fire at different distances
- Blast over-pressures due to an explosion as function of distance from the incident spot
- Toxic effects affecting the vulnerable zone (circle showing concentrations)
- Number of people likely to be affected

Methodology for Calculation of Vulnerable Zones Prescribed by MOEF

The injury criteria or level of concern is used to determine vulnerable zones. The consequence distances for Toxic Release, Fire and Explosion scenario are worked out as per micro-methodology evolved by the MOEF.

Toxic Exposure

The IDLH (immediately dangerous to life and health) concentration value is taken as the criterion for identifying vulnerability zone. Accidents giving rise to toxic clouds from each of the MAH units in the area need to be considered. The calculations for consequence distances should be done for weather stability class D with wind speed of 3 m/s and also for class F with wind speed of 1 to 2 m/s. The circles with radii equal to the consequence distances should be drawn on maps to indicate vulnerable zones for planning and preparedness purpose. The toxic cloud arrival and departure time should also be indicated on the map for each circle.

Heat Radiation (Pool Fire, Flare, BLEVE)

The heat radiation equal to 10kW/m^2 produces second-degree burns on unprotected parts of the human body. The heat radiation of 5kW/m^2 produce first-degree burns. These intensities of radiation are chosen as the limit value to identify vulnerable zones. The radiation intensity of 10kW/m^2 is taken as a limit value to identify fatality zone and that of 5kW/m^2 is taken for the injury zone.

Explosion 2

It is assumed that everyone inside an area in which the peak over-pressure is greater than 0.1 bars will be wounded. This area is and will be represented by a circle drawn around the explosion centre and having radius equal to the (calculated) distance from explosion centre at which peak over-pressure = 0.1 bar is expected.

In the case of a vapour cloud explosion, the explosion centre, which coincides with the cloud centre, will vary depending upon the prevailing weather conditions and the time when it gets source of ignition.

Use of Vulnerability Templates

The Maps showing the location of likely emergencies and corresponding vulnerable zones are to be included in the Plan. The maps are useful for planning and preparing, in advance, for the likely emergencies. The maps are also useful to identify area under threat in an actual emergency. To assess the impact of toxic release, use of computer software along with the real time input of meteorological data would be an ideal method to identify the area under threat. However, it may not be always possible to have such sophisticated facility available at every place. Under such circumstances, transparent "Templates" can be developed and used to assess the effects of spread of the toxic cloud with concentration levels as function of distance from the point of origin the transparent templates for each scenario which are to be used in the following manner.

Place the transparency on the relevant map with

- The toxic release source on the map and the plume source on the transparency coinciding.
- The X-axis of the plume pointing in the prevailing wind direction.
- Injuries requiring medical attention will extend up to the contours of the transparency superimposed on the area map.

Templates should be developed for the Hazardous Chemicals used, stored or transported in the MAH Units to provide the District Emergency Authority and the Local Crisis Group with a tool for rapid assessment of vulnerable zones.

Templates should be drawn on transparent sheets and indicate the shape and extent of a vulnerable zone. The vulnerable zone in the event of a given toxic release scenario is assessed by using the appropriate template in conjunction with its associated map. The scale of the template needs to be the same as that of the map.

It may be noted that the templates will be useful for identifying the vulnerability zone in case of toxic cloud.

Computer Models

MOEF in association with National Informatics Centre (NIC) is in process of evolving computer software model for calculation of vulnerable zone and its projection on digital maps. Wherever available this computerized model may be used for delineation of vulnerable zones.

Use of specific information

The use of specific information regarding wind velocity, temperature etc. at the site during the actual occurrence of emergency can be made Wherever the computer software model is in use. In its absence the standard calculations of Class D with wind speed of 3 m/s and Class F with wind speed 1 to 2 m/s as prescribed by MOEF shall be used accordingly for delineation of vulnerable zones.

5.2 Emergency Scenarios in MAH Installations

L1: A district level disaster within the capabilities of the district administration to deal with.

L2: A state level disaster within the capabilities of the state government to deal with.

L3: A National level disaster requiring major direct intervention of the Central Government.

Also, the guidelines define fourth category 'L0' as 'No disaster situation. This is a level at which surveillance, preparedness and mitigation activities must be carried out.' Since the off-site plan is a district-level plan, the possible emergencies within a district of higher magnitude (L2, L3) should get identified in the off-site plan.

Table 12 Emergency Scenarios in MAH Installations

SR.	MAH UNIT NAME	HAZARDOUS CHEMICALS HANDLED	DISASTER SCENARIOS #	(L1 / L2 / L3)*	VULNERABLE ZONE DIA. WITH DISTINCT FEATURES SUCH AS SCHOOLS ETC	POPULATION IN VULNERABLE ZONE	REMARKS
1	2	3	4	5	6	7	8
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR	CHLORINE	TOXIC RELEASE	L2	KALA TALAV SCHOOL NARBAD SCHOOL	2000	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	EPN (EPICHLORO HYDRINE)	FIRE, EXPLOSION AND TOXIC RELEASE	L2	LAL KRISHNA ADVANI SCHOOL URBAN PRIMARY HEALTH CENTER ANANDNAGAR	800	
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	LPG	FIRE, EXPLOSION	L2	-	-	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR (M): 9825019963 E-mail : nirma-kalatalav@gmail.com	CHLORINE AMMONIA HYDROGEN BROMINE	FIRE, EXPLOSION AND TOXIC RELEASE	L2	KALA TALAV SCHOOL NARBAD SCHOOL	2000	
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	CHLORINE	TOXIC RELEASE	L2	-	-	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA-TANSA, DIST-BHAVNAGAR	LPG	FIRE, EXPLOSION	L2	-	-	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.- BHAVNAGAR-364 240.	LPG	FIRE, EXPLOSION	L2	-	-	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	BROMINE	TOXIC RELEASE	L2	BHUTESHWAR PRIMARY SCHOOL	800	

5.3 Domino Effect Emergency Scenarios

Table 13 Domino Effects of Emergency Scenarios

SR.	DISASTER SCENARIO (TABLE NO., SR. AND DESCRIPTION)	TRIGGERED SCENARIO 1	TRIGGERED SCENARIO 2	TRIGGERED SCENARIO 3	REMARKS
1	TOXIC GAS RELEASE – CHLORINE / BROMINE/ AMMONIA	CAUSE EXPOSURE TO IRRITATING AND CHOKING TOXIC GAS.	EXECUTING STARTS IN THE DOWN WIND DIRECTION	SAFE SHUT DOWN OF THE PLANT AND RESPONSE ACTIONS START TO MITIGATE	
2	FIRE & EXPLOSION – L.P.G., HYDROGEN	EMISSION OF BLACK SMOKE IN THE DOWN WIND DIRECTION AND PRESSURE SHOCKWAVE RELEASE	EXECUTING STARTS IN THE DOWN WIND DIRECTION	SAFE SHUT DOWN OF THE PLANT AND RESPONSE ACTIONS START TO MITIGATE	

5.4 Other Emergency Scenarios Including Fall-Outs of Natural Disasters

Table 14 Emergency Scenarios arising out of Natural Disasters

sr.	Natural Disasters Likely	Vulnerable MAH Unit, Disaster Scenario	Remarks
1	2	3	4
1	FLOOD	ARCHIT ORGANOSYS LTD., NIRMA LIMITED (SODA ASH)	
2	CYCLONE	ALL	
3	STORM / CYCLONE	ALL	
4	EARTHQUAKE	ALL	
5	TSUNAMI	NIRMA LIMITED (SODA ASH)	
6	LIGHTNING	ALL	

5.5 Development of Vulnerability Templates

Table 15 Vulnerability Template Catalogue

SR.	MAH UNIT DISASTER SCENARIO REF NO: AND DESCRIPTION	VULNERABILITY TEMPLATE IDENTIFICATION NO:	MAP IDENTIFICATION NO	REMARKS
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR	TEMPLATE - 1 CHLORINE TONER	TEMPLATE- 1A CHLORINE TONER	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	—	—	
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	TEMPLATE-3 LPG BULLET	TEMPLATE-3A LPG BULLET	
		TEMPLATE- 4 LPG CYLINDER	TEMPLATE- 4A LPG CYLINDER	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	TEMPLATE - 1 CHLORINE TONER	TEMPLATE- 1A CHLORINE TONER	
		TEMPLATE- 2 CHLORINE TANK	TEMPLATE- 2A CHLORINE TANK	
		TEMPLATE - 5 AMMONIA	TEMPLATE - 5A AMMONIA	
		TEMPLATE - 8 BROMINE	TEMPLATE- 8A BROMINE	
		TEMPLATE - 6 HYDROGEN	TEMPLATE - 6A HYDROGEN	
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	TEMPLATE - 1 CHLORINE TONER	TEMPLATE- 1A CHLORINE TONER	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSI, DIST-BHAVNAGAR	TEMPLATE-3 LPG BULLET	TEMPLATE-3A LPG BULLET	
		TEMPLATE- 4 LPG CYLINDER	TEMPLATE- 4A LPG CYLINDER	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.- BHAVNAGAR-364 240.	TEMPLATE-3 LPG BULLET	TEMPLATE-3A LPG BULLET	
		TEMPLATE- 4 LPG CYLINDER	TEMPLATE- 4A LPG CYLINDER	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	TEMPLATE - 8 BROMINE	TEMPLATE- 8A BROMINE	

6. Identification of Emergency Resources

6.1 Introduction to Emergency Resources

Prompt availability of emergency resources is vital to mitigating an offsite emergency. The emergency resources required should be identified with the sources of their availability and the means to call for them. The emergency resources and their sources are identified in this chapter.

Table 16 Resources with MAH units forming part of Mutual Aid Resources

SR.	MAH UNIT NAME WITH ADDRESS AND PHONE:- NUMBER	DESIGNATED CONTACT PERSONS WITH ADDRESS (O, R) AND PHONE:- NUMBERS (O, R, M)	TYPE AND NUMBER OF FIRE TENDERS (WATER, FOAM, MIST TENDERS)	OTHER EQUIPMENTS AND MATERIALS (SCBA, PPE, FIRE EXTINGUISHERS ETC)										
1	2	3	4	5	6									
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR	Mr. architbhai amin (Factory Manager) (M) 909017735 E-mail : sales@architorg.com	---	FIRE EXTINGUISHERS – <table><tr><td>TYPE</td><td>AVAILAB LE SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>DCP – 5 (KG)</td><td>6</td></tr><tr><td>CO₂</td><td>5,7 (KG)</td><td>12</td></tr></table> OTHER EQUIPMENTS :- Self-Contained air-Breathing Apparatus Set – 03 No.		TYPE	AVAILAB LE SIZE	QUANT ITY	ABC	DCP – 5 (KG)	6	CO ₂	5,7 (KG)	12
TYPE	AVAILAB LE SIZE	QUANT ITY												
ABC	DCP – 5 (KG)	6												
CO ₂	5,7 (KG)	12												
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	Dr. Amit Mehta (Factory Manager) (M): 9426743350 E-mail : bharat.sathiya@sumichem.co.in	1 MULTIPURPOSE FIRE TENDER (WATER, FOAM)	FIRE EXTINGUISHERS – <table><tr><td>TYPE</td><td>AVAILAB LE SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>1,4,5,6,9, 10 (KG)</td><td>228</td></tr><tr><td>CO2</td><td>2,9 (KG)</td><td>100</td></tr></table> OTHER EQUIPMENTS :- Self-Contained air-Breathing Apparatus Set – 20 No.		TYPE	AVAILAB LE SIZE	QUANT ITY	ABC	1,4,5,6,9, 10 (KG)	228	CO2	2,9 (KG)	100
TYPE	AVAILAB LE SIZE	QUANT ITY												
ABC	1,4,5,6,9, 10 (KG)	228												
CO2	2,9 (KG)	100												
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	Mr. ajay(kumar gautam Occupier) (M): 9797568567 E-mail : pandeynitin@indianoil.in	---	FIRE EXTINGUISHERS – <table><tr><td>TYPE</td><td>AVAILAB LE SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>9,75 (KG)</td><td>118</td></tr><tr><td>CO2</td><td>2, 4.5 (KG)</td><td>25</td></tr></table> OTHER EQUIPMENTS :- Self-Contained air- Breathing Apparatus Set –		TYPE	AVAILAB LE SIZE	QUANT ITY	ABC	9,75 (KG)	118	CO2	2, 4.5 (KG)	25
TYPE	AVAILAB LE SIZE	QUANT ITY												
ABC	9,75 (KG)	118												
CO2	2, 4.5 (KG)	25												

				20 No.																		
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	Mr. D. G. Jhakde (Factory Manager) (M): 9825019963 E-mail : nirma-kalatalav@gmail.com	2 MULTIPURPOSE FIRE TENDER (WATER – 8000 LTR, FOAM - 500 LTR)	FIRE EXTINGUISHERS – <table><tr><td>TYPE</td><td>AVAILABL E SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>1,4,5,6,9, 10,50 (KG)</td><td>364</td></tr><tr><td>CO₂</td><td>3.5, 4.5, 6.5, 6.8, 22.5 (KG)</td><td>665</td></tr><tr><td>FOAM</td><td>09, 45, 50 (LTR)</td><td>63</td></tr><tr><td>SAND BUCKET</td><td>NORMAL</td><td>315</td></tr><tr><td>K</td><td>2 (KG)</td><td>3</td></tr></table> OTHER EQUIPMENTS :- 1 trolley pump. - Canister Gas Mask – 25 No. - Self-Contained air-Breathing Apparatus Set – 20 No. - Spare Oxygen cylinders – 15 No. - Airline Breathing Apparatus Set – 33 No. - Safety Ladder – 3 No. - Safety Net – 12 No. - Hydrogen Gas Detector, Oxygen Gas Detector, Ammonia Gas Detector, CO2 Gas Detector, SO2 Gas Detector, Multi Gas Detector	TYPE	AVAILABL E SIZE	QUANT ITY	ABC	1,4,5,6,9, 10,50 (KG)	364	CO ₂	3.5, 4.5, 6.5, 6.8, 22.5 (KG)	665	FOAM	09, 45, 50 (LTR)	63	SAND BUCKET	NORMAL	315	K	2 (KG)	3
TYPE	AVAILABL E SIZE	QUANT ITY																				
ABC	1,4,5,6,9, 10,50 (KG)	364																				
CO ₂	3.5, 4.5, 6.5, 6.8, 22.5 (KG)	665																				
FOAM	09, 45, 50 (LTR)	63																				
SAND BUCKET	NORMAL	315																				
K	2 (KG)	3																				
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	Mr. Bhrugurajsinh Zala (Factory Manager) (M): 9913999988 E-mail : renaissanceindustriesfac@gmail.com	---	FIRE EXTINGUISHERS – <table><tr><td>TYPE</td><td>AVAILABL E SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>5,6 (KG)</td><td>17</td></tr><tr><td>CO₂</td><td>2.5, 4.5 (KG)</td><td>4</td></tr><tr><td>FOAM</td><td>9 (LTR)</td><td>1</td></tr><tr><td>SAND BUCKET</td><td>NORMAL</td><td>2</td></tr></table> OTHER EQUIPMENTS :- - Canister Gas Mask – 2 - Self-Contained air-Breathing Apparatus Set – 6	TYPE	AVAILABL E SIZE	QUANT ITY	ABC	5,6 (KG)	17	CO ₂	2.5, 4.5 (KG)	4	FOAM	9 (LTR)	1	SAND BUCKET	NORMAL	2			
TYPE	AVAILABL E SIZE	QUANT ITY																				
ABC	5,6 (KG)	17																				
CO ₂	2.5, 4.5 (KG)	4																				
FOAM	9 (LTR)	1																				
SAND BUCKET	NORMAL	2																				
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA),	Mr. Pravinbhai Bagadiya	---	FIRE EXTINGUISHERS –																		

	AT POST- ODARAKA, VIA- TANSA, DIST-BHAVNAGAR	(Factory Manager) (M) : 8141418090 E-mail : accsria93@gmail.com		<table><tr><td>TYPE</td><td>AVAILABL E SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>DCP - 9 (KG)</td><td>9</td></tr><tr><td>CO₂</td><td>50 (KG)</td><td>1</td></tr></table>	TYPE	AVAILABL E SIZE	QUANT ITY	ABC	DCP - 9 (KG)	9	CO ₂	50 (KG)	1												
TYPE	AVAILABL E SIZE	QUANT ITY																							
ABC	DCP - 9 (KG)	9																							
CO ₂	50 (KG)	1																							
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.: BHAVNAGAR-364 240.	Mr. Pradip Chaurasiya (Occupier) (M) : 9377553439 E-mail : pkchourasia@gmail.com	---	<table><tr><th colspan="3">FIRE EXTINGUISHERS –</th></tr><tr><td>TYPE</td><td>AVAILABL E SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>DCP - 9 (KG)</td><td>15</td></tr></table>	FIRE EXTINGUISHERS –			TYPE	AVAILABL E SIZE	QUANT ITY	ABC	DCP - 9 (KG)	15												
FIRE EXTINGUISHERS –																									
TYPE	AVAILABL E SIZE	QUANT ITY																							
ABC	DCP - 9 (KG)	15																							
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	Mr.AMIT BHATTI(Factory 9426731559786187 E-mail : sumit.kakkar@agrocel.net	---	<table><tr><th colspan="3">FIRE EXTINGUISHERS –</th></tr><tr><td>TYPE</td><td>AVAILABL E SIZE</td><td>QUANT ITY</td></tr><tr><td>ABC</td><td>1,2,6,9, (KG) 25 (DCP)</td><td>81</td></tr><tr><td>CO₂</td><td>4.5, 6.5 (KG)</td><td>11</td></tr><tr><td>FOAM</td><td>09, 50 (LTR)</td><td>7</td></tr></table> <table><tr><th colspan="2">OTHER EQUIPMENTS :-</th></tr><tr><td>•</td><td>Canister Gas Mask – 2</td></tr><tr><td></td><td>Self-Contained air-Breathing Apparatus Set – 6</td></tr></table>	FIRE EXTINGUISHERS –			TYPE	AVAILABL E SIZE	QUANT ITY	ABC	1,2,6,9, (KG) 25 (DCP)	81	CO ₂	4.5, 6.5 (KG)	11	FOAM	09, 50 (LTR)	7	OTHER EQUIPMENTS :-		•	Canister Gas Mask – 2		Self-Contained air-Breathing Apparatus Set – 6
FIRE EXTINGUISHERS –																									
TYPE	AVAILABL E SIZE	QUANT ITY																							
ABC	1,2,6,9, (KG) 25 (DCP)	81																							
CO ₂	4.5, 6.5 (KG)	11																							
FOAM	09, 50 (LTR)	7																							
OTHER EQUIPMENTS :-																									
•	Canister Gas Mask – 2																								
	Self-Contained air-Breathing Apparatus Set – 6																								

6.2 Other Emergency Infrastructure

Table 17 Emergency Response Vehicles

SR.	EMERGENCY RESPONSE VEHICLE DESCRIPTION AND FACILITIES AVAILABLE	LOCATION	CONTACT AUTHORITY NAME WITH ADDRESS (O, R) AND PHONE- NUMBERS (O, R, M)	REMARKS
1	2	3	4	5
1.	VAN - 1	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR	Mr. K M Patel (Factory Manager) (M) 9426858337 E-mail : sales@architorg.com	
2.	AMBULANCE - 1 AMBULANCE VAN - 1 CAR -4	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	Dr. Amit Mehta (Factory Manager) (M): 9426743350 E-mail : bharat.sathiya@sumichem.co.in	
3.	CAR - 1	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	Mr. Nitin Pandey (Occupier) (M): 9453016084 E-mail : pandeynitin@indianoil.in	
4.	AMBULANCE - 1 BUS - 15 JEEP - 4 TATA SUMO - 6	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	Mr. D. G. Jhakde (Factory Manager) (M): 9825019963 E-mail : nirma-kalatalav@gmail.com	
5.	—	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	Mr. Bhururajsinh Zala (Factory Manager) (M): 9913999988 E-mail : renaissanceindustriesfac@gmail.com	
6.	TRUCK - 4	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSI, DIST- BHAVNAGAR	Mr. Pravinbhai Bagadiya (Factory Manager) (M) : 8141418090 E-mail : accsria93@gmail.com	
7.	—	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.-: BHAVNAGAR-364 240.	Mr. Pradip Chaurasiya (Occupier) (M) : 9377553439 E-mail : pkchourasia@gmail.com	
8.	AMBULANCE VAN: 1 BUS: 1	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	Mr. Sumit kakkar (Factory Manager) (M): 7861870694 E-mail : sumit.kakkar@agrocel.net	

Table 18 Emergency Response Centre (ERC)

SR.	ERC/ PCC DESCRIPTION AND FACILITIES AVAILABLE	LOCATION	CONTACT AUTHORITY NAME WITH ADDRESS (O, R) AND PHONE- NUMBERS (O, R, M)	REMARK S
1	2	3	4	5
1.	DISASTER MANAGEMENT CELL, COLLECTOR OFFICE	COLLECTOR OFFICE	1077 (O) 0278 2521554 (O) 0278 2521555	
2.	POLICE CONTROL ROOM	BHAVNAGAR	100	
3.	FIRE CONTROL ROOM BMC	BHAVNAGAR	101 (M) 9727712177	
4.	EMERGENCY AMBULANCE	BHAVNAGAR	108	

6.3 Evacuation – Transport and Sheltering

Table 19 Evacuation Information – Transport

SR.	TRANSPORT COMPANY	FLEET (NO. OF BUSES AND TRUCKS)	CONTACT AUTHORITY NAME WITH ADDRESS (O, R) AND PHONE- NUMBERS (O, R, M)	REMARK S
1	2	3	4	5
1.	STATE TRANSPORT CO. BHAVNAGAR	SUFFICIENT BUS AVAILABLE	Mr. SURENDRASINH MATROJA , DIVISIONAL CONTROLLER (M) 6359919028 (O) 02782422699	

Table 20 Evacuation Information – Sheltering

SR.	INDUSTRIES	NEARBY EVACUATION AREA LOCATION	CAPACITY (NO. OF PEOPLE)	REMARKS
1	2	3	4	5
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE- NARMAD, TA-DIST-BHAVNAGAR	KALA TALAV SCHOOL, VILLAGE NARBAD SCHOOL, NARBAD VILLAGE	AROUND 100 AROUND 100	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	PRIMARY SCHOOL ANANDNAGAR – KRISHNANAGAR, BHAVNAGAR LAL KRISHNA ADVANI SCHOOL KRISHNANAGAR, BHAVNAGAR	AROUND 100	
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	TAGDI PRIMARY SCHOOL, TAGDI VILLAGE	AROUND 100	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	KALA TALAV SCHOOL, VILLAGE NARBAD SCHOOL, NARBAD VILLAGE	AROUND 100 AROUND 100	
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST- BHAVNAGAR	SHRI M.G. HIGH SCHOOL, VARTEJ VILLAGE	AROUND 100	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSI, DIST-BHAVNAGAR	ODARKA PRIMARY SCHOOL, ODARKA VILLAGE	AROUND 100	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.: BHAVNAGAR-364 240.	VADIYA PRIMARY SCHOOL, VADIYA VILLAGE	AROUND 150	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	BHUTESHWAR PRIMARY SCHOOL, BHUTESHWAR VILLAGE. AVANIYA MODEL SCHOOL, AVANIYA VILLAGE	AROUND 150 AROUND 150	

6.4 ****Technical Resources

6.4.1 Technical Experts Directory

Table 21 Technical Experts Directory

SR.	EXPERT NAME	EXPERTISE DETAILS, QUALIFICATION, DESIGNATION	ADDRESS	PHONE NUMBER (O,R,M)	REMARKS
1	2	3	4	5	6
1.	MR. BHRUGURAJ SINH ZALA	CHLORINE	RENAISSANCE INDUSTRIES PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	(M) 9913999988	
2.	MR. NITIN PANDEY	L.P.G.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI GHOGHA BHAVNAGAR	(M) 9453016084	
3.	V.V. SHAH (A.G.M. S.H.E.)	CHLORINE, BROMINE, AMMONIA, HYDROGEN	NIRMA LTD (SODA ASH) KALA TALAV, TA-DIST- BHAVNAGAR	(M) 9099069056	
4.	MR. SHAKTIDAN ROHADIYA	CHLORINE, BROMINE, AMMONIA, HYDROGEN	NIRMA LIMITED (SODA ASH) KALA TALAV, TA-DIST- BHAVNAGAR	(M) 8980026351	

6.4.2 Emergency Response Data Sheets (ERDS)

PRESTELS recommends maintenance of Emergency Response Data Sheets (analogous to Material Safety Data Sheets - MSDS) for all the hazardous chemicals handled in the district. The ERDS should contain all the information required by the District Authorities and Agencies to take appropriate emergency response measures.

ERDS for following chemicals are prepared and kept as Annexure - 9

1. Chlorine
2. Liquidities Petroleum Gas (LPG)
3. Ammonia
4. Bromine
5. Hydrogen

6.5 Media Resources

Table 22 Media Resources Information

SR.	AGENCY NAME (RADIO, TELEVISION, MOBILE PUBLIC ANNOUNCEMENT, MASS-SMS) WITH ADDRESS AND PHONE NUMBER	ADDRESS AND PHONE- NUMBERS (O, R, M)	REMARK S
1	2	3	4
1.	DISTRICT INFORMATION OFFICER	BEHIND COLLECTOR'S OFFICE, MOTI BAGH, BHAVNAGAR. (O) 0278 2424994 (O) 0278 2422919 (M) 9537409098	
2.	SUARASHTRA SAMACHAR	PLOT NO.4, RAMDEV SOCIETY, CHITRA GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION, BHAVNAGAR PRATAPBHAI SHAH (M) 9824020899 (M) 9426266370	
3.	SANDESH LTD	102, ANMOL PLAZA, WAGHAWADI ROAD, BHAVNAGAR HO, BHAVNAGAR - 364001 (O) 0278 251 9941 (M) 7947115466	
4.	GUJARAT SAMACHAR	OFFICE NO 205/206, 2ND FLOOR, LAXMINARAYAN COMPLEX, BHIDBHANJAN CHOWK RD, KALANALA, OPPOSITE BHIDBHANJAN MAHADEV TEMPLE, BHAVNAGAR. (O) 0278 243 1199	

6.6 Other Emergency Resources

Table 23 Other Emergency Resources- Earthmoving Equipment's

Sr.	NAME OF MAH UNIT	NAME OF EARTHMOVING EQUIPMENT WITH QUANTITY AND CONTACT PERSONS	REMARKS
1	2	4	5
1.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	• Loader – 5 • Dumper – 8 • J.C.B. – 1 • Water Tanker – 3 • Crane (40 MT) - 1 • Hydra (40MT) - 1 Mr. D. G. Jhakde (Factory Manager) (M): 9825019963 E-mail : nirma-kalatalav@gmail.com	
2.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	• Tractor & Tractor: 1 Nos. • Water tanker: 1 Nos. Mr. Sumit kakkar (Factory Manager) (M): 7861870694 E-mail : sumit.kakkar@agrocel.net	

Table 24 Other Emergency Resources – Antidote Suppliers

SR.	TOXIC CHEMICALS HANDLED IN DISTRICT (ESP. IN MAH UNITS)	ANTIDOTES REQUIRED	ANTIDOTE SUPPLIER* NAME WITH ADDRESS AND PHONE:- NUMBERS, CONTACT PERSONS	QUANTITY OF ANTIDOTES AVAILABLE	REMARKS
1	2	3	4	5	6
1.	AMMONIA	0.4 % BENZOCAIN FOR EYES	ALL GOVT. HOSPITALS ALL MEDICAL STORES		
2.	CHLORINE	DERRIFYLINE, DEXONA, CP MALATE, MILK OF MEGHNESIYA	ALL GOVT. HOSPITALS ALL MEDICAL STORES		
3.	BENZENE, TOLUENE, XYLENE	DIAZEPAM 10 MG I/V MOVE THE PERSON TO FRESH AIR. GIVE OXYGEN	ALL GOVT. HOSPITALS ALL MEDICAL STORES		

Table 25 Other Emergency Resources – NGOs

SR.	NGO NAMEWITH ADDRESSAND PHONE:-NO.	CONTACT PERSONNAME, ADDRESSAND PHONE:-NO. (O,R,M)	REMARKS
1	2	3	4
1.	INDIAN RED CROSS SOCIETY, RED CROSS BHAVAN, DIVANPARA ROAD, BHAVNAGAR.	SUMITBHAI THAKKAR (O) 0278 2424761, (O) 0278 2430700, (O) 0278 2242376	
2.	BHAVNAGAR BLOOD BANK TRUST MUNICIPAL COMMERCIAL COMPLEX SARDAR NAGAR, BHAVNAGAR.	DR.N.N. VAISHNAV (O) 0278 2200006 (M) 9825207660	
3.	SHREE RAM MANTRA MANDIR TRUST KALIABID, BHAVNAGAR	RAMNIKBHAI M SHAH (O) 0278 2569100, (O) 0278 2566491, (M) 9426916335	
4.	SAI SEVA SAMAJ SAIBABA MANDIR, MEGHANI CIRCLE, DON, BHAVNAGAR	DIPAKBHAI MAHETA (M) 9426817171	
5.	LIONS CLUB OF BHAVNAGAR (CITY) CO. SUNBEAM ELECTRONIC, GHOGHA GATE, BHAVNAGAR.	LION SANJAY OZA (O) 0278 2513709, (M) 9825207588 129/A/9, NEW PEOPLE SOCIETY, RING ROAD, SUBHASH NAGAR.	
6.	BHAVNAGAR JILLA BHARAT SCOUT GUIDE SANGH. DAKSHINAMURTI GIJUBHAI KUMAR MANDIR, SATYANARAYAN ROAD, BHAVNAGAR	VIRNDRABHAI BHATT (M) 9426253405, (O) 0278 2564119	
7.	BHUKAMP SURKSHA SAMITI BEH.VADODARIYA PARK, FULWADI, BHAVNAGAR	MUKUNDBHAI PARIKH (O) 0278 2566929	
8.	NCC – 3 GUJARAT AIR UNIT 608 B, CRESCENT BUILDING,CRESCENT CIRCLE,KRISHNA NAGAR,BHAVNAGAR	GROUP CAPT. MANISH MAHAJAN (O) 0278 2516893 (M) 9667533505	
9.	NCC – 3 GUJARAT NAVAL UNIT OPP. SHAMALDAS COLLEGE, WAGHAVADI ROAD, BHAVNAGAR	LT. COMMANDER NITISH SHAH (O) 0278 2565396	
10.	NCC - 6 GUJARAT BATTALION (ARMY WING) DEVBAGH, BHAVNAGAR	COL MMS MEELU (O) 0278 2424995	
11.	NCC – 3 GUJARAT GIRLS BATTALION (ARMY WING) ATTABHAI CHAUK, NEAR GULISTHA GROUND, BHAVNAGAR	COL J.S. RATHORE (O) 0278 2565336	

Table 26 Assembly Points

SR.	MAH UNIT	ASSEMBLY POINT (SCHOOL, HALL AND, GROUND)	CONTACT PERSONS WITH ADDRESS (O, R) AND PHONE:- NUMBERS (O, R, M)	REMARKS
1	2	3	3	5
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE-NARMAD, TA-DIST-BHAVNAGAR	TOTAL - 02 1. NEAR MAIN GATE 2. NEAR ADMIN BUILDING	Mr. K M Patel (Factory Manager) (M) 9426858337 E-mail : sales@architorg.com	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	TOTAL - 04 1. NEAR ADMINISTRATIVE BUILDING 2. NEAR MAIN CANTEEN. 3. NEAR GLYPHOSATE GODOWN 4. NEAR EC FORMULATION CANTEEN.	Dr. Amit Mehta (Factory Manager) (M): 9426743350 E-mail : bharat.sathiya@sumichem.co.in	
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	TOTAL - 01 1. CENTRAL MONITORING HUB	Mr. Nitin Pandey (Occupier) (M): 9453016084 E-mail : pandeynitin@indianoil.in	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	TOTAL - 08 1. NEAR ENGINEERING OFFICE 2. NEAR NEW COAL SHED 3. NEAR FLY ASH SILO 4. SODA ASH NEAR 4TH STREAM 5. CAUSTIC PLANT - NEAR N2PSA 6. CAUSTIC PLANT - NEAR DISPATCH AREA 7. SALT WORKS/SALT HANDLING 8. PPA PLANT	Mr. D. G. Jhakde (Factory Manager) (M): 9825019963 E-mail : nirma-kalatalav@gmail.com	
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST-BHAVNAGAR	TOTAL -01 1. NR DG SET	Mr. Bhururajsinh Zala (Factory Manager) (M): 9913999988 E-mail : renaissanceindustriesfac@gmail.com	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSI, DIST- BHAVNAGAR	NEAR BY EXIT GATE OF THE FACTORY.	Mr. Pravinbhai Bagadiya (Factory Manager) (M) : 8141418090 E-mail : accsria93@gmail.com	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST:- BHAVNAGAR-364 240.	NEAR BY EXIT GATE OF THE FACTORY.	Mr. Pradip Chaurasiya (Occupier) (M) : 9377553439 E-mail : pkchourasia@gmail.com	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	TOTAL - 03 1. NEAR EHS OFFICE 2. OPP. D.G. SET 3. OPP. UTILITY BUILDING	Mr. Summit kakkar (Factory Manager) (M): 7861870694 E-mail : sumit.kakkar@agrocel.net	

Table 27 MAH Unit Statutory Compliance Status

SR.	MAH UNITNAMEWITHADDRESS AND PHONE-NO.	ON- SITE PLAN STATUS	PLI STATUS	REMARKS
1	2	3	4	5
1.	ARCHIT ORGANOSYS LTD. SURVEY NO. 228/1-A, PAIKI 7 & PAIKI 2, VILLAGE- NARMAD, TA-DIST-BHAVNAGAR	LAST UPDATED ON OCT - 21	IFFCO TOKYO GENERAL LIFE INSURANCE CO. LTD. COMPANY UP TO NOV - 2024	
2.	SUMITOMO CHEMICAL INDIA LTD. 6/2, RUVAPARI ROAD, BHAVNAGAR GUJARAT	LAST UPDATED ON MAY-23	NEW INDIA ASSSurance CO. LTD COMPANY UP TO MARCH 2024	
3.	INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) TAGADI, GHOGHA, BHAVNAGAR.	LAST UPDATED ON JULY-21	TATA AIG INSURANCE COMPANY UP TO MARCH 2024	
4.	NIRMA LIMITED (SODA ASH), KALA TALAV, TA-DIST-BHAVNAGAR	LAST UPDATED ON OCT-23	UNITED INDIA INSURANCE COMPANY UP TO MARCH 2024	
5.	RENAISSANCE INDUSTRIES, PLOT NO. 104, 105, GIDC, VARTEJ, DIST- BHAVNAGAR	LAST UPDATED ON SEP-21	RGI COMPANY UP TO OCT 2024	
6.	SHIP RECYCLING IND. ASSOCIATION (INDIA), AT POST- ODARAKA, VIA- TANSa, DIST- BHAVNAGAR	LAST UPDATED ON AUG-22	ICICI LOMBARD COMPANY UP TO MAY 2024	
7.	SUNFIRE PETROCHEMICALS (P) LTD. SURVEY NO. 34, VILL. VADIA, GHANGHALI, SIHOR, DIST.-BHAVNAGAR-364 240.	LAST UPDATED ON MARCH - 20	HDFC ERGO COMPANY UP TO MARCH 2024	
8.	AGROCEL INDUSTRIES PRIVATE LIMITED SURVEY NO. 442, 443, 444 & 452/3 NR. VILL. AVANIA GHOGHA ROAD TA.: GHOGHA DIST.: BHAVNAGAR	LAST UPDATED ON APR-22	UNITED INDIA INSURANCE COMPANY LIMITED UP TO MARCH 2024	

7. Roles and Responsibilities

7.1 Introduction

Meticulous role playing and effective discharging of responsibilities is crucial to management of off-site emergency. The responsibilities of various authorities and agencies are provided in this chapter. It is important that the concerned authorities and agencies know, understand and Accept their responsibilities. The issues pertaining thereof should be resolved in peace times. Apart from the assigned responsibilities, the specifics of situation may call for prudent action. It is however envisaged to foresee various tasks and assign the respective responsibilities. The list of responders to off-site emergency is provided in Chapter 4 of Part A of this guideline document. The responsibilities of the responders listed therein are provided below.

7.2 Responsibilities of Authorities and Agencies

The general responsibilities of the various authorities and agencies involved in mitigation of off-site emergency are listed below. In addition, the authorities and agencies should perform all such tasks as per the demands of emergency situation at hand.

7.2.1 District emergency Authority (DEA – District Collector)

- Take overall responsibility for combating the Off-site emergency
- Ensure the Police and Fire, personnel combat the emergency
- Arrange, if necessary, for warning and evacuating the public, through the Department of Police
- Communicate with Media to disseminate vital information to public
- Arrange for dispensing vital information to public using arrangements like mass- sms, public announcement using pre-recorded tapes
- Direct the team of Doctors headed by the Medical Officer
- Direct the local chief of State Transport Corporation to arrange for transport of victims and evacuation of people trapped within the hazard zone, if necessary
- Direct the Electricity Board officials to give uninterrupted power supply
- Direct the official in-charge to provide uninterrupted water supply as required
- If evacuation of population is necessary direct the Revenue officer and the Supply officer to provide safe shelters, food and other life sustaining requirements for the evacuees, if required
- Co-ordinate with the media
- Arrange for, release and provide necessary funds at various stages of disaster mitigation
- Direct railways to stop train, if required

7.2.2 Police

Communicate and co-ordinate with

- MAH unit
- DEA
- Fire Services
- Transport authorities
- Medical Department
- Media
- Civil Defence and Home Guards
- Local Army establishment as required
- Warn and advice the people in the affected area
- Regulate and divert traffic

- Arrange for evacuation
- Maintain law and order in the area
- Ensure protection of life and property of evacuees
- Deal sternly with people exploiting opportunism in wake of a disaster

7.2.3 Fire Service Department

- Perform fire-fighting operations by deploying men and appliances
- Perform rescue operation in the affected area.
- Communicate and co-ordinate with Police, Medical Department of necessary information
- Keep knowledge on appropriate response to different chemical emergency scenarios
- Keep adequate stock and resource information on necessary means, material, appliances required to deal with particular emergency situations with updated details of suppliers and stockists

7.2.4 Medical Department

- Arrange for preparing casualties to be sent to government/private hospitals
- Set up temporary medical camp and ensure medical facilities at affected location and neighbourhood
- Keep knowledge on appropriate response to different cases of toxic consumption and injuries
- Set up temporary mortuary, identification of dead bodies and post-mortem

7.2.5 Factory Inspectorate Department

- Provide necessary direction to MAH unit and assistance to DEA, Fire Department, Medical Department among others.
- Seek help from and involve assistance of Technical Experts of relevant and appropriate expertise and specialization.
- Initiate, facilitate and provide for investigation into the accident.

7.2.6 Occupier of MAH Unit

- Possess up-to-date copy of Off-site Emergency Plan
- Communicate promptly, any foreseeable disaster, to the DEA, Police, Fire Service and Inspector of Factories in-charge of the District
- Communicate changes within the factory that may require inclusion or suitable modification in the off-site plan to the DEA (Maintenance Officer) of the Plan

7.2.7 Technical Experts

- Promptly respond to provide the necessary technical advice to MAH unit, DEA, Factory Inspectors, Fire Department, Medical Department among others
- Provide on-phone help after properly understanding and assessing the situation
- Make visit to the site in co-ordination with DEA, Factory Inspector(s) to provide for appropriate technical assistance

7.2.8 Mutual AID Groups

To quickly mobilize the resources required to emergency mitigation at the site or wherever required

7.2.9 Pollution Control Board

- Project likely areas to be polluted.
- Carry out pollution assessment at suspected locations including soil, river and air assessment
- Ensure controlling of long-term pollution damage
- Identify unidentified substances, chemical releases, if any

7.2.10 Transport Fleet Owners Including State Transport

- Act on the direction of DEA or Police

- Ascertain the extent of transport required with pick-points, routes and destinations to transport people
- Promptly arrange for dispatch of vehicles with sufficient fuel for evacuation purposes
- Arrange vehicles to transport water and other provision to camps set up

7.2.11 Media

- Disseminate vital information to public on direction of DEA, Police and other Authorities
- Act responsibly in disseminating vital information and dispel rumours, if any

7.2.12 Railways

- Act as per the direction of DEA to stop incoming trains, if required
- Arrange for evacuation, if required

7.2.13 Transporters of Hazardous Chemical

- Possess up-to-date copy of Off-site Emergency Plan
- Communicate promptly, any foreseeable disaster during transportation to the DEA, Police, Fire Service and Inspector of Factories in-charge of the District
- Communicate new assignments, newly added routes or other changes that may require inclusion or suitable modification in the off-site plan to the DEA (Maintenance Officer) of the Plan

7.2.14 Electricity Board

- Arrange for uninterrupted power supply to the plant, as required
- Arrange for lighting; at temporary medical camps etc
- Arrange for switching off power supply on request from District Authorities
- Take care of electrical equipment within the damaged zone

7.2.15 Telecommunication Department

- Ensure working of communication lines to enable effective communication between various responder agencies

7.2.16 Aviation Department

- Mobilise resources such as helicopters for knocking down vapour clouds etc

7.2.17 Civil Defence

- Co-ordinate with Police authorities
- Extend help in evacuation
- Arrange for round the clock security arrangements in the affected and evacuation areas
- Safeguard the properties and belongings of evacuees

7.2.18 Home Guards

- Co-ordinate with Police authorities.
- Extend help in evacuation.
- Arrange for round the clock security arrangements in the affected and evacuation areas.
- Safeguard the properties and belongings of evacuees

7.2.19 National Disaster Response Force

- Carry out tasks for disaster mitigation as required

7.2.20 Local Government Bodies

- Mobilise necessary resources in emergency mitigation
- Provide for community halls, town halls for evacuees

7.2.21 NGOs

- Act as per the direction of DEA, Police and other District Authorities
- Aid and assist the district authorities in emergency mitigation

7.2.22 Public Works Department

- Ensure adequate water supply for fire- fighting
- Arrange for drinking water for evacuated persons at rallying posts, parking yards and evacuation centres
- Arrange water for cattle.

7.2.23 Water Supply Board

- Arrange for supply of water to evacuees and all others involved in emergency control operations

7.2.24 Civil Supplies Department

- Arrangement to provide food and clothing as necessary, to the evacuees and all others involved in emergency controlling operations

7.2.25 Animal Husbandry Department

- Arrange for taking care of cattle - especially milch animals living in affected zone
- If evacuation of cattle is required, identify the evacuation area and shelter
- Transport arrangements for evacuation
- Fodder, drinking water arrangements for cattle.
- Arrange for veterinary doctor

7.2.26 Agriculture Department

- Arrange for protection of food grains and standing crops in the vulnerable zone. Give instructions, to farmers, if any

7.2.27 Regional Transport Authority

- To investigate into the cause of road accident involving hazardous goods carrier and take necessary action

7.2.28 Other Members of DCG

- Assist and act as per directions of the District Collector

7.2.29 Coasts Guards and Port Trusts (in case of emergency situation in coastal areas)

- Co-ordinate with Police authorities.
- Provide necessary help in emergency mitigation

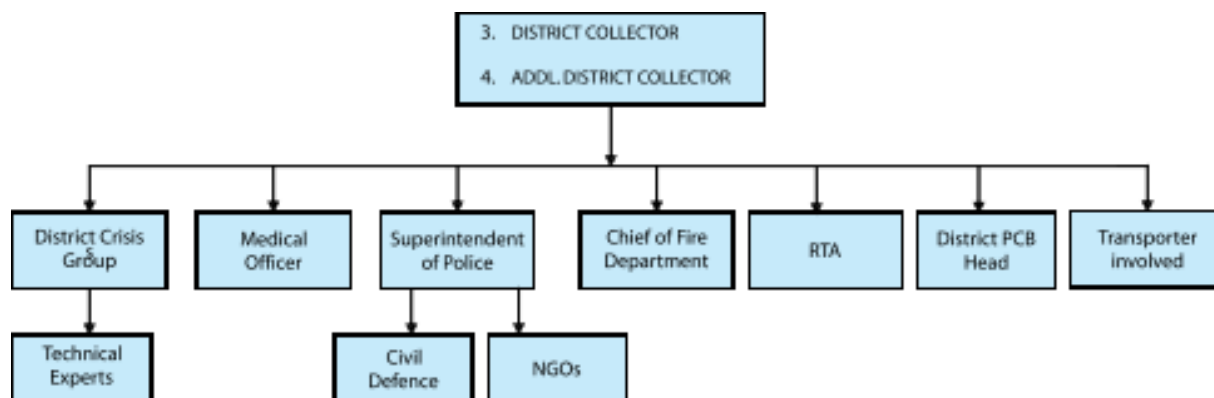
7.3 Emergency Organisation Chart of Roles

The emergency organization chart of roles must be clearly defined. The emergency organization and line of command may differ from the operational line of command during peace times.

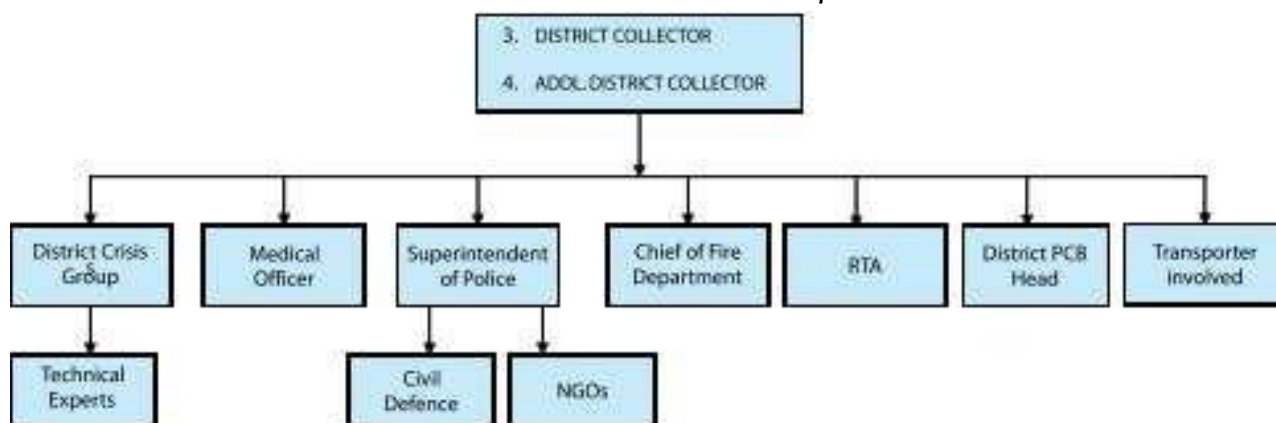
A sample emergency organization of roles is attached here for reference:

The emergency organization chart of roles must be clearly defined. The emergency organization and line of command may differ from the operational line of command during peace times.

EMERGENCY ORGANISATION FOR INDUSTRIAL DISASTER - Example



EMERGENCY ORGANISATION FOR ROAD TRANSPORT DISASTER - Example



7.4 Emergency Behaviour of Public at Large

The extent of damage control in an emergency situation can improve greatly if the public at large conducts itself in a responsible and intelligent manner. The possible reason for disadvantageous behaviour by the public is Panic Curiosity or Excitement Purposeful exploitation of the situation. The following are the ways and means of addressing the above causes of disadvantageous behaviour

1. Panic

Panic arises out of sense of urgency coupled with lack of knowledge and information to deal with the situation. Panic can be dealt with effectively by dissemination of important knowledge, information and instructions on response behaviour. A toxic gas leak may require people to stay confined than run out in helter-skelter. Such useful response instruction can be disseminated to public at large through mass education campaigns. Such campaigns shall be periodically conducted by vulnerable industrial units. Educational syllabus for schools shall include lesson on response behaviour in case of emergency. Chemistry lessons shall include simple tips on responding to various gases. For instance, in case of MIC leak at Bhopal, the magnitude of toxic consumption could have greatly reduced had people put a wet handkerchief on their nose since MIC dissolves in water.

2. Curiosity or Excitement

Uproar, noise, mass gatherings bring curiosity to the mind of people who add to the number of on-lookers. Police should play an active role in cordoning off the emergency area and judiciously allow volunteers who are willing to act to mitigate the disaster.

3. Purposeful Exploitation of situation

Unfortunately some people seek opportunism for themselves in wake of a disaster. Such people contribute only to the reducing the efficacy of mitigation effort. Such people should be identified and dealt sternly with by the Police and other authorities involved in mitigation.

7.5 Specific Actions Required by Public at Large and Communication to them

An emergency situation may call for the public at large to act on information such as evacuation to a particular area or confinement of themselves in their houses with all windows closed. The dissemination of such information shall be made using media such as Radio, Television, Mass-SMS, and Mobile Public Announcement System.

8. Emergency Response Plan

8.1 Introduction

The emergency response plan is the detailed plan to be executed in case of an emergency. The emergency response plan is drawn for the emergency scenario

Under consideration. No two emergency scenarios are alike and as such the possible emergency scenarios at any given time can be infinite. Laying down common emergency response plan is not possible and also not advisable as different scenarios will call for different plans. It is therefore prudent to begin with emergency response planning for most critical emergency scenarios. The emergency response planning can be put to test during the mock drill. This should ensure preparation of emergency response plan for new emergency scenario every time a mock drill is conducted. PRESTELS has developed PAC analysis for emergency response planning, which is attached and explained in Part C of this document. The PAC analysis yield emergency response plan for the emergency scenario under consideration

8.2 Enforcement and Implementation of Plan

The responsibility for enforcement and implementation of the plan rests with the DEA. In event of offsite emergency, the DEA will declare the emergency via Annexure 1 and communicate the same to the authorities and agencies listed there under along with other responders. The various authorities and agencies shall discharge their responsibility and carry out all such tasks that the situation on hand may call for.

8.3 Marriage of Chapter 5, 6, 7

- Chapter 5 deals with projection of emergency scenarios
- Chapter 6 deals with identification of resources
- Chapter 7 deals with roles and responsibilities

An emergency scenario is an undesired event that may occur. Resources both material and intellectual are required to mitigate the possible effect of an emergency scenario. The people involved in applying the resources for mitigation should discharge their expected roles and responsibilities intelligently and faithfully. Thus, we must in advance keep the resources and roles-responsibilities mapped to the emergency scenario. This mapping is determinedly referred to as the 'Marriage of Chapter 5, 6 and 7). PRESTELS recommends PAC analysis for developing a complete course of response in case of an emergency.

(See information on PAC analysis attached in Part C)

8.4 Discharging and Co-Ordination of Roles and Responsibilities

It is of utmost importance that all authorities and stakeholders involved in disaster mitigation discharge their roles and responsibilities in letter and spirit. It is for this purpose necessary to ensure that the authorities and stakeholders know with full awareness their roles and responsibilities.

9. Post-Emergency Restoration

9.1 Calling off Emergency

Having satisfied himself that the emergency is over, the DEA shall call off the emergency via Annexure 5. The calling off of emergency shall restore life to normalcy and curtail the spread of misinformation, rumours giving opportunism for exploitation of the situation. The emergency camps set up shall continue to function after calling off of emergency till they provide all the needed support to the aggrieved.

9.2 Controlling Long-Term Damage

The emergency may affect natural resources of soil, water and air. The PCB unit shall make assessment of the areas adjoining the emergency scene where such damage may take place. The PCB shall submit their report to the DEA via Annexure 6. The DEA shall act on the information and recommendation provided by the PCB.

9.3 Investigation Studies and Reporting

The DEA shall appoint a committee constituting the necessary stakeholders who may be necessary to carry out thorough investigation into the emergency as well as introspection of the response actions and measures. The investigation reporting shall be via Annexure 7. The investigation report shall become a part of Chapter 10 of this report. The lessons drawn from the investigation shall be incorporated into this plan in the appropriate chapters.

9.4 Compensation and Settlements

The compensation and settlements shall be carried out by the DEA. The DEA shall process compensations as claimed under the PLIA.

10. Past Accidents in the District

The investigation reports of offsite emergencies made via Annexure 7 shall be filed in this chapter. The notes of changes made in the plan drawing lessons from the off-site emergency shall be recorded in this plan

Table 28 Lessons from Past Accidents

SR.	OFF-SITE EMERGENCY INVESTIGATION REPORT NO-	REFERENCE WITH	NOTE OF CHANGES MADE IN PLAN	REMARKS
1				

11. Mock Drills

Mock drills are exercises to test the effectiveness of plan. Mock drills must be carried out at periodic intervals as specified in the MSIHC rules (i.e. once in a year). The lessons drawn from Mock drills must be used to improve the plan. The Mock drill reports via Annexure 8 shall be filed in this chapter. The notes of changes made in the plan drawing lessons from the mock drills shall be recorded in this plan

Table 29 Lessons from Mock Drills

SR.	OFF-SITE EMERGENCY REFERENCE WITH INVESTIGATION REPORT NO	REMARKS
1.	MOCK DRILL YEAR – M.A.H. Unit Name:- <u>BELOW OBSERVATIONS GIVEN:-</u>	
	I.	
	II.	

ANNEXURE 1 - DECLARATION OF OFF-SITE EMERGENCY

I declare Off-site Emergency in the district of Gujarat starting at this _____ hour on this day of _____.

DEA: [NAME, SIGNATURE AND SEAL]

Date: -----

Information to the following be made via phone followed by written communication

Directory of Key Responders in the District

Table2 Directory of Key Responders

SR.	AUTHORITY	NAME OF CURRENT OFFICEHOLDER	ADDRESS (O, R)	TELEPHONE (O, R, M)	EMAIL
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5.	DDO, BHAVNAGAR MEMBER	SHRI HANUL CHAUDHARI, IAS	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)0278-2426810 (M)9978406231	ddo-bav@gujarat.gov.in
6.	SUPERINTENDENT OF POLICE Member	SHRI NITESH PANDEY IPS	OFFICE OF SUPERINTENDENT OF POLICE, BHAVNAGAR	(O)02782520050 (M)9978405067	sp-bav@gujarat.gov.in
7.	MAMLATDAR, DISASTER CONTROL	SHRI A.D.KUBAVAT	DISTRICT DISASTER MANAGEMENT CONTROL ROOM BHAVNAGAR	(E)+91278 1077 (O)+912782521554 (O)+912782521555 (M)9426902111	dismgmt- bav@gujarat.gov.in
8.	FIRE DEPARTMENT CHIEF FIRE OFFICER MEMBER	SHRI PRADYUMANSINH JADEJA CHIEF FIRE OFFICER	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424814 (O)+912782424815 (M)9727712177	cfo-bmc@gujarat.gov.in
9.	(ALTERNATE) DIVISIONAL FIRE OFFICER	MR.P.R.JADEJA	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424878, (M)9825204004	cfo-bmc@gujarat.gov.in

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12	DEPUTY CONTROLLER, CIVIL DEFENCE, BHAVNAGAR	DR.CHINTAN VAISHNAV	DISASTERCELL, COLLECTOROFFICE, BHAVNAGAR	(O)+912782521554 (M)8980035034	cdbvn04@gmail.com
13	POLLUTION CONTROL BOARD (REGIONALOFFICER)	SHRI MANISH BARAD	MOKDHAJI CIRCLE, GHOGHARD, SARDARNAGAR, BHAVNAGAR.	(O)+912782566108 (M)8140944711	ro-gpcb- bhav@gujarat.gov.in
14	REGIONAL TRANSPORT OFFICER MEMBER	SHRI RUTVIJA DANI	SARDAR PATEL CIRCLE, GADHECHIVADALA, BHAVNAGAR	(O)02782424004 (M)9723759293	rto-trans- bhv@gujarat.gov.in
15	A)TECHNICALEXPERTS MEMBER	MR SHAKTIDAN ROHADIYA (DY.MANAGER,FIRE AND SAFETY) NIRMA LTD	KALATALAV BHAVNAGAR	(M)8980026351	nirma-kalatalav@gmail.com
16	B)TECHNICAL EXPERTS MEMBER	V.V.SHAH (A.G.M.S.H.E.) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9099069056	nirma-kalatalav@gmail.com
17	C)TECHNICAL EXPERTS MEMBER	MR AMITMAHETA(V.P.) SUMITOMO CHEMICAL INDIALTD	RUVPARI ROAD BHAVNAGAR	(M)9426743350	bharat.sathiya@sumichem. co.in
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19	INDUSTRIES REPRESENTATIVE MEMBER	MR D.G.JAKHADE (UNITHEAD) NIRMALTD	KALATALAV BHAVNAGAR	(M)9825019963	nirma-kalatalav@gmail.com
20	INDUSTRIES REPRESENTATIVE MEMBER	MR NITIN PANDEY IOCL BOTTLINGPLANT	TAGDI,BHAVNAGAR	(M)9453016084	pandeynitin@indianoil.in
21	INDUSTRIES REPRESENTATIVE MEMBER	MR S. R. SINGHARCHITORGANO SYS LTD	NARMAD,BHAVNAGAR	(M)6351275128	sales@architorg.com
22	TRADE UNION REPRESENTATIVE MEMBER	MR.VIDHYADHARRAHA NE (GENRALSECRETARY) A.S.S.R.ANDG.W.ASSO CIATION	ALANG,BHAVNAGAR	(O)02842235035	—
23	DISTRICT INFORMATION OFFICER MEMBER	MR R.S.CHAUHAN	BEHIND COLLECTOR'S OFFICE, MOTIBAGH, BHAVNAGAR.	(O)02782424994 (O)02782422919 (M)9537409098	cdmo-bav@gujarat.gov.in

24	WESTERN RAILWAY BHAVNAGAR	MR. DINESH VERMA RAILWAY MANAGER	CENTRALRAILWAYSTATION BHAVNAGAR	(0)02782445475 (M)9724097000	drm@bvp.railnet.gov.in
25	PETROLEUM AND EXPLOSIVE SAFETY ORGANISATION MEMBER	DR.R.VENUGOPALJ OINTCHIEFCONTR OLLEROFEXPLOSI VES – VADODARA	8 TH FLOOR,YASHKAMALBILDIN G,SAYAJIGANJ,VADODARA	(0)02652225159	rvenugopal@explosives.gov .in
26	PASCHIM GUJARAT VIJ COMPANY LIMITED CIRCLE OFFICE, BHAVNAGAR MEMBER	SHRI Y.R.JADEJA CHIEF ENGINEER	"VIJSEVASADAN",OLDPOWE RHOUSECOMPOUND,CHAV DIGATE,BHAVNAGAR	(0)02782522922 (0)02782524924(M)9879203840	sebvn.pgvcld@gebmil.com

27	PRANT OFFICER, BHAVNAGAR		COLLECTORATE BUILDING,GROUND FLOOR,MOTIBAUG, BHAVNAGAR	(O)02782428701 (M)7567010346	po-bav@gujarat.gov.in
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29	PRANT OFFICER, PALITANA	MR.ANKIT PATEL	TALETIROAD,OPP. PALITANAHIGH SCHOOL,PALITANA, DIST.BHAVNAGAR- 364270	(O)02848243350 (M)7567010276	sdm-pali-bav@gujarat.gov.in
30	PRANT OFFICER, SIHOR	SHRI BHUMIKA KORIYA	OFFICEOFDEPUTY COLLECTOR, BHAVNAGAR-SHIHOR ROAD,DIST. BHAVNAGAR	(O)02846222103 (M)7567010355	po-shihor-bav@gujarat.gov.in
31	PRANT OFFICER,TALAJA	SHRI JAYKUMAR RAVAL	ROYALCHOWKADI, TALAJA-BHAVNAGAR N.H.NO.8-E,TALAJA	(O)02842222260 (M)7567010274	po-talaja-bav@gujarat.gov.in
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33	NCC COMMANDING OFFICER ,BHAVNAGAR	GROUP CAPT.MANISH MAHAJAN	608B,CRESCENT BUILDING,CRESCENT CIRCLE,KRISHNA NAGAR,BHAVNAGAR	(O)02782516893 (M)9667533505	air.bvng@nccindia.nic.in

ANNEXURE 2 - POSSESSORS OF THE COPY OF OFF-SITE EMERGENCY PLAN

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			FLOOR, MOTIBAUG,		
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ANNEXURE 3 - COMMUNICATION OF CHANGE IN COPY OF THIS PLAN TO ALL POSSESSORS OF THE COPY OF OFF-SITE EMERGENCY PLAN

The following change(s) are made to the version _____ of the Off-site
Emergency Plan dated _____.

SR. NO.	PAGE NUMBER	EXISTING INFORMATION	CHANGE(S) MADE

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Communication to the following:-

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12	DEPUTY CONTROLLER,	DR.CHINTAN	DISASTERCELL,	(O)+912782521554	cdbvn04@gmail.com

	CIVIL DEFENCE, BHAVNAGAR	VAISHNAV	COLLECTOR OFFICE, BHAVNAGAR	(M)8980035034	
13	POLLUTION CONTROL BOARD (REGIONAL OFFICER)	SHRI MANISH BARAD	MOKDHAI CIRCLE, GHOGHARD, SARDARNAGAR, BHAVNAGAR.	(O)+912782566108 (M)8140944711	ro-gpcb- bhav@gujarat.gov.in
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15	A) TECHNICAL EXPERTS MEMBER	MR SHAKTIDAN ROHADIYA (DY.MANAGER, FIRE AND SAFETY) NIRMA LTD	KALATALAV BHAVNAGAR	(M)8980026351	nirma-kalatalav@gmail.com
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22	TRADE UNION REPRESENTATIVE MEMBER	MR. VIDHYADHAR RAHA NE (GENERAL SECRETARY) A.S.S.R. AND G.W. ASSO CIATION	ALANG, BHAVNAGAR	(O)02842235035	—
23	DISTRICT INFORMATION OFFICER MEMBER	MR R.S. CHAUHAN	BEHIND COLLECTOR'S OFFICE, MOTIBAGH, BHAVNAGAR.	(O)02782424994 (O)02782422919 (M)9537409098	cdmo-bav@gujarat.gov.in
24	WESTERN RAILWAY BHAVNAGAR	MR. DINESH VERMA RAILWAY MANAGER	CENTRAL RAILWAY STATION BHAVNAGAR	(O)02782445475 (M)9724097000	drm@bvp.railnet.gov.in
25	PETROLEUM AND EXPLOSIVE SAFETY ORGANISATION MEMBER	DR. R. VENUGOPAL JOINT CHIEF CONTROLLER OF EXPLOSIVES – VADODARA	8 TH FLOOR, YASH KAMAL BLDG, SAYAJIGANJ, VADODARA	(O)02652225159	rvenugopal@explosives.gov .in

26	PASCHIM GUJARAT VIJ COMPANY LIMITED CIRCLE OFFICE, BHAVNAGAR MEMBER	SHRI Y.R.JADEJA CHIEF ENGINEER	"VIJSEVASADAN",OLDPOWE RHOUSECOMPOUND,CHAV DIGATE,BHAVNAGAR	(O)02782522922 (O)02782524924(M)9879203840	sebvn.pgvcl@gmail.com
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27	PRANT OFFICER, BHAVNAGAR		COLLECTORATE BUILDING,GROUND FLOOR,MOTIBAUG, BHAVNAGAR	(O)02782428701 (M)7567010346	po-bav@gujarat.gov.in
28	PRANT OFFICER, MAHUVA	SHRI SUSMITHA EPPALAPALLY (I.A.S.)	TALUKA SEVA SADAN, NH-51,VADLI, MAHUVA,BHAVNAGAR	(O)02844222765 (M)7567010268	sdm-mahuva-bav@gujarat.gov.in
29	PRANT OFFICER, PALITANA	MR.ANKIT PATEL	TALETIROAD,OPP. PALITANAHIGH SCHOOL,PALITANA, DIST.BHAVNAGAR- 364270	(O)02848243350 (M)7567010276	sdm-pali-bav@gujarat.gov.in
30	PRANT OFFICER, SIHOR	SHRI BHUMIKA KORIYA	OFFICEOFDEPUTY COLLECTOR, BHAVNAGAR-SHIHOR ROAD,DIST. BHAVNAGAR	(O)02846222103 (M)7567010355	po-shihor-bav@gujarat.gov.in
31	PRANT OFFICER,TALAJA	SHRI JAYKUMAR RAVAL	ROYALCHOWKADI, TALAJA-BHAVNAGAR N.H.NO.8-E,TALAJA	(O)02842222260 (M)7567010274	po-talaja-bav@gujarat.gov.in
32	SUPERINTENDENT SIR TAKHTASINHJI GENERAL HOSPITAL, BHAVNAGAR	DR. ASHOK VALA	KALANALA, BHAVNAGAR	(O)02782423250 (M)9898141114	ms.health.bhavnagar@gmail.com
33	NCC COMMANDING OFFICER ,BHAVNAGAR	GROUP CAPT.MANISH MAHAJAN	608B,CRESCENT BUILDING,CRESCENT CIRCLE,KRISHNA NAGAR,BHAVNAGAR	(O)02782516893 (M)9667533505	air.bvng@nccindia.nic.in

ANNEXURE 4 - COMMUNICATION OF CHANGE IN POSITIONS, ADDRESS AND PHONE NUMBERS TO THE MAINTENANCE OFFICER OF THE PLAN

To,
The DEA,
(The Maintenance Officer)
Off-site Emergency Plan,

[NAME AND ADDRESS]

Date:_____

Sub: Change information for updating Off-site Emergency Plan

Dear Sir/Madam,

Please note the following change(s) in the Off-site Emergency Plan:

Please incorporate the above changes in the plan with effect from

(Date): _____

Thanking you,

Yours Faithfully,

[NAME, SIGNATURE AND SEAL OF THE AUTHORITY AND DATE]

ANNEXURE 5 - CALLING OFF THE DECLARED OFF-SITE EMERGENCY

I call off the declared Off-site Emergency in the district of *[NAME OF THE DISTRICT]* starting at this _____ Hour on this day of _____.

DEA: *[NAME, SIGNATURE AND*

SEAL] Date: *[DATE]*

Information to the following be made via phone followed by telegram

Directory of Key Responders in the District

Table2 Directory of Key Responders

SR.	AUTHORITY	NAME OF CURRENT OFFICEHOLDER	ADDRESS (O, R)	TELEPHONE (O, R, M)	EMAIL
1.	DISTRICT COLLECTOR (ORDEA) CHAIRMAN	SHRI MANISHKUMAR BANSAL, IAS	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782428822 (O)+912782521666 (M)9978406206	collector- bav@gujarat.gov.in
2.	(ALTERNATE) RESIDENT ADDITIONAL COLLECTOR, BHAVNAGAR	SHRI N.D.GOVANI	DISTRICT COLLECTOR OFFICE, BHAVNAGAR	(O)+912782421881 (O)+912782427756 (M)9978405178	add-collector- bav@gujarat.gov.in
3.	MUNICIPAL COMMISSIONER MEMBER	SHRI NARENDRAKUMAR MEENA, IAS	BHAVNAGAR MUNICIPAL CORPORATION	(O)+912782439900 (O)+912782510532 (M)9978404500	comm-bmc@gujarat.gov.in
4.	ALTERNATE DY.MUNICIPAL COMMISSIONER	SHRI M.C.PATEL	BHAVNAGAR MUNICIPAL CORPORATION	(O)+912782439292 (M)9925224646	dmca.bmcgujarat@gmail.co m
5.	DDO, BHAVNAGAR MEMBER	SHRI HANUL CHAUDHARI, IAS	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)0278-2426810 (M)9978406231	ddo-bav@gujarat.gov.in
6.	SUPERINTENDENT OF POLICE Member	SHRI NITESH PANDEY IPS	OFFICE OF SUPERINTENDENT OF POLICE, BHAVNAGAR	(O)02782520050 (M)9978405067	sp-bav@gujarat.gov.in
7.	MAMLATDAR, DISASTER CONTROL	SHRI A.D.KUBAVAT	DISTRICT DISASTER MANAGEMENT CONTROL ROOM BHAVNAGAR	(E)+91278 1077 (O)+912782521554 (O)+912782521555 (M)9426902111	dismgmt- bav@gujarat.gov.in
8.	FIRE DEPARTMENT CHIEF FIRE OFFICER MEMBER	SHRI PRADYUMANSINH JADEJA CHIEF FIRE OFFICER	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424814 (O)+912782424815 (M)9727712177	cfo-bmc@gujarat.gov.in
9.	(ALTERNATE) DIVISIONAL FIRE OFFICER	MR.P.R.JADEJA	MAIN FIRE STATION, BHAVNAGAR	(O)+912782424878, (M)9825204004	cfo-bmc@gujarat.gov.in

10	CHIEF DIST.HEALTH OFFICER(CDHO) MEMBER	DR.KOKILABEN SOLANKI	JILLA PANCHAYAT, NEAR MOTIBAUG, BHAVNAGAR	(O)+912782423665 (M)9727779662	cdho.health.bhavnagar@gmail.com
11	ASISTANT DIRECTOR, I. S.H., BHAVNAGAR MEMBER SECRETARY	MR.N.K.PATEL	JILLA SEVASADAN-2, 3 RD FLOOR, DISH OFFICE,BHAVNAGAR	(O)+912782428473 (M)9427508476	astdish-bav@gujarat.gov.in
12	DEPUTY CONTROLLER, CIVIL DEFENCE, BHAVNAGAR	DR.CHINTAN VAISHNAV	DISASTERCELL, COLLECTOROFFICE, BHAVNAGAR	(O)+912782521554 (M)8980035034	cdbvn04@gmail.com
13	POLLUTION CONTROL BOARD (REGIONALOFFICER)	SHRI MANISH BARAD	MOKDHAJI CIRCLE, GHOGHARD, SARDARNAGAR, BHAVNAGAR.	(O)+912782566108 (M)8140944711	ro-gpcb-bhav@gujarat.gov.in
14	REGIONAL TRANSPORT OFFICER MEMBER	SHRI RUTVIJA DANI	SARDAR PATEL CIRCLE, GADHECHIVADALA, BHAVNAGAR	(O)02782424004 (M)9723759293	rto-trans-bhv@gujarat.gov.in
15	A)TECHNICALEXPERTS MEMBER	MR SHAKTIDAN ROHADIYA (DY.MANAGER,FIRE AND SAFETY) NIRMA LTD	KALATALAV BHAVNAGAR	(M)8980026351	nirma-kalatalav@gmail.com
16	B)TECHNICAL EXPERTS MEMBER	V.V.SHAH (A.G.M.S.H.E.) NIRMA LTD	KALATALAV BHAVNAGAR	(M)9099069056	nirma-kalatalav@gmail.com
17	C)TECHNICAL EXPERTS MEMBER	MR AMITMAHETA(V.P.) SUMITOMO CHEMICAL INDIALTD	RUVAPARI ROAD BHAVNAGAR	(M)9426743350	bharat.sathiya@sumichem.co.in
18	D)TECHNICAL EXPERTS MEMBER	MR BHRUGURAJZALA(H.S. E.)RENAISSANCE INDUSTRIES	VARTEJ GIDC ,BHAVNAGAR	(M)9913999988	renaissanceindustriesfac@gmail.com
19	INDUSTRIES REPRESENTATIVE MEMBER	MR D.G.JAKHADE (UNITHEAD) NIRMALTD	KALATALAV BHAVNAGAR	(M)9825019963	nirma-kalatalav@gmail.com
20	INDUSTRIES REPRESENTATIVE MEMBER	MR NITIN PANDEY IOCL BOTTLINGPLANT	TAGDI,BHAVNAGAR	(M)9453016084	pandeynitin@indianoil.in
21	INDUSTRIES REPRESENTATIVE MEMBER	MR S. R. SINGHARCHITORGANO SYS LTD	NARMAD,BHAVNAGAR	(M)6351275128	sales@architorg.com
22	TRADE UNION REPRESENTATIVE MEMBER	MR.VIDHYADHARRAHANE (GENRALSECRETARY) A.S.S.R.ANDG.W.ASSOCIATION	ALANG,BHAVNAGAR	(O)02842235035	—
23	DISTRICT INFORMATION OFFICER MEMBER	MR R.S.CHAUHAN	BEHIND COLLECTOR'S OFFICE, MOTIBAGH, BHAVNAGAR.	(O)02782424994 (O)02782422919 (M)9537409098	cdmo-bav@gujarat.gov.in

24	WESTERN RAILWAY BHAVNAGAR	MR. DINESH VERMA RAILWAY MANAGER	CENTRALRAILWAYSTATION BHAVNAGAR	(0)02782445475 (M)9724097000	drm@bvp.railnet.gov.in
25	PETROLEUM AND EXPLOSIVE SAFETY ORGANISATION MEMBER	DR.R.VENUGOPALJ OINTCHIEFCONTR OLLEROFEXPLOSI VES – VADODARA	8 TH FLOOR,YASHKAMALBILDIN G,SAYAJIGANJ,VADODARA	(0)02652225159	rvenugopal@explosives.gov .in
26	PASCHIM GUJARAT VIJ COMPANY LIMITED CIRCLE OFFICE, BHAVNAGAR MEMBER	SHRI Y.R.JADEJA CHIEF ENGINEER	"VIJSEVASADAN",OLDPOWE RHOUSECOMPOUND,CHAV DIGATE,BHAVNAGAR	(0)02782522922 (0)02782524924(M)9879203840	sebvn.pgvc@gmail.com

SD/- Pollution Control Board

ANNEXURE 7 - INVESTIGATION REPORTING

Investigation Report No: - Name of Event - Accident Description - Cause of Accident - Effects of Accident a1. No. of people dead a2. No. of people injured b. Property damage(s)	c. Pollution (short-term) d. Pollution (long-term) Lessons to be drawn from the event - Resource Gap: - Communication Gap: - Others:
---	---

- Response measures taken:-

SR.	AGENCY	RESPONSE(S)	REMARKS

ANNEXURE 8 - MOCK DRILL REPORTING

- Mock Drill No:
- Mock Drill Scenario Description:
- Observations:

SR.	RESPONSE AGENCY	RESPONSE	OBSERVATION AND COMMENTS	REMARKS

- Lessons to be drawn from the event
 - Resource Gap:
 - Communication Gap:
 - Others:
- Response measures taken

SR.	AGENCY	RESPONSE	REMARKS

ANNEXURE – 9 ERDS AND TEMPLATE

ERDS FOR CHLORINE

Formula: Cl₂

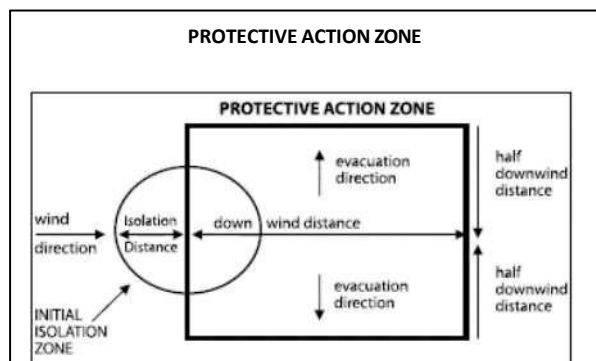
Yellow/ Green Colour, Gas, Pungent Door, Corrosive (Chlorine gas is heavier than air and Dispersion is slow)

Flammable:	NO
Flash Point:	N/A
LEL- UEL:	N/A
Toxic:	Yes
IDLH:	10 PPM
TLV:	01 PPM

I. General Response Action::

- On-SITE:- Stop Chlorine Leakage, if possible safely
- Wear self contained Breathing Apparatus (SCBA) and use Chlorine emergency kit
- INFORM people to stay confined indoor with door & window tightly shut and ventilators & ACs off.
- SHELTER AND CONFINE un-housed people to an indoor area outside likely cloud travel path.
- Use water spray / fog to disperse and dilute vapours
- Collect runoff for disposal as potential hazardous waste.

II. Evacuation Zone Dimensions::



SR. NO	MASS OF RELEASE	APPROX. VALNERABLE DISTANCE (M) (IN THE DIRECTION OF WIND)	APPROX. TIME TO REACH MAX. VULNERABLE DIST. (MIN)
1	0.5	622	4
2	0.9	3100	15

* The figures in above table are not true values but arbitrary for demonstrating the concept
(The above values are reference values for a particular Maximum Credible Loss Scenario and are to be used only in absence of any other values, only as an aid to form a judgement)

III. Fire

- Chlorine is non flammable, so the cascading effects in case of fire explosion is absent. Hence Domino Effect.
- However, It may ignite or explode on contact with comustible materials.

Suggested Action:

- Use water spray / fog as extinguishing medium.
- Do not use dry chemicals, carbon dioxide or Halogenated extinguishing agents
- For Large Fires- Flood with fine water spray.

IV. Medical ::

- **Danger**

- Poisonous if inhaled. Fatality may be caused due to inhalation when concentration in air is greater than 10 PPM (IDLH)
- Low level exposure to chlorine in air will cause eye/ skin / airway irritation, sore throat, and cough.
- At higher levels of exposure, sign and symtoms may progress to chest tightness, wheezing, dyspnoea, and bronchospasm.
- Low level exposures to chlorine gas will cause eye and skin irrigation. Higher exposures may result in severe chemical brns or ulcerations. Exposure to compressed liquid chlorine may cause frostbite of the skin and eyes.

- **Suggested Action:**

- Inhalational chlorine poisoning can be treated with supportive care and can include administration of humidified oxygen, bronchodilators, and airway management.
- Pulmonary edema may be delayed and therefore patients should be monitored for up to 24 hours following severe inhalation exposures.

- **Antidotes:** There is No specific Antidots.

V. Pollution ::

- A leak of chlorine vapours poses a significant air pollution hazards Chlorine is heavier than air
- And spersion is slow. Hence state of emergency will last longer.

VI. Chemical Information ::

A) Chemical Reactivity:-

- Reactivity with Water:- Chlorine is sparingly soluble in water. The Water solubility of chlorine is 0.7% @ 20 > C.

B) Reactivity with Common Material:-

- Chlorine is aggressive to certain non metallic material like natural rubber and many plastics, therefore equipment and hoses must be suitable for chlorine.
- Chlorine is chemically stable. It is incompatible with Strong oxidizers.
- It does not react with common material but may react with oxidizing material.

- Olefine impurities may lead to narcotics effects or it may act like a simple asphyxiate.

C) Polymerisation:-

- Hazardous polymerization will not occur.

D) Combustion Products :-

- Not applicable since chlorine is not flammable gas.

E) Properties:-

- Physical State at 15 Deg. C and 1 Atm. Pressure: Gas
 - TLV: 1 PPM
 - IDLH: 10 ppm
 - Molecular weight: 70.906
 - Boiling Points: -34.0 Deg C
 - Freezing Points: -101 Deg C
 - Vapour Pressure: 5168 mm Hg @ 21 deg.c
 - Vapour Density: (air=1) 2.49
 - Liquid Density: (Water=1): 1.56 @ -34. Deg C
 - Liquid Vapour conversion: 1:450

ERDS FOR LPG

Formula: $C_3H_8 - C_4H_{10}$

Colour less gas odourless

Flammable: Highly Flammable

Flash Point: -104°C (-155°F)

LEL- UEL: 2.1 % & 9.5 %

Toxic:

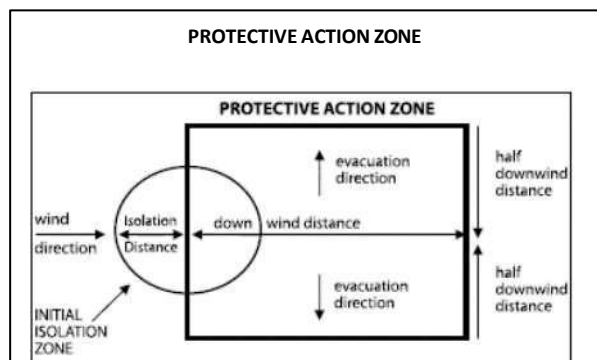
IDLH: PPM

TLV: PPM

I. General Response Action::

- On-SITE: keep container dry, keep away from heat and source of ignitions
- PPEs: Face shield, full suit and vapour respirator.

II. Evacuation Zone Dimensions::



SR. NO	MASS OF RELEASE	APPROX. VALNERABLE DISTANCE (M) (IN THE DIRECTION OF WIND)	APPROX. TIME TO REACH MAX. VULNERABLE DIST. (MIN)
1	1200	5	<2

* The figures in above table are not true values but arbitrary for demonstrating the concept
(The above values are reference values for a particular Maximum Credible Loss Scenario and are to be used only in absence of any other values, only as an aid to form a judgement)

III. Fire::

- Highly Inflammable & Explosive

Suggested Action:

- Avoid contact with oxidizers olefinic impurities may lead to narcotic effect or it may cut a simple as phyxicant
- Fire Hazard when exposed to heat or flame
- If fire is big keep surrounding areas cool by spraying water.

IV. Medical ::

- **Routes of Entry :-** Inhalation, Skin concentration in air greater than 10% causes dizziness in few minutes 1% conc. Give the same symptoms in 10 mins high conc.causes Asphyxiation.
- Liquid on skin causes frostbite.

Suggested Action:

- Remove the victim to the fresh area.
- Provide artificial Resuscitation, Remove the wetted clothes
- Wash the affected area with water

Antidotes: N.A.

V. Pollution ::

- A leak of LPG poses a significant air pollution hazards
- May cause fire and explosion -a great environmental hazards

VI. Chemical Information ::

A. Chemical Reactivity:

Reactivity with Water:

B. Reactivity with Common Material:

C. Polymerisation:

D. Combustion Products :

E. Properties:

- Physical State at 15 Deg. C and 1 Atm. Pressure: Gas
- TLV: PPM 1000
- IDLH:PPM
- Molecular weight.....
- Boiling Points: - -40.0 Deg C
- Freezing Points:.....Deg C
- Vapour Pressure: 23 to 123 mm Hg @ 21 deg.c
- Vapour Density: (air=1)...: Lighter.
- Liquid Density: (Water=1): 1.6 @ -34. Deg C

ERDS FOR AMMONIA

Formula: NH_3

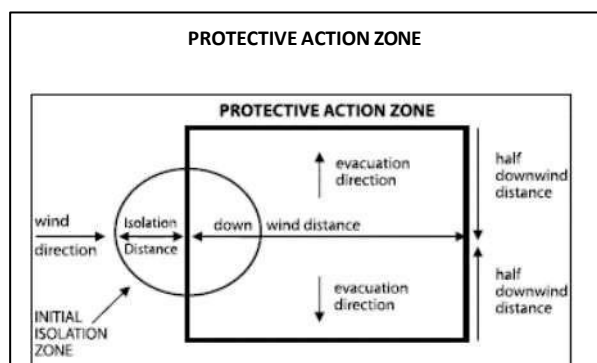
Colourless gas or liquid with pungent odour

Flammable:	Air – Ammonia mixture is inflammable
Flash Point:	N/A
LEL- UEL:	16% - 25%
Toxic:	Yes
IDLH:	300 PPM
TLV:	25PPM

I. General Response Action

- On-SITE: Stop Ammonia Leakage, if possible safely.
- Wear self contained Breathing Apparatus (SCBA) and use Ammonia emergency kit.
- Stay upwind, out of low areas, and ventilate closed spaces before entering. Evaluate the affect area to determine whether to evacuate or shelter-in-place by taping windows and doors, shutt off outside air intakes (attic fans, etc.), and placing a wet towel or cloth over the face needed).Earth-ground and bond all lines and equipment associated with the ammonia system.
- Electrical equipment should be non-sparking or explosion proof.
- Use water spray / fog to disperse and dilute vapours.
- Wear PVC Suit, Goggles, Hand gloves.

II. Evacuation Zone Dimensions



SR.NO	MASS OF RELEASE	APPROX. VALNERABLE DISTANCE (M) (IN THE DIRECTION OF WIND)	APPROX. TIME TO REACH MAX. VULNERABLE DIST. (MIN)
1	5	500 M	3
2	10	10000 M	40

* The figures in above table are not true values but arbitrary for demonstrating the concept
(The above values are reference values for a particular Maximum Credible Loss Scenario and are to be used only in absence of any other values, only as an aid to form a judgement)

III. Fire

- Ammonia is inflammable. Fire hazards of ammonia are moderate .
- Ammonia forms flammable mixture with air within certain limits(16- 25%) by vol.
- Fire hazard increases in contact with oil or other combustible materials.

Suggested Action:

- To extinguish the fire use CO₂, DCP or water spray.
- Cool the leaking cylinder with large amt. of water.
- To control the fire, stop the flow of the gas if possible.

IV. Medical ::

Danger

- Skin Contact – Irritation, Burn may be very painful.
- Eye Contact; Highly painful irritation of eye & eyelids
- Watering of eye.
- Serious lesions in eyes.
- Inhalation – Irritation of nose , eyes and throat.
- Difficulty in breathing
- Sudden death.

Suggested Action:

- Immediately remove the victim from the affected area & take him to the nearest shower.
- Immediately administer medical oxygen under low pressure using a pulmotor.

Antidotes: N.A.

V. Pollution ::

- a. Ammonia is harmful to aquatic life in very low concentrations and may be hazardous if it enters water intakes.
 - b. Local health and wildlife authorities, as well as operators of water intakes in the vicinity, should be notified of water releases.
 - c. Waterfowl toxicity may occur at elevated concentrations.
 - d. Ammonia does not concentrate in the food chain.
 - e. The conversion of ammonia to nitrites/nitrates by bacteria in aquatic systems can reduce the concentration of dissolved oxygen (referred to as nitrogenous oxygen demand).
- Effect on water treatment process: Chlorination will produce chloramines, which are more readily detected by taste and odor.

VI. Chemical Information ::

- A) Chemical Reactivity:
Reactivity with Water:
Chlorine is rapidly soluble in water. when ammonia reacts with water , it forms Ammonium Hydroxide
($\text{NH}_3 + \text{H}_2\text{O} \rightarrow \text{NH}_4\text{OH}$)
- B) Reactivity with Common Material:
Ammonia is highly reactive with Sodium, Potassium at ordinary temp.
- C) Polymerisation:
Hazardous polymerization will not occur.
- D) Combustion Products :

Hydrogen at very high temperatures: 1544°F (840°C).

E) Properties:

- Physical State at 15 Deg. C and 1 Atm. Pressure: Gas
- TLV: 25 PPM
- IDLH: 300 ppm
- Molecular weight: 17.03
- Boiling Points: -33 Deg C at 1 atm
- Freezing Points: -78Deg C
- Vapour Pressure: 7,600 mm Hg @ 25° C
- Vapour Density: (air=1) 0.597 @ 0° C
- Liquid Density: (Water=1): 0.6818
- Liquid Vapour conversion: 1:450

ERDS FOR BROMINE

Formula: (Br₂)

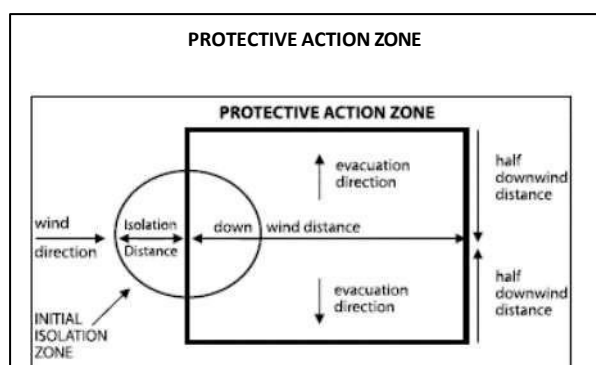
Red Brown (Dark) Liquid, Acute toxicity, Inhalation, Skin corrosion, Acute aquatic toxicity

Flammable:	Non-flammable
Flash Point:	N/A
LEL- UEL:	N/A
Toxic:	Yes
IDLH:	3 PPM
TLV:	0.1 PPM

I. General Response Action::

- On-SITE:- Stop Bromine Leakage, if possible safely
- Wear self-contained Breathing Apparatus (SCBA) and use Bromine emergency kit
- INFORM people to stay confined indoor with door & window tightly shut and ventilators & ACs off.
- SHELTER AND CONFINE un-housed people to an indoor area outside likely cloud travel path.
- Use water spray / fog to disperse and dilute vapours
- Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

II. Evacuation Zone Dimensions:



SR. NO	MASS OF RELEASE	APPROX. VALNERABLE DISTANCE (M) (IN THE DIRECTION OF WIND)	APPROX. TIME TO REACH MAX. VULNERABLE DIST. (MIN)
1	0.5	622	4
2	0.9	3100	15

* The figures in above table are not true values but arbitrary for demonstrating the concept
(The above values are reference values for a particular Maximum Credible Loss Scenario and are to be used only in absence of any other values, only as an aid to form a judgement)

III. Fire

- Bromine is non flammable, so the cascading effects in case of fire explosion is absent. Hence Domino Effect.
- However, It may ignite or explode on contact with comustible materials.

Suggested Action:

- Use water spray / fog as extinguishing medium.
- Do not use dry chemicals, carbon dioxide or Halogenated extinguishing agents
- For Large Fires- Flood with fine water spray.

IV. Medical:

- **Danger**
 - Poisonous if inhaled. Fatality may be caused due to inhalation when concentration in air is greater than 10 PPM (IDLH)
 - Low level exposure to bromine in air will cause eye/ skin / airway irritation, sore throat, and cough.
 - At higher levels of exposure, sign and sytoms may progress to chest tightness, wheezing, dyspnoea, and bronchospasm.
 - Low level exposures to chlorine gas will cause eye and skin irrigation. Higher exposures may result in severe chemical brns or ulcerations. Exposure to compressed liquid chlorine may cause frostbite of the skin and eyes.
- **Suggested Action:**
 - Inhalational bromine poisoning can be treated with supportive care and can include administration of humidified oxygen, bronchodilators, and airway management.
 - Pulmonary edema may be delayed and therefore patients should be monitored for up to 24 hours following severe inhalation exposures.
- **Antidotes:** explained in plan.

V. Pollution:

- A leak of bromine vapours poses a significant air pollution hazards Chlorine is heavier than air
- And spersion is slow. Hence state of emergency will last longer.

VI. Chemical Information:

F) Chemical Reactivity: -

- Reactivity with Water: - Bromine is sparingly soluble in water. The Water solubility of chlorine is 0.7% @ 20 > C.

G) Reactivity with Common Material: -

- Bromine is aggressive to certain non-metallic material like natural rubber and many plastics, therefore equipment and hoses must be suitable for chlorine.
- Bromine is chemically stable. It is incompatible with Strong oxidizers.
- It does not react with common material but may react with oxidizing material.
- Olefine impurities may lead to narcotics effects or it may act like a simple asphyxiate.

H) Polymerisation: -

- Hazardous polymerization will not occur.

I) Combustion Products: -

- Not applicable since Bromine is not flammable gas.

J) Properties: -

- Physical State at 15 Deg. C and 1 Atm. Pressure: Gas
 - TLV: 0.1 PPM
 - IDLH: 3 ppm
 - Molecular weight: 159.808 g/mol
 - Boiling Points: - 58.8 Deg C
 - Freezing Points: -7.2 Deg C
 - Vapour Pressure: 184 mmHg@ 20 deg.c
 - Vapour Density: 7.1 g/l @ STP
 - Liquid Density: (Water=1): 3.12 @ 25 Deg C

ERDS FOR HYDROGEN

Hydrogen: (H₂)

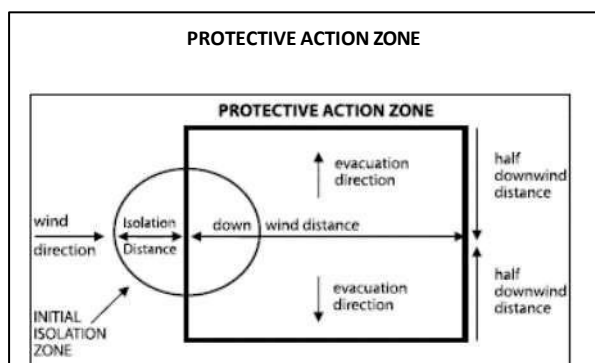
Colourless Gas, Flammable, Non-Toxic



I. General Response Action::

- On-SITE:- Stop Hydrogen Leakage, if possible safely
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.
- Protect from sunlight. Store in a well-ventilated place
- INFORM people to stay confined indoor with door & window tightly shut and ventilators & ACs off.
- SHELTER AND CONFINE un-housed people to an indoor area outside likely cloud travel path.
- Use water spray / fog to disperse and dilute vapours
- Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

II. Evacuation Zone Dimensions:



SR. NO	MASS OF RELEASE	APPROX. VALNERABLE DISTANCE (M) (IN THE DIRECTION OF WIND)	APPROX. TIME TO REACH MAX. VULNERABLE DIST. (MIN)
1	0.5	622	4
2	0.9	3100	15

* The figures in above table are not true values but arbitrary for demonstrating the concept
(The above values are reference values for a particular Maximum Credible Loss Scenario and are to be used only in absence of any other values, only as an aid to form a judgement)

III. Fire

- Hydrogen is highly flammable and can ignite easily if it comes into contact with an ignition source such as a spark or flame. However, It may ignite or explode on contact with combustible materials.

Suggested Action:

- Use water spray / fog as extinguishing medium.
- Use an extinguishing agent suitable for the surrounding fire.

IV. Medical:

- Danger**

- Hydrogen is non-toxic, but in indoor environments like battery storage rooms, it may build up and cause asphyxiation by displacing oxygen. This danger can be offset to some extent by adding odorants to hydrogen fuel, giving it an artificial smell and alerting users in case of a leak.
- Allows your cells and body to stay hydrated. Eliminates toxins and wastes out of your body. Ensures that your joints stay lubricated.
- Hydrogen used in the fuel cells is a very flammable gas and can cause fires and explosions if it is not handled properly.
- Inhaling hydrogen has a similar effect, as it also reduces the density of the vocal cords, resulting in a higher-pitched voice.
- At higher levels of exposure, sign and symptoms may progress to chest tightness, wheezing, dyspnoea, and bronchospasm.
- Hydrogen peroxide is corrosive to skin, eyes, and mucous membranes at high concentrations (>10%); lower concentrations may cause irritation.

- Suggested Action:**

- Never smoke near a place where hydrogen is generated or being used. Remove all possible sources of flame and sparks. Avoid build-up of hydrogen under ceilings/roofs and other partly enclosed spaces.
- Place alarms in close vicinity to areas of anticipated leakage. Alarms will be triggered if a specified concentration of hydrogen. Pulmonary edema may be delayed and therefore patients should be monitored for up to 24 hours following severe inhalation exposures.

V. Pollution:

- The oxidation of hydrogen in the atmosphere leads to increasing concentrations of greenhouse gases in both the troposphere and stratosphere.

VI. Chemical Information:

A) Chemical Reactivity: -

- Hydrogen is highly reactive because it has one electron in its outer shell. This makes it eager to bond with other elements to achieve a stable electron configuration.

B) Reactivity with Common Material: -

- Almost all metals and nonmetals react with hydrogen at high temperatures. At elevated temperatures and pressures hydrogen reduces the oxides of most metals and many metallic salts to the metals.

C) Polymerisation: -

- Hazardous polymerization will not occur.

D) Combustion Products : -

- Not applicable since chlorine is not flammable gas.

E) Properties:-

- Physical State at 15 Deg. C and 1 Atm. Pressure: Gas
 - Molecular weight: 1.00784 atomic mass units
 - Boiling Points: - 252.9 Deg C
 - Freezing Points: -259.14 Deg C
 - Vapour Pressure: 0.1000 bar at -258.6°C
 - Vapour Density: 0.00523 lb/ft³

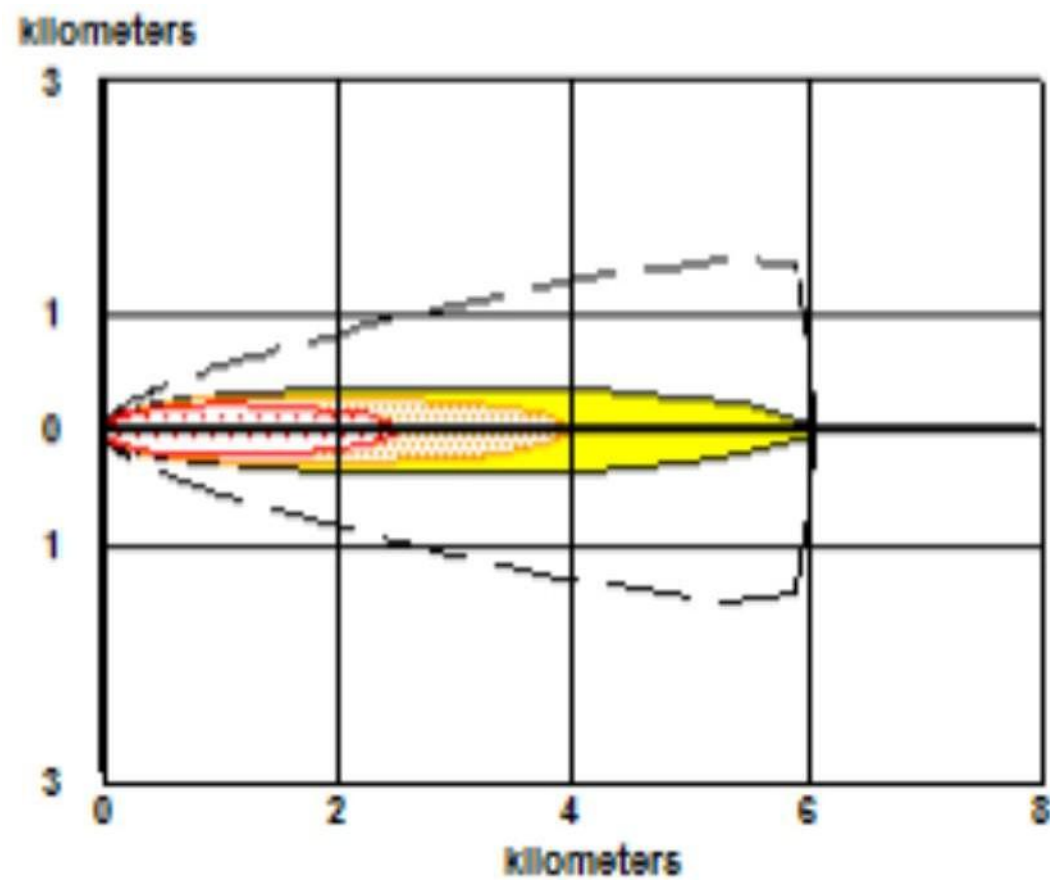
TEMPLATE - 1 Chlorine Tonner

Name of the Company				1. ARCHIT ORGANOSYS LTD. 2. NIRMA LIMITED (SODA ASH) 3. RENAISSANCE INDUSTRIES		
Type and name of Chemical and its Capacity				Chlorine Toner		
Type of Leakage	Weather class	Wind Speed m/s	Rate of Release Kg/Min	Probable extent of damage in KM	In place control measure	Number of people likely to be affected
Intermittent Release	<i>F</i>	1	15	1.1	Dedicated storage, CCE approved storage with most of units, FRP hood with caustic scrubbers with many units, Cross Ventilation, Fire Extinguisher, Fire hydrant system, SCABA set, Air line with bubble hood. Canister Mask, Chlorine Kit and O2 cylinder for any emergency	<100
		2	15	1.1		
	D	3	15	0.622		
Rapid Release	<i>F</i>	1	13.7 Kg/Sec	1.5		
		2	13.7 Kg/Sec	1.9		
	<i>D</i>	3	13.7 Kg/Sec	2.5		
Massive Release	F	1	15 Kg/Sec	1.9		
		2	15 Kg/Sec	2.5		
	D	3	15 Kg/Sec	3.1		

TEMPLATE - 1 A Chlorine Tonner

DISPERSION CONTOUR FOR CHLORINE LEAKAGE AT DIFFERENT WEATHER CONDITION

RAPID RELEASE Wind Speed 3m/s W. Class- D



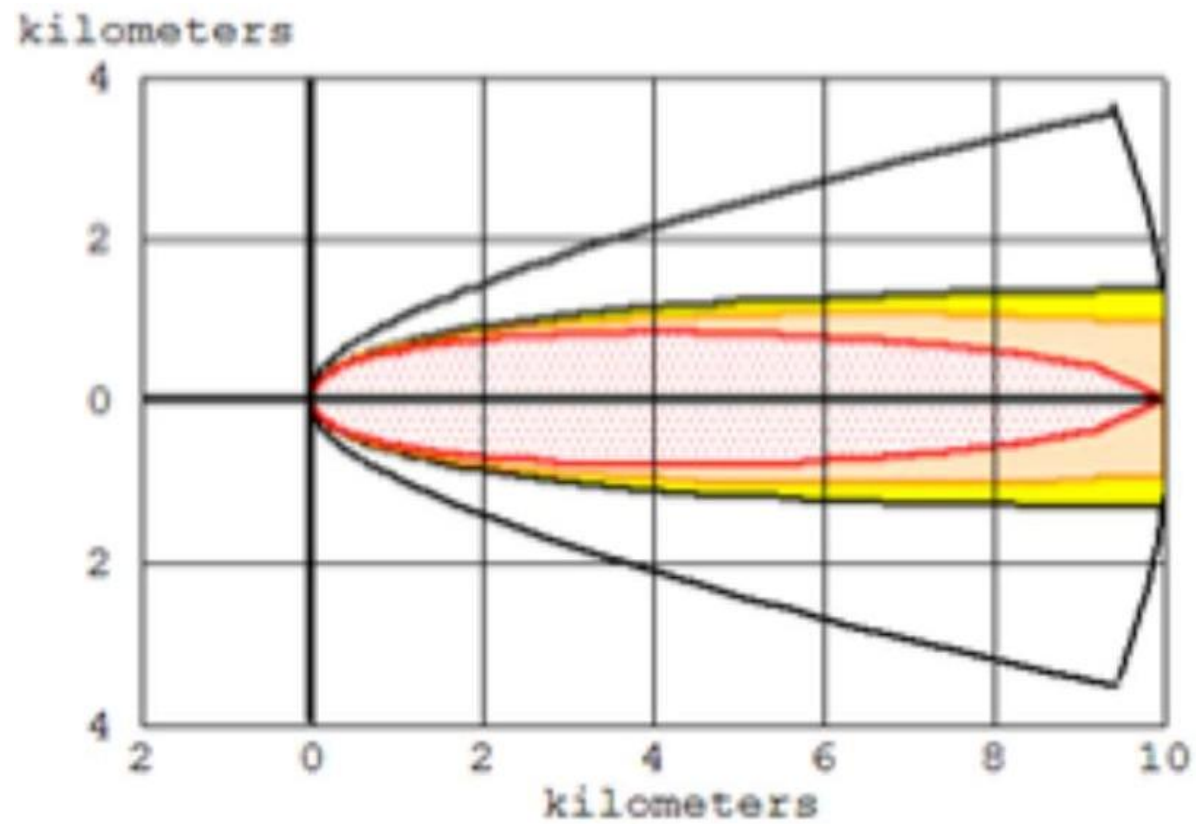
TEMPLATE - 2 Chlorine Tank

Name of the Company			1. NIRMA LIMITED (SODA ASH)			
Type and name of Chemical and its Capacity			Chlorine Tank			
Type of Leakage	Weather class	Wind Speed m/s	Rate of Release Kg/Min	Probable extent of damage in KM	In place control measure	Number of people likely to be affected
Intermittent Release	F	1	969	8.8	PROVISION OF DYKE WALL, , PROVISION OF ON LINE MONITORING SENSORS.;	<1500
		2	968	1.1		
	D	3	968	5.5		
Rapid Release	F	1	7,970	8.5		
		2	7,970	7.8		
	D	3	7,970	10.0		
Massive Release	F	1	968	10		
		2	968	9.2		
	D	3	968	10		

TEMPLATE - 2 A Chlorine Tank

DISPERSION CONTOUR FOR CHLORINE LEAKAGE AT DIFFERENT WEATHER CONDITION

RAPID RELEASE Wind Speed 3m/s W. Class- D



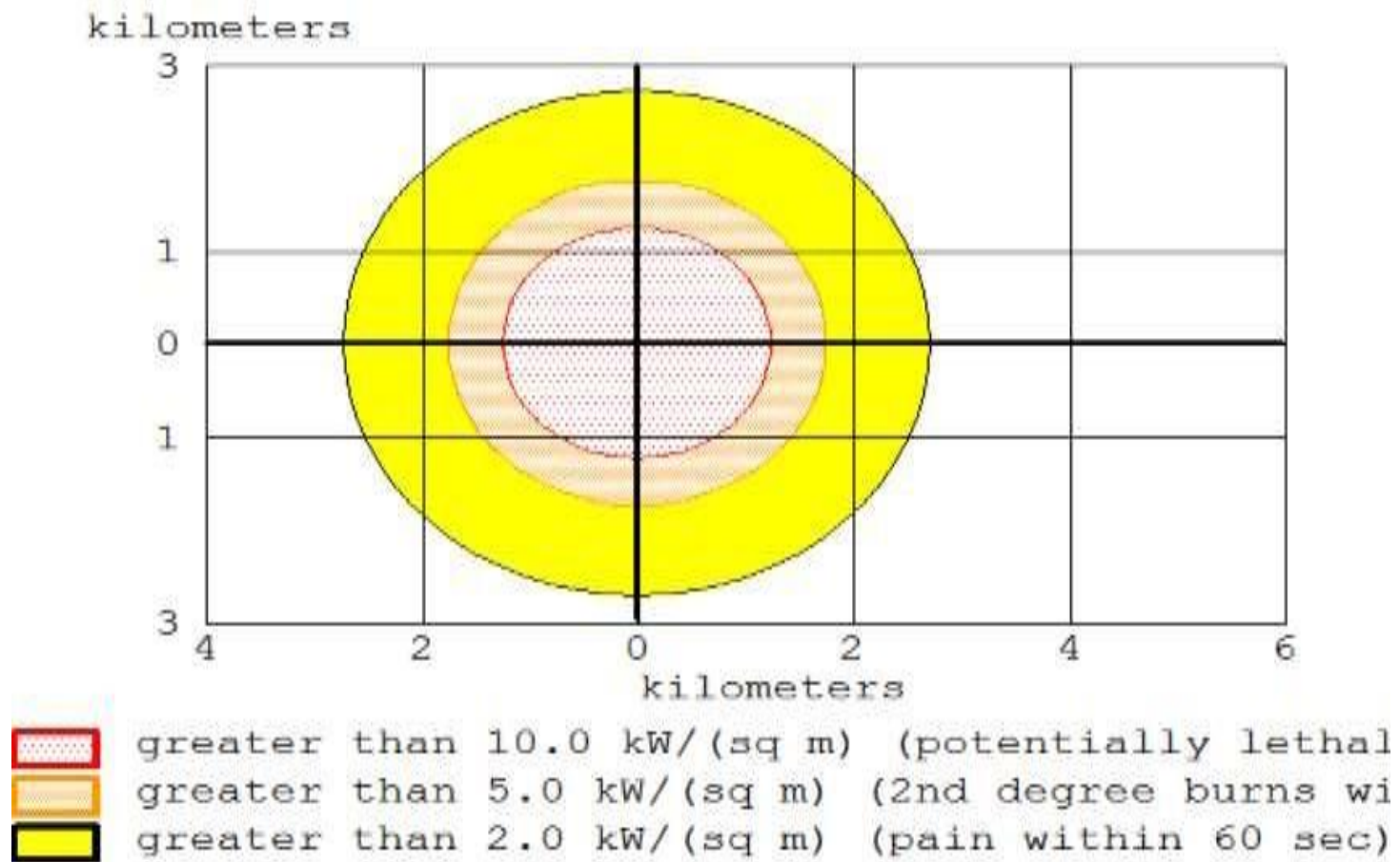
TEMPLATE - 3 LPG

Name of the Company			1. INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) 2. SHIP RECYCLING IND. ASSOCIATION (INDIA) 3. SUNFIRE PETROCHEMICALS (P) LTD.			
Type and name of Chemical and its Capacity			LPG BULLET			
Type of Leakage	Weather class	Wind Speed m/s	Rate of Release Kg/Min	Probable extent of damage in Meter	In place control measure	Number of people likely to be affected
SPILLAGE OF FLAMMABLE SOLVENT CONFINED	<i>F</i>	1	1,830	193	FLAME PROOF INSTALATION, SPRINKLER SYSTEM INSTALLED, FIRE HYDRANT PROVIDED WITH MONITOR, CCE APPROVED STORAGE WITH COMPOUND, SBA SETS AND ADEQUATE PPES, SVWITH RD INSTALLED	<500
		2	1,820	181		
	<i>D</i>	3	1,830	129		
SPILLAGE OF FLAMMABLE SOLVENT UNCONFINED	<i>F</i>	1	5,400	476		
		2	5,400	299		
	<i>D</i>	3	5,400	177		
MAJOR FIRE - POOL FIRE	<i>F</i>	1	2,050	52		
		2	2,050	52		
	<i>D</i>	3	2,050	52		
MAJOR FIRE - JET FIRE	<i>F</i>	1	5,410	71		
		2	5,410	72		
	<i>D</i>	3	5,410	74		
EXPLOSION - BLEVE	<i>F</i>	1	100%	1200		
		2	100%	1200		
	<i>D</i>	3	100%	1200		

TEMPLATE - 3 A LPG

DISPERSION CONTOUR FOR LPG LEAKAGE AT DIFFERENT WEATHER CONDITION

EXPLOSION BLEVE Wind Speed 3m/s W. Class- D



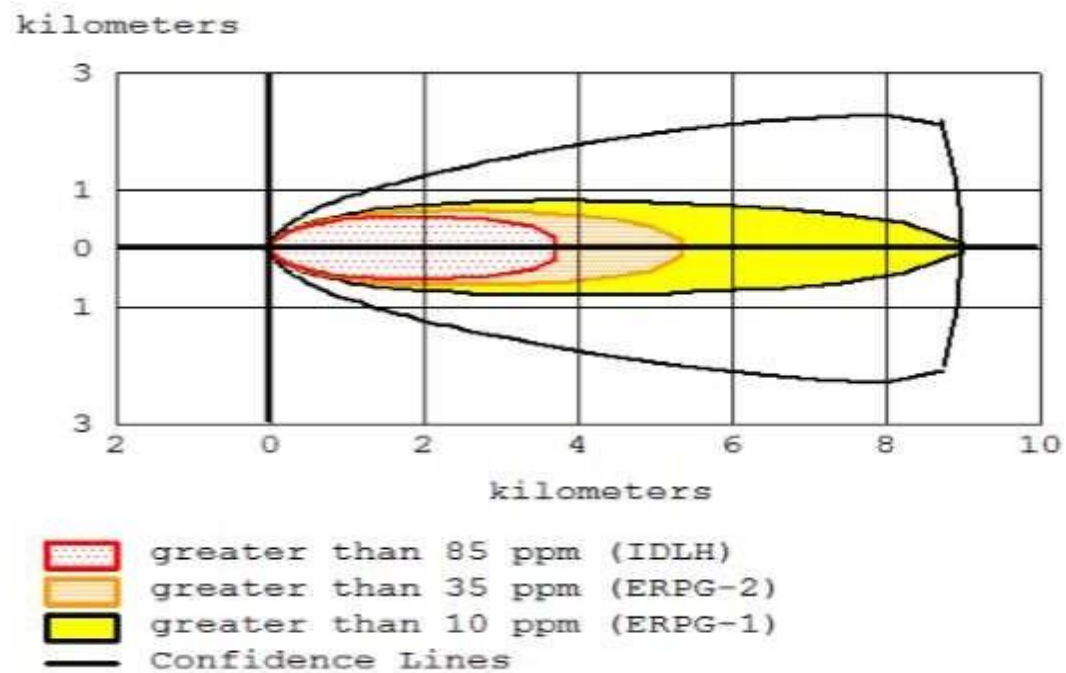
TEMPLATE – 4 LPG

Name of the Company				1. INDIAN OIL CORPORATION LIMITED (L.P.G.BOTTLING PLANT) 2. SHIP RECYCLING IND. ASSOCIATION (INDIA) 3. SUNFIRE PETROCHEMICALS (P) LTD.		
Type and name of Chemical and its Capacity				LPG CYLNDER		
Type of Leakage	Weather class	Wind Speed m/s	Rate of Release Kg/Min	Probable extent of damage in KM	In place control measure	Number of people likely to be affected
Intermittent Release	<i>F</i>	<i>1</i>	15.1	<i>0.397</i>	FLAME PROOF INSTALATION, SPRINKLER SYSTEM INSTALLED, FIRE HYDRANT PROVIDED WITH MONITOR, CCE APPROVED STORAGE WITH COMPOUND, SBA SETS AND ADEQUATE PPES, SV WITH RD INSTALLED	< 50
		2	15.1	<i>0.271</i>		
	D	3	15.1	<i>0.131</i>		
Rapid Release	<i>F</i>	1	6,080	<i>4.5</i>		
		2	6,080	5.2		
	<i>D</i>	3	6,080	4.3		
Massive Release	F	1	907 kilograms/sec	<i>7,1</i>		
		2	907 kilograms/sec	<i>7,1</i>		
	D	3	302 kilograms/sec	3.7		

TEMPLATE - 4 A LPG

DISPERSION CONTOUR FOR LPG LEAKAGE AT DIFFERENT WEATHER CONDITION

INSTANTANEOUS RELEASE Wind Speed 3m/s W. Class-D



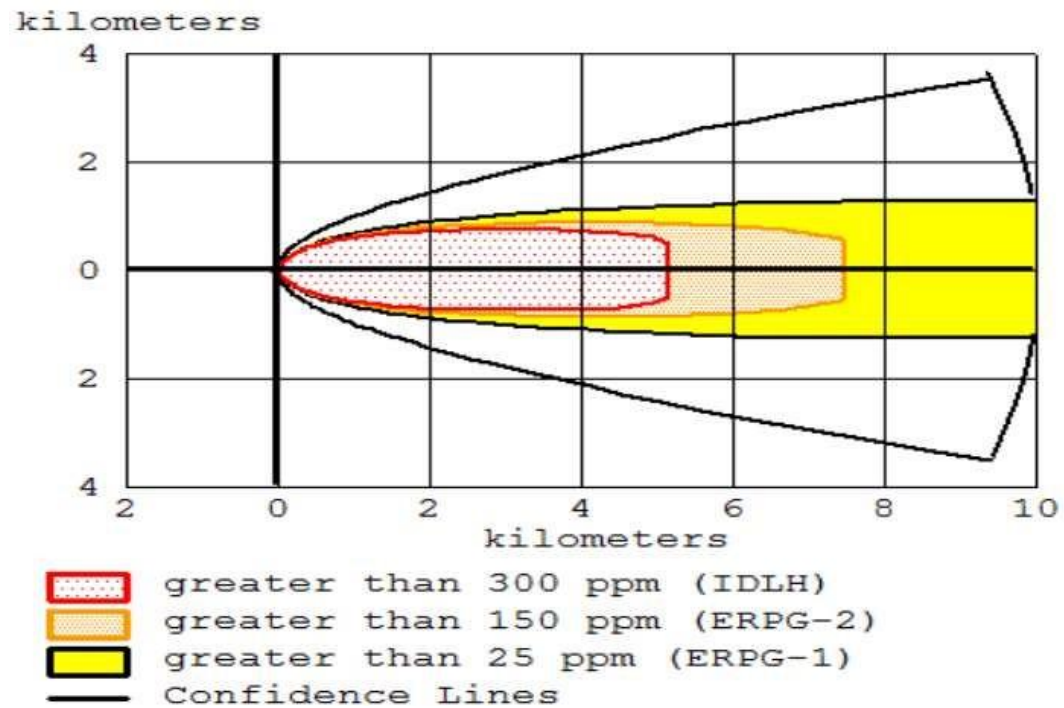
TEMPLATE – 5 AMMONIA

Name of the Company			1. NIRMA LIMITED (SODA ASH)			
Type and name of Chemical and its Capacity			AMMONIA			
Type of Leakage	Weather class	Wind Speed m/s	Rate of Release Kg/Min	Probable extent of damage in KM	In place control measure	Number of people likely
Intermittent Release	<i>F</i>	1	907 kilograms/sec	7.1 kilometres	Sprinkler system installed, Fire Hydrant Provided with Monitor, CCE Approved storage with compound, SBA sets and adequate PPEs, SV with RD installed	<2000
		2	907 kilograms/sec	7.1 kilometres		
	D	3	302 kilograms/sec	3.7 kilometres		
Rapid Release	<i>F</i>	1	6,080 kilograms/min	4.5 kilometres		
		2	6,080 kilograms/min	5.2 kilometres		
	<i>D</i>	3	6,080 kilograms/min	4.3 kilometres		
Massive Release	F	1	15.1 kilograms/min	397 meters		
		2	15.1 kilograms/min	271 meters		
	D	3	4.99 kilograms/min	131 meters		

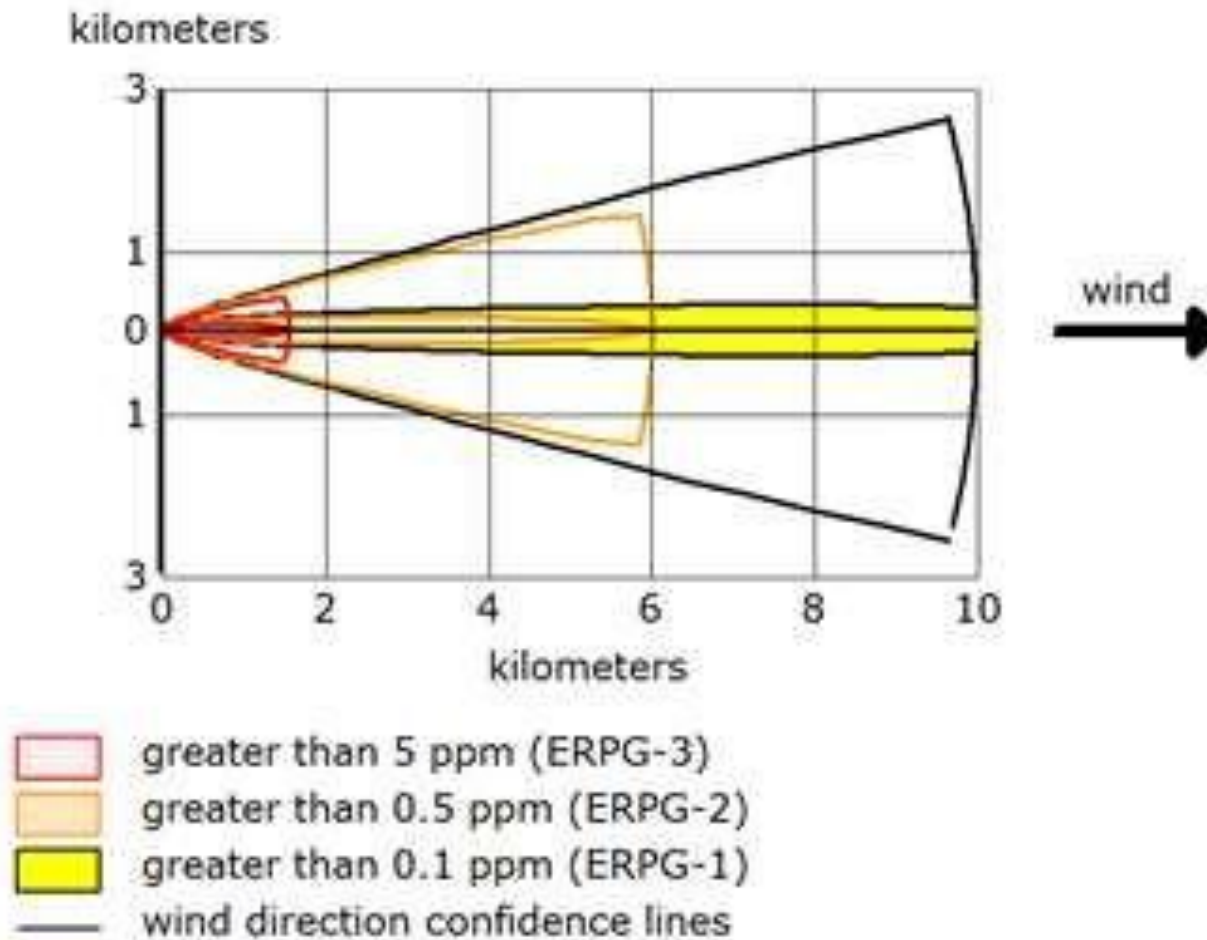
TEMPLATE - 5 AMMONIA

DISPERSION CONTOUR FOR AMMONIA LEAKAGE AT DIFFERENT WEATHER CONDITION

RAPID RELEASE Wind Speed 3m/s W. Class- D



TEMPLATE- 8A BROMINE



Note: Threat zone picture is truncated at the 10 km limit.

PART-C

PAC Analysis for Emergency Scenarios

Introduction

The PAC analysis is a method developed by PRESTELS for developing Emergency Response Plan for a particular emergency scenario. The PAC analysis clarifies the roles and responsibilities of various responders, actions to be taken and communication to be made. The PAC analysis throws light on the resources required to combat emergency. It also draws attention to the Pacific's of communication that must be made.

P-A-C

The term PAC stands for Person – Action – Communication during an emergency, each responder is required to take certain Action and make certain Communication. The PAC analysis charts the Actions to be taken and the Communication to be made against every responder. The analysis begins at the onset of signs for a looming disaster and ends with the 'calling-off' of the off-site emergency.

Person

The person is an individual authority or role such as District Collector or Site Controller. It may also be group of people such as Police Constables, Bus Drivers or NGOs volunteers.

Action

The action is an act undertaken by person such as assessment of damage potential or projection of vulnerable zone or transportation of person from one place to another or diversion of traffic.

Communication

Communication is a message communicated from one person to other person(s) to initiate actions from the person(s) to whom the message is communicated.

Explanation of Columns on the PAC sheet

Person

Primary

Here, enter name of authority, role such as District Collector, Police officer or Site Incident Controller Enter the name of persons in brackets.

Alternate

Here, enter name of person who will assume temporary charge in absence of the person listed in the Primary.

Action

Act

Here, enter the activities to be undertaken such as Assess Damage, Divert Traffic and others by Concerned persons.

Resource

Here enter the resource(s) required by the person to carry out his Act sufficiently and efficiently. e.g.: Nose Masks, Ambulances, Water etc.

Whom

Here enter the authority, role to whom the communication must be made. Enter the name of person in brackets

How

Here, enter the means of communication and phone numbers as:

INT: for internal line numbers

O: for office landline numbers

R: for residence landline numbers

M: for mobile numbers

What

Here, enter the specifics of message to be communicated

Remarks

This section is to be used for making observations on the Person – Action – Communication proceeds. This section may be filled during a Mock Drill exercise

Time

Here, enter the clock time at the completion of a particular Person – Action – Communication Sequence

Resource Gap

Here, enter the shortcoming in resources and additional resources necessary

Communication Gap

Here, enter communication gaps observed

Other

Here, enter other observations, comments or suggestions

Serial Numbering Rules for PAC Sheet

Every row of PAC corresponds to the entity 'Person'. Number rows as '1, 2, 3...etc.' for every 'Person', there will be numbers of actions. Label 'Act' as 'a, b, c...etc.' Every 'Act' will have its resource requirement. Label 'Resources' as 'a, b, c...etc.' corresponding to the respective 'Act'. Likewise, one 'Person' may have to communicate too many others. Under communication Columns, label 'Whom' as 'a, b, c...etc.' and label the 'How' and 'What' as 'a, b, c...etc.' corresponding to the 'Whom' respectively. (See examples for clarity of labelling serial numbers. Wherever required grouping of serial numbers such as 'a, b)' or 'a-f)' is permitted. Where only one item exists labelling can be dropped. However, every label in 'Act' column must have a corresponding label in 'Resources' column and every label in 'Whom' column must have a corresponding label in 'How' and 'What' column. In case a particular 'Act' does not require any 'Resources', then the entry may be made as '-' in the Resources column.

Benefits of PAC

The benefits of PAC are as under:

- Clarity of roles and responsibilities to people involved in emergency management.
- Identification of resource gaps for resource planning and procurement.

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response mitigation.

- Improved specificity of observations during mock-drills and identification of improvement opportunities.
- The PAC can be a very effective tool for training emergency responders

Case Study 1 - Chlorine Leak

Scenario

A chlorine pipeline connected to the bulk storage tank is ruptured. Initially about 500 kg of liquid Chlorine leaks out creating a major emergency. The flow is stopped by applying special cement, and the transfer of chlorine to the spare tank is started. However, there is a danger of escalation because the cement could give way to the internal pressure before the transfer is completed. Thus, the off-site plan is activated including evacuation. The scenario incorporates situations illustrating how the plan is activated, how each responder responds and what problems arise.

Development

- The incident occurs at 4-30 pm when the second shift has started. As soon as the emergency occurs, the shift maintenance engineer assumes charge of Incident Controller. The Dy. Chief Engineer who is in charge of the factory at that time assumes the charge of Site Controller. He informs the District Collector, Fire Brigade, Police, Medical Officer and other agencies. He informs the Chief Maintenance Engineer, who arrives and takes over as the Incident Controller. He informs the CEO/Manager, who immediately reaches factory and then takes over as Site Controller from Dy. Chief Engineer.
- The RDC who was in the office when the message is received assumes the charge and informs the Collector who reaches office in 15 minutes. Before the Collector arrives, the RDC has activated the Plan and has informed the Fire Brigade, Police, Medical Officer, Transport provider among responders and has confirmed that they have received the information and have initiated their action.
- Meanwhile the Site Controller procures and projects the details on extent of emergency and informs it to the District Collector, Fire Brigade, Police and other responders. He informs that the situation is getting under control but can develop into a major emergency requiring intimation to public to stay confined indoors and evacuation from certain areas. He also identifies the area likely to be affected and gives the details to the agencies.
- The Police block the traffic, send a vehicle with loud speaker to alert public to go stay confined indoors. Those who are on the streets are directed to walk crosswind.
- Police realize that a public meeting is going on an open ground nearby. A constable is sent to ask the public to walk away in particular direction and get inside confined shelters. The leaders of the political party conducting the meeting (which is the opposition party) take it amiss and refuse to disperse, taking it as a ploy to prevent their meeting. A senior officer is deputed with a police van. The leaders understand the gravity and situation is under control. People start evacuating the ground.
- In a nearby cinema house a show is going on. Police inform the manager of cinema theatre. An announcement is made to ask the people to stay inside. The air conditioning system is stopped. As the AC system is stopped the people are uncomfortable and in bad mood. Situation is tactfully controlled.
- Hutments near the factory, are not "gas-proof", staying inside is not safe. The Collector asks State Transport to dispatch buses to undertake evacuation. The ST drivers refuse, questioning about their safety. There are no PPE for them. They are persuaded to go with wet cloth tied over the nose. A decision is taken to evacuate women, children and old people first. They are shifted to "shelters" (such as school). Food and water arrangements are made through the civil supplies department and help from NGOs.
- There is a milk dairy in the vicinity. The cattle are in open sheds and hence not safe. Evacuation is difficult. The dairy owners are asked to cover the sides of the sheds by tarpaulin sheets, which are provided by the nearby supplier. People affected by chlorine are shifted to hospitals and treated by medical teams.
- The Fire Brigade tenders help the Incident Controller to establish water curtains.

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affected.

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- The District Collector continuously monitors the actions being taken and ensures proper coordination amongst the responding agencies. The District Collector also requests for additional assistance from the neighbouring districts and the State Authorities. The Collector also is constantly in touch with the Site Controller at the factory to know the status and to ascertain the developing situation. (For example, the wind direction may change, leak may aggravate.)
- The Incident Controller and his team work hard and ensure that the emergency does not escalate further and Chlorine is transferred from the affected tank to the spare tank.
- When the Chlorine transfer to safe spare tank is complete, the Site Controller informs the District Collector, who calls off the emergency.
- Arrangements are made to ensure that the people who were shifted from the hutments are again brought back to their homes. The Factory Inspectorate initiates accident investigation. The Pollution Control Board alerts the District Collector on the possible pollution and its effects on near and distant future. The long term clean up and post-emergency restoration activities are initiated.

Case Study 2 - Transportation Emergency

Scenario

Tanker carrying highly flammable naphtha overturns on mountainous road and develops a leak after its valve is damaged. The leak is minimal but can develop further if untreated. The driver and his assistant (cleaner) are luckily not injured. The tanker belongs to Kerala state and accident takes place in Karnataka state.

Development

- The driver, using his cell phone, tries to call the Police Control Room but the network is weak. Meanwhile, the cleaner requests a passing vehicle to report the incidence to the next police station on way.
- The driver succeeds in calling the Police Control Room and informs them about the type of emergency, location and what help is required. The driver also tries to contact his employer. (The Police also receive information from the driver of a passing vehicle, which had seen the overturned vehicle.)
- The cleaner tries to keep the moving traffic as far away as possible by using stones and tree branches. (He improvises because he is not carrying the equipment for road blockage like the portable plastic cones or a barrier stand). He is unable to repair or stop the leak.
- Some local nomads gather and try to collect the leaking liquid. Driver tries to stop them, warns them about the hazard.
- Traffic jam ensues.
- The police team reaches the spot. The police control room alerts and transmits information to District Collector, Fire Brigade, Medical Office, Police headquarters for additional staff to control the situation. The District Collector declares and off-site emergency. The technical team to repair and stop the leakage, a spare tanker and a crane to move the overturned tanker is called for.
- The driver briefs the police who have arrived at the spot and they immediately stop the traffic, and also disperse the crowd local nomads.
- (Observe that first the driver and later the police team are the 'Incident Controllers'. The officer at the Police Control Room is the 'Site Controller')
- The technical team arrives and the leader of the team takes charge as the 'Incident Controller'. The repairs stopped the leakage, but it is decided that the tanker will be emptied before it is made to stand on its wheels. The fire brigade arrives and is kept on standby in case its service is required. The spare tanker, requested earlier, arrives. The transfer is started. The crane arrives and the overturned tanker is lifted. The police regulate the traffic and the jam is gradually reduced. The incident is brought under control. The off-site emergency is called off and the post-emergency operations are initiated.

(Note: The following PAC draft may show the same communication or task being done by multiple agencies. This is to ensure that intimation has reached at least from one source or action is initiated in fastest possible manner.)

Role of Incident Controller and Site Controller

The Site Controller and the Incident Controller are the two vital roles in the management of emergency. This note seeks to clarify the two roles.

Incident Controller

team involved in repairing, controlling and preventing escalation at the source. He is expected to have the required technical knowledge, skill and resources required to attend to the incident causing emergency. For example, if there is a crack in a pipeline carrying toxic gas, he ensures that the valve on the supply line is closed and repairs the damaged pipeline. If a bulk Storage tank has a crack, transfer of the contents to a spare tank is started and repairs undertaken.

The incident controller co-ordinates with only the 'Site Controller' (see below). The incident controller must ask for any additional help (staff, tools, material, equipment etc required for dealing with the incident) from the Site controller. The site controller will arrange for the same at the earliest. This enables incident controller to concentrate on his job of attending to the incident without being burdened by communication tasks. Also, in the normal course, the incident controller does not directly interact with the outside industry authorities and agencies such as the District Collector, Fire brigade, Police etc. This is done by the site controller.

The incident controller gives continuous feedback about the status of the operation to the site controller.

Site Controller

The 'Site Controller' is overall in-charge of the operation at the incident-site. While the incident controller attends to the source or the cause of emergency, the site controller will be in the Emergency Control Room (ECR). The ECR is a place to be well equipped with telephones, drawings and maps, computer programs for dispersion modelling etc.

The site controller ensures that the off-site responders (District Collector, Police, Fire Brigade etc) are given quick intimation. He also ensures prompt assistance to the requirements of the incident controller. He may have to arrange the assistance from the factory itself or get help from outside (from fire brigade, mutual aid member, stockiest etc). He will continuously monitor the progress and give information to the offsite responders. He will identify the areas likely to be affected and communicate the same to the responders. He will update all concerned responders with the emergency status. For example: Escalation in the emergency, change in wind direction etc. The site controller will also communicate the necessary information to the media and public at large. In short, the site controller acts as the focal point who on the one hand interacts with the incident controller to give him required assistance and know the status and on the other hand, interacts with other district authorities and agencies to give information.

Temporary Assumption of Roles

It needs to be noted that 'Incident Controller' and 'Site Controller' are emergency roles. It is not necessary that only the one person will act as incident controller / site controller from beginning to end. For example, when a valve fails and toxic gas starts leaking, the person on the spot assumes the charge of incident controller till a senior expert, personnel (appointed incident controller) reaches the spot and takes over from him. This will be especially true when the incident happens during a late night shift, when only the skeleton staff may be present. Similarly, a senior person present will assume the charge of site controller till the manager / CEO (appointed Site Controller) reaches the factory and takes over.

For a transport emergency, the driver may be the first incident controller till the Police team and subsequently a technical team reaches with tools to take care of the emergency. Then the police and later the technical team leader will be incident controller.

It may be mentioned that it is difficult to lay down specific and rigid guidelines in this respect. What is important is that the relevant functions are carried out efficiently, smoothly and promptly. There should be no loss of time, there should be no conflict, and the aim should be to bring the emergency control as fast as possible with least damage or loss.

Glossary of Terms

Blast wave: A pressure wave generated from explosion.

BLEVE: Boiling Liquid Expanding Vapour Explosion usually occurs from a sudden release of large mass of liquid under pressure. The most likely scenario is a flame of fire impinging on a vessel above the liquid level thereby weakening the vessel and causing sudden rupture.

Consequence: The outcome of an incident.

Consequence analysis: The analysis of the possible manifestation and effect of an incident.

Dispersion model: The mathematical model describing the dispersion of a material release, usually in free atmosphere.

Domino effect: The triggering of secondary incidents from a primary incident, thus leading to increase in the consequence or the vulnerable zone. For example: Explosion of a tank producing high pressure wave leading rupture and subsequent toxic release from a neighbouring tank.

Dovetailing: The process of aligning a sub-level plan to higher level plan. For example, the onsite plan of a factory should be in line and agreement to the offsite plan of the district in which the factory is situated. The onsite procedure or part thereof should not be in conflict with the offsite procedure or a part thereof.

Explosion: Sudden release of energy that causes pressure disturbance.

Fireball: The atmospheric burning of fuel-air mixture in which thermal energy is radiated.

Flash point: The lowest temperature at which the liquid can produce sufficient flammable vapour to ignite in presence of external source of ignition.

Hazard: A chemical or physical condition that has the potential for causing damage to people, property, or the environment.

Hazard Analysis: A process used to identify hazards and select means to controlling or eliminating them.

Incident: The undesirable loss of containment of material or energy. For example, gas release, fire or explosion.

IDLH: Immediately Dangerous to Life and Health is an estimate of the maximum concentration in the air to which a healthy person could be exposed for a specified period of time (30 minutes as per NIOSH standards) without suffering permanent health effects.

Lower Explosive Limit (LEL): The concentration of a flammable vapour in air below which the air –vapour mixture will not ignite.

Maximum Credible Loss Scenario (MCLS): A loss scenario with a maximum damage effect, which is believed to be possible.

Over pressure: The pressure above the normal atmospheric pressure, usually arising from a blast wave.

Plume: The gas cloud resulting from a continuous release.

Pool fire: The combustion of material evaporating from a layer of liquid underneath.

Risk: A measure of human, property or environmental damage in terms of both the magnitude and the likelihood of damage.

Risk assessment: The quantitative estimate of risk.

Upper Explosive Limit (UEL): The concentration of a flammable vapour in air above which the air vapour mixture will not ignite.

UVCE: Unconfined Vapour Cloud Explosion is open explosion of flammable vapour and air. The term is also referred to as Vapour Cloud Explosion.

Vulnerable zone: The area that can get affected by an incident. For toxic release, it is the area over which the airborne concentration of toxic gas exc. needs certain accepted level of concentration. For fire, it is the area over which the intensity of heat radiation exceeds certain accepted levels. For explosion, it is area over which the pressure of blast wave exceeds certain accepted level.

PAC Analysis for Emergency Scenarios - Explanation Sheet

SR.	PERSON		ACTION		COMMUNICATION			REMARKS(TO BE FILLED BY OBSERVERS DURING MOCK DRILL TRIAL)			
	PRIMARY	ALTERNET	ACT	RECOURSE	WHOM	HOW	WHAT	TIME(MIN)	RECOURSE GAP	COMMUNICAT ION GAP	OTHER
1	INCIDENT CONTROLLER	(NAME OF INCIDENT CONTROLLE R)	ACTION REQUIRED BY INCIDENT CONTROL LER	RECOURSE REQUIRED TO CARRY OUT TO ASSIGNED ACTION	WHAT IS TO BE CONTACTED	HOW IS THE PERSON TO BE CONTACTED	WHAT IS MESSAGE TO BE COMMUNICATED	TIME TAKEN	RECOURSE GAP OBSERVED	COMMUNICATIO N GAP OBSERVED	OTHER REMARKS, IF ANY
2					POLICE OFFICER	MOBILE-LANDLINE	EXTENT OF DAMAGE ,EXTENT OF DISASTER POSSIBLE				

PAC Analysis

Emergency Scenario Description: 10T Chlorine Bullet leak at ABC Chemicals, Anandnagar (0261)

PRESTELS PAC ANALYSIS for EMERGENCY SCENARIOS - ILLUSTRATION PURPOSE ONLY

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNET	ACT	RECOURSE	WHOM	HOW	WHAT
1	INCIDENT CONTROLLER		A) ATTEND TO LEAKAGE WITH MAINTENANCE TEAM B) START TRANSFER ACTIVITY C) USE NEUTRALIZING MEDIUM FOR SPILLED LIQUID, FOG AND CURTAIN TO PREVENT SPREAD.	A) TEAM OF TRAINED WORKS ,EQUIPMENT FOR REPAIRS , EMERGENCY KIT ,LOCAL EXHAUST,SCBAS,SPECIAL QUICK SETTING CEMENT B) PERMANENT PIPING ARRANGEMENT FOR TRANSFER TO OTHER STORAGE VESSEL. C)NEUTRALIZING MEDIUM, GAS SCRUBBING ARRANGEMENT ,WATER FOR CREATING FOG AND WATER CURTAIN	SITE CONTROLLER	INT:202	CHLORINE LEAK FROM PIPE OF BULK STORAGE TANK ,FLOW BEING STOPPED TEMPORARILY BYE USING CEMENT TRANSFER BEING STARTED HELP OF FIRE BRIGADE FOR FOG AND WATER CURTAIN NEEDED ASSESSED QUANTITY SPILLED ABOUT 3 KG AND THAT LEAK MAY START AGAIN IF CEMENT GIVES WAY.
2	SITE CONTROLLER		B) COORDINATE ACTIONS WITH INCIDENT CONTROLLER FOR STAFF ,MATIRIAL,EQUIPMENT,EXPERTS ADVISE AND ARRANGE FOR HELP C) IDENTIFY IF ALL WORKERS ARE SAFE AND ARRANGE FOR RESCUE WHERE NECESSARY.	TEMPLATES ,WINDSOCK, PLANT AND AREA MAP B)INTERNAL TELEPHONE C)TRANSPORT FOR INJURED D)COMMUNICATION CENTRE	A) DISTRICT COLLECTOR B) POLICE C) FIRE BRIGADE D) FACTORY INSPECTOR E)MUTUAL AID REPRESENTATIVE G) MEDIA		A-F) THE NATURE OF EMERGENCY ,CONSEQUENCES ,AREA LIKELY TO BE AFFECTED PRESENTLY AND IF EMERGENCY IS ESCALATED, WHAT HELP IS REQUIRED G) NATURE OF EMERGENCY, AREA LIKELY TO BE AFFECTED AND PRECAUTIONS TO BE TAKEN BY PUBLIC AT LARGE.

PAC Analysis

Emergency Scenario Description: 10T Chlorine Bullet leak at ABC Chemicals, Anandnagar (0261)

PRESTELS PAC ANALYSIS for EMERGENCY SCENARIOS - ILLUSTRATION PURPOSE ONLY

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RESOURCE	WHOM	HOW	WHAT
3	DISTRICT COLLECTOR	ASST. DISTRICT COLLECTOR	A) CONFORM THAT POLICE FIRE BRIGADE AND MEDICAL OFFICER HAVE RECEIVED INFORMATION AND ACTIVATED THEIR PLAN. DIRECT THEM SUITEBLY. B) DIRECT CONCERNED REVENUE OFFICIAL FOR EVACUATION, SHELTERING ARRANGEMENT WHEREVER NECESSARY. C) MONITOR SITUATION AT FACTORY CONTINUOUSLY AND IN THE AFFECTED AREA AND ISSUES DIRECTIONS TO RESPONDERS. D) REQUISITION FROM AUTHORITIES AND AGENCIES (BOTH GOVERNMENT AND PRIVATE) SUCH AS TRANSPORTATION, WATER , ELECTRICITY PROVIDERS AS NECESSARY. E) ARRANGE MEDIA CENTRE TO GIVE INFORMATION TO MEDIA, PUBLIC, FAMILIES.	A-D) AREA MAP VULNERABLY ABILITY TEMPLATES ,TELEPHONES E)COMMUNICATION CENTRE	A) POLICE B) FIRE BRIGADE C) MEDICAL OFFICER D) STATE TRANSPORT DEPOT MANAGER ELECTRICITY BOARD OFFICIAL F) WATER SUPPLY OFFICER (MR. ARUN LYER) G) SUPPLY OFFICER (REVENUE DEPT.) H) STATION MASTER , ANANDNAGAR I) MEDIA J) OUTSIDE DISTRICT AUTHORITIES (NEIGHBOURING DISTRICTS ,STATE AUTHORITY)		A) INFORM POLICE ABOUT NATURE OF EMERGENCY PER SIFTING WIND DIRECTION, AFFECTED AREAS, ISOLATION AREA, AND ARRANGEMENT FOR WARNING AND PREPARATION FOR EVACUATION. B) INFORM FIRE BRIGADE ABO REQUIREMENT US NATURE OF EMERGENCY ,WIND DIRECTION ,CASUALTIES IN THE FACTORY ,RESCUE REQUIREMENT ,MITIGATION REQUIREMENTS. I) ARRANGE FOR INFORMING PUBLIC THROUGH LOCAL CABLE TV, SMS, LOCAL FM RADIO, PA SYSTEM. STOP THE TRAFFIC ON THE RAILWAY LINE PASSING THROUGH THE AREA LIKELY TO BE AFFECTED. SHELTERS, FOOD. H) DIRECT STATION MASTER, ANANDNAGAR TO AND INSTRUCT HIM TO BE READY TO ARRANGE TO EVACUATE PEOPLE IN COORDINATION WITH POLICE AND TO ARRANGE FOR PROVIDING SAFE TENUOUS WATER SUPPLY WITH PROPER PRESSURE. G) ALERT SUPPLY OFFICER (REVENUE DEPT.) CONSTANT ELECTRIC SUPPLY TO THE AREA. F) DIRECT WATER SUPPLY OFFICER TO ENSURE CON- FROM DC/POLICE. E) DIRECT ELECTRICITY BOARD OFFICIALS TO ENSURE AREA. DIRECT HIM TO KEEP BUSES READY WITH DRIVERS, FULL WITH FUEL AND AWAIT INSTRUCTIONS D) INFORM STATE TRANSPORT DEPOT MANAGER ABOUT NATURE OF EMERGENCY, LIKELY AFFECTED LIKELY TO BE AFFECTED. DIRECT MEDICAL OFFICER TO ALERT HOSPITALS IN THE AREA. C) INFORM MEDICAL OFFICER ABOUT NATURE OF EMERGENCY, CASUALTIES IN THE FACTORY, AREA J) REQUEST FOR ALL ADDITIONAL HELP REQUIRED TO MITIGATE THE EMERGENCY.

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
5	FIRE BRIGADE CHIEF	DEPUTY FIRE CHIEF	A) ARRANGE FOR WATER CURTAINS AND FOG AROUND THE SPILLED LIQUID CHLORINE IN ASSOCIATION WITH THE FACTORY FIRE TEAM. B) RESCUE THE AFFECTED PERSONS. EVACUATE THEM AND OTHER CASUALTIES AND HAND OVER TO MEDICAL TEAM.	A) WATER, NOZZLES FOR FOG AND CURTAIN, FIRE TENDERS, SCBAS. B) FIRE TENDER WITH EXTENDIBLE LADDERS , SCBAS, STRETCHERS, ARRANGEMENT TO LOWER THE STRETCHERS FROM HEIGHT.	A) FIRE BRIGADE (NEIGHBORING DISTRICT) B) MEDICAL OFFICER C) DISTRICT COLLECTOR		A) REQUEST FOR FIRE TENDERS. B) INFORM LOCATION OF EFFECTED RESCUED PERSONS. C) REQUEST FOR ADDITIONAL ASSISTANCE FROM FIRE BRIGADE OF NEIGHBORING CITIES, DISTRICTS IF REQUIRED.
6	POLICE SUPERINTENDENT	DEPUTY POLICE SUPERINTENDENT	A) CORDON OFF AREA, STOP TRAFFIC GOING TOWARDS EFFECTED AREA. B) ARRANGE FOR WARNING PUBLIC. C) ARRANGE FOR PERSONNEL AT VARIOUS SPOTS TO MAINTAIN LAW AND ORDER .D) SEND POLICE TO PUBLIC CONGREGATION TO ASK THEM TO STAY CONFINED. E) MAKE ARRANGEMENTS TO EVACUATE DWELLERS FROM NEIGHBOURING HUTMENTS, WHICH ARE LIKELY TO BE AFFECTED. HAND OVER CHARGE OF EVACUEES TO REVENUE OFFICER. F) INTERACT CONTINUOUSLY WITH SITE CONTROLLER AND DISTRICT COLLECTOR.	A) BARRICADES' B) PA SYSTEM FIXED ON JEEPS. E) POLICE PERSONNEL, VEHICLES F) TELEPHONE	A) COMMANDANT HOME GUARDS B) COMMANDANT CIVIL DEFENSE C) STATE TRANSPORT MANAGER D) DISTRICT COLLECTOR E) NEIGHBORING DISTRICT HEADQUARTERS		A) INFORM WHERE THEY ARE NEEDED AND ABOUT ACTION TO BE TAKEN. B) INFORM WHERE THEY ARE NEEDED AND ABOUT ACTION TO BE TAKEN. C) REQUEST TO ARRANGE BUSES TO EVACUATE PEOPLE FROM PUBLIC CONGREGATION AND HUTMENTS. D) INFORM GROUND-STATUS AND REQUEST FOR ADDITIONAL ARRANGEMENTS OR MEASURES TO BE TAKEN. E) INFORM EMERGENCY AND ASK FOR ADDITIONAL STAFF AND RESOURCES.

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
6	MEDICAL OFFICER	ASST. MEDICAL OFFICER	A) ARRANGE FOR AMBULANCES, DOCTORS AND STAFF. B) ARRANGE FOR OXYGEN AND OTHER REQUIREMENTS FOR EMERGENCY TREATMENT.	A) AMBULANCES, DOCTORS, NURSING STAFF B) OXYGEN CYLINDERS	IDENTIFIED HOSPITALS AND DOCTORS		INFORM ABOUT NATURE OF EMERGENCY, AND ASK THEM TO BE READY FOR TREATMENT. INFORM ABOUT LIKELY NUMBER OF CASUALTIES AND ASK THEM TO MAKE BEDS AVAILABLE PROMPTLY, DISPATCH AMBULANCES AND PICK UP CASUALTIES IN COORDINATION WITH POLICE AND OTHER AUTHORITIES.
7	STATE TRANSPORT MANAGER	ASST. STATE TRANSPORT MANAGER	A) KEEP VEHICLES READY WITH DRIVERS AND WITH SUFFICIENT FUEL. ASCERTAIN NUMBER OF BUSES , PICK POINTS, ROUTES AND DESTINATIONS FROM DISTRICT COLLECTOR AND POLICE. DISPATCH VEHICLES WITH NECESSARY INSTRUCTIONS TO DRIVERS AS DIRECTED BY POLICE / DISTRICT COLLECTOR FOR EVACUATION, OR FOR TRANSPORTATION OF PROVISIONS. B) ARRANGE FOR MORE VEHICLES FROM OTHER DEPOTS IF REQUIRED.	A) BUSES, WATER TANKERS, DRIVERS. B) TELEPHONE	A) POLICE/ DISTRICT COLLECTOR B) OTHER DEPOTS FOR ADDITIONAL VEHICLES		A) DETAILS OF REQUIREMENTS OF BUSES, PICKUP POINTS, ROUTES, DESTINATIONS B) REQUIREMENT FOR ADDITIONAL VEHICLES
8	FACTORY INSPECTOR IN-CHARGE DY. D I S H	DEPUTY FACTORY INSPECTOR	A) VISIT SITE IN COORDINATION WITH TECHNICAL EXPERTS. B) INVESTIGATE ACCIDENT IN DUE COURSE.	A) TRANSPORT ARRANGEMENT. B) INVESTIGATION FORM	A) EXPERTS B) MUTUAL AID MEMBERS		A) INFORM ABOUT EMERGENCY AND SEEK THEIR TECHNICAL ADVICE. B) DIRECT TO PROVIDE ASSISTANCE IN HANDLING EMERGENCY.

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
9	TECHNICAL EXPERTS	CMO, RELIANCE	A) RESPOND WITH APPROPRIATE TECHNICAL ADVICE TO THE FACTORY, DISTRICT COLLECTOR, POLICE, FIRE BRIGADE, MEDICAL OFFICER, FACTORY INSPECTOR. B) VISIT SITE IN COORDINATION WITH DISTRICT COLLECTOR, FACTORY INSPECTOR TO PROVIDE NECESSARY ADVICE	A) OWN EXPERTISE, TECHNICAL REFERENCE LIBRARY, INTERNET FACILITY, TELEPHONE B) VEHICLE	A) FACTORY B) FACTORY INSPECTOR C) DISTRICT COLLECTOR D) FIRE BRIGADE E) MEDICAL OFFICER		A-E) TECHNICAL ADVICE FOR HANDLING EMERGENCY
10	POLLUTION CONTROL BOARD MEMBER	GPCB OFFICER	PROJECT AREAS TO BE AFFECTED AND MONITOR CHLORINE CONCENTRATION LEVELS AT VARIOUS SPOTS	MONITORING EQUIPMENT			
11	ELECTRICITY BOARD		ENSURE UNINTERRUPTED ELECTRIC SUPPLY TO THE FACTORY AND AT SHELTERS				
12	ANIMAL HUSBANDRY		PROVIDE NECESSARY CARE FOR CATTLE OF THE DAIRIES, ARRANGE FOR VETERINARY DOCTOR.		VETERINARY DOCTOR		LOOK AFTER THE CATTLE
13	AGRICULTURE DEPARTMENT		-				

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNAT E	ACT	RECOURSE	WHOM	HOW	WHAT
14	CIVIL DEFENSE AND HOME GUARDS		A) CO-ORDINATE WITH POLICE AND ARRANGE TO CONTROL TRAFFIC, ASSIST IN EVACUATION. B) ASSIST POLICE FOR SECURITY OF EVACUATED PROPERTY.	A, B)STAFF	POLICE		INFORMATION REGARDING EVACUATION AND TRAFFIC CONTROL ARRANGEMENTS
15	PWD/WATER SUPPLY		A) ENSURE CONTINUOUS WATER SUPPLY WITH ADEQUATE PRESSURE FOR FIRE BRIGADE. B) ARRANGE DRINKING WATER AT SHELTERS. C) ENSURE WATER FOR THE CATTLE.	A) WATER, B) DRINKING WATER C) WATER FOR CATTLE			
16	CIVIL SUPPLIES DEPARTMENT		ARRANGE FOR FOOD, WATER AND OTHER BASIC AMENITIES AS NECESSARY FOR EVACUEES	FOOD, WATER AND OTHER BASIC AMENITIES			

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
18	RAILWAY STATION MASTER		A) STOP TRAINS PASSING THROUGH THE AFFECTED AREA AS ADVISED BY DISTRICT COLLECTOR. B) COORDINATE WITH POLICE IF EVACUATION IS NECESSITATED	(A,B)			GROUND STATUS REPORTING
19	HEAD OF LOCAL GOVERNMENT BODY		MOBILIZE RESOURCES REQUIRED UNDER THE CONTROL OF THE BODY LIKE BUSES, SHELTERS (COMMUNITY HALLS, TOWN HALL, SCHOOLS), FOOD AND WATER SUPPLY	EMERGENCY SHELTERS, FOOD AND WATER SUPPLY	DISTRICT COLLECTOR		FIND OUT RESOURCES, PERSONNEL HELP REQUIRED
20	TELECOMMUNICATION DEPARTMENT		ENSURE THAT COMMUNICATION LINES ARE EFFICIENTLY WORKING				
21	NGO		A) ASSIST EMERGENCY RESPONDERS. B) HELP FAMILIES OF CASUALTIES, COUNSEL VICTIMS.	(A,B)			
22	MEDIA GUJARAT MITRA		DISSEMINATE VITAL INFORMATION TO PUBLIC IN A RESPONSIBLE MANNER		PUBLIC AT LARGE	MEDIA CHANNELS	PRECAUTIONS AND ACTIONS TO BE TAKEN BY PUBLIC

Case Study 2 - Transportation Emergency

PRESTELS PAC ANALYSIS for EMERGENCY SCENARIOS - ILLUSTRATION PURPOSE ONLY

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
1	DRIVER	CO-DRIVER	A) CALL THE POLICE. REQUEST PASSING VEHICLES TO INFORM THE POLICE, IF PHONE OUT OF RANGE. B) STOP VEHICLES AND DIVERT TRAFFIC AWAY FROM LEAKING TANK. C) WARN PEOPLE BY PUTTING UP DISPLAY BOARD STATING 'DANGER'.	A) PHONE B) ROAD BLOCKING ARRANGEMENT C) DISPLAY BOARD OF 'DANGER'	A) POLICE CONTROL ROOM B) EMPLOYER		A) THE TANKER CARRYING HIGHLY FLAMMABLE NAPHTHA HAS OVERTURNED, THERE IS LEAKAGE FROM THE VALVE AND THERE IS A DANGER OF FIRE AND POSSIBLE EXPLOSION. DETAILS OF LOCATION. TRAFFIC HAS TO BE STOPPED. REPAIRS NEEDED AND SPARE TANKER FOR TRANSFER OF MATERIAL REQUIRED. CROWD IS GATHERING AND NEEDS QUICK CONTROL.
2	POLICE CONTROL ROOM	POLICE CONTROL ROOM			A) NEAREST POLICE STATION B) DISTRICT COLLECTOR C) FIRE BRIGADE D) MEDICAL OFFICER E) MUTUAL AID GROUP COORDINATOR		A-E) THE DETAILS OF THE INCIDENT AND DETAILS OF EXACT LOCATION.

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
3	LEADER OF POLICE TEAM AT THE SPOT	(RANGE 1)	A) STOP TRAFFIC FROM BOTH DIRECTIONS. B) CORDON OFF AREA TO ENSURE THAT PEOPLE ARE AT SAFE DISTANCE C) ENSURE THAT THERE IS NO SOURCE OF IGNITION LIKE A SMOKING BIDI/CIGARETTE. D) ENSURE THAT THERE IS NO BLOCKAGE OF SMOOTH ARRIVAL OF EMERGENCY RESPONDERS.		POLICE CONTROL ROOM		REQUEST FOR ENFORCEMENTS, IF NEEDED, UPDATE ON STATUS AT SITE.
4	DISTRICT COLLECTOR	ASSISTANT DISTRICT COLLECTOR	ASCERTAIN TYPE OF ACCIDENT AND POSSIBLE CONSEQUENCES		A) FIRE BRIGADE B) MEDICAL OFFICER C) MUTUAL AID GROUP D) ROAD TRANSPORT AUTHORITY E) PROVIDER OF CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT F) INSPECTOR FACTORY		A-C INFORM ABOUT THE INCIDENT ETC, IF THEY HAVE NOT RECEIVED IT EARLIER, MONITOR PROGRESS OF ACTION TAKEN. D) INFORM ABOUT THE INCIDENT AND LOCATION, AND DIRECT HIM TO ARRANGE FOR A CRANE AND A SPARE TANKER. NOT RECEIVED IT EARLIER, MONITOR PROGRESS OF DIRECT HIM FURTHER TO REACH THE SPOT. E) REQUISITION FOR RESOURCES SUCH AS CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT, IF REQUIRED. F) INFORM ABOUT INCIDENT AND DIRECT TO SEEK APPROPRIATE TECHNICAL ADVICE.
5	FIRE BRIGADE CHIEF	DEPUTY IN CHARGE-FIRE BRIGADE	SEND A FIRE TENDER TO THE SPOT.				
6	MEDICAL OFFICER	ASST. MEDICAL OFFICER	ARRANGE TO SEND AN AMBULANCE FROM A SOURCE NEAREST TO THE SPOT.	AMBULANCE	HOSPITALS		INFORM ABOUT THE INCIDENT. REQUEST THEM TO BE IN STATE OF READINESS IF THERE ARE FIRE/EXPLOSIVE CASUALTIES.

SR.	PERSON		ACTION		COMMUNICATION		
	PRIMARY	ALTERNATE	ACT	RECOURSE	WHOM	HOW	WHAT
7	ROAD TRANSPORT AUTHORITY CHIEF	DEPUTY OFFICER, RTA	A) ARRANGE FOR RESOURCES REQUIRED SUCH AS CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT. B) PROCEED TO THE SPOT FOR RENDERING ASSISTANCE. C) INITIATE ACCIDENT INVESTIGATION	A) RESOURCE DIRECTORY B) VEHICLE C) ACCIDENT INVESTIGATION REPORT FORMAT	NEAREST PROVIDER OF CRANE, SPARE TANKER WITH PUMPING ARRANGEMENTS		REQUISITION FOR CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT.
8	FACTORY INSPECTOR DY. D I S H	DEPUTY FACTOR INSPECTO R	A) ARRANGE FOR TECHNICAL ASSISTANCE FROM TECHNICAL EXPERTS. B) DIRECT MUTUAL AID GROUP TO RENDER ASSISTANCE.	A) RESOURCE DIRECTORY B) TELEPHONE			
9	MUTUAL AID GROUP COORDINATOR	DISASTER MGMT CENTER	A) ARRANGE FOR RESOURCES REQUIRED SUCH AS CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT. B) PROCEED TO THE SPOT WITH TECHNICAL EXPERTS FOR RENDERING ASSISTANCE.	A) AVAILABLE RESOURCES B) VEHICLES, TRANSPORT ARRANGEMENT	A) DISTRICT COLLECTOR B) POLICE C) FIRE BRIGADE D) RTA		A-D) INFORM AND OFFER AVAILABLE RESOURCES TO MITIGATE THE EMERGENCY.
10	OWNER OF VEHICLE INVOLVED IN ABOVE ACCIDENT	MANAGER AT OWNER'S FACILITY	A) ARRANGE FOR RESOURCES REQUIRED SUCH AS CRANE, SPARE TANKER WITH PUMPING ARRANGEMENT B) PROCEED TO THE SPOT FOR RENDERING ASSISTANCE	A) AVAILABLE RESOURCES B) VEHICLES, TRANSPORT ARRANGEMENT	A) DISTRICT COLLECTOR B) POLICE C) FIRE BRIGADE D) RTA E) NEIGHBORING OWNERS OF SUCH TRANSPORTATION COMPANIES.		A-D) INFORM AND OFFER AVAILABLE RESOURCES TO MITIGATE THE EMERGENCY E) INFORM ABOUT INCIDENT DETAILS AND SEEK ASSISTANCE