

ON SITE EMERGENCY PLAN

PREPARED FOR



**P.O. DULIAJAN
DIST DIBRUGARH
ASSAM 786 602
INDIA**

CONDUCTED & PREPARED BY



GREEN CIRCLE CONSULTANTS (I) PVT LTD.

*Environmental, Health, Hygiene, Safety, Risk, & Quality
Consulting Engineers & Trainers*

(An ISO 9001: 2008 Certified Company)

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QUALITY CONTROL SHEET

Rev.	Date	Reason History	Prepared By	Reviewed By	Approved By
00	20/09/10	Draft On Site Emergency Plan of AGCL	PT	DD	YD

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ACKNOWLEDGEMENT

*WE EXPRESS OUR SINCERE THANKS TO MANAGEMENT & EMPLOYEES OF **ASSAM GAS COMPANY LIMITED, P.O. DULIAJAN, DIST DIBRUGARH, ASSAM 786 602, INDIA** FOR THEIR CO-OPERATION & UNSTINTED HELP WITHOUT WHICH THE '**ON SITE EMERGENCY PLAN**' COULD NOT HAVE BEEN POSSIBLE. THE COURTESY EXTENDED TO OUR TEAM IS HIGHLY APPRECIATED.*



For: GREEN CIRCLE CONSULTANTS (I) PVT.LTD.

AUTHORISED SIGNATORY

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ABBREVIATIONS

AGCL	Assam Gas Company Limited
OEP	On Site Emergency Plan
PNGRB	Petroleum & Natural Gas Regulatory Board
BVFCL	Brahamaputra Valley Fertilization Camical Ltd.
APL	Assam Petro Chemical Ltd.
D.G.	Diesel Generator
MSDS	Material Safety Data Sheet
ECC	Emergency Control Centre
CIC	Chief Incident Controller
SIC	Site Incident Controller

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CHAPTER – 1

INTRODUCTION OF ON-SITE EMERGENCY PLAN

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ON SITE EMERGENCY RESPONSE & MANAGEMENT

1.1 General

It is impossible to forecast the time and nature of emergency, which might strike the unit. In spite of the fact that every industry is expected to take steps to assess, minimize and wherever feasible eliminate risks, accidents may occur, as risk can only be minimized, it can never be totally eliminated.



Industrial units are vulnerable to various kinds of natural and man-made emergencies. Examples of Natural disasters are flood, Cyclone, earthquake, lightening etc. and man made disasters like major fire, explosion, sudden heavy leakage of toxic / flammable gases, civil work plant failure, human errors, vehicle crash, sabotage etc.

The emergency is an undesirable occurrence of events of such magnitude and nature that adversely affect production, cause loss of human lives and property as well as damage to the environment.

Controlling the emergency will require prompt action by the operating staff, the staff of various agencies, emergency teams and outsiders when called for. Minimizing the effect on people may be achieved by prompt communication, rescue, evacuation etc., if the situation so warrants.

However, an effective emergency plan helps to minimize the losses in terms of human lives, plant assets and environmental damage and to resume the working condition as soon as possible. In all these steps SPEED IS THE ESSENCE.

As a part of emergency preparedness, keeping in the view the potential hazards prevailing in the factory and effect of such hazards, the On-Site Emergency Action Plan has been prepared.

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1.2 Statutory Requirement for Preparation of On-site Emergency Plan

The unit, which is covered under chemical hazardous factory, has to prepare the On-Site Emergency Plan with indicating what preventive measures have been taken against hazards and how to fight emergency. This plan has to be submitted to the specified authorities. It is also provided that the periodical rehearsals / exercises are also required to be conducted.

The provisions for preparing the on-site emergency plan are explained on next page:



1.2.1 The Factories Act, 1948 (1987)

Section 7 A (2) & 41 (B) of The Factories Act 1948 (1987) providing that the every occupier, who has control of an industrial activity pertaining to hazardous chemical shall furnish the On-Site Emergency Plan detailing how major accidents shall be dealt along with explaining specific responsibilities and actions by various persons.

1.2.2 The Environment (Protection) Act- 1986 (2001)

Rule 13 (1) under the Manufacture, Storage and Import of Hazardous Chemicals Rule 1989 (Amended 2000), rules framed under The Environment (Protection) Act -1986 (2001), indicates that the occupier shall prepare and keep up-to-date as On-Site Emergency Plan containing details specified in schedule II and detailing responsibilities and actions by different person and agencies.

1.2.3 Chemical Accidents (Emergency Planning, Preparedness and Response) Rule 1996 (2000)

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Under this rules, framed under The Environment (Protection) Act 1986, the state government has constituted local crisis group & District Crisis Group to deal with major chemical accidents and to provide expert guidance for handling chemical accidents. Further provision is made that the Major Accident Hazard units have to prepare the on-site emergency plan & submit the plan to the crisis groups. The local emergency plan will dovetail with the District off-site emergency plan.

1.2.4 PNGRB Norms



Under the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP) Regulations, 2010.

1.2.5 Off-Site Emergency Plan

The emergency planning for on-site and off-site are different but they should be dovetailed with each other. On-site emergency planning is the responsibility of the site management, while offsite planning is for the whole district having responsibility casts to district authorities like District Magistrate & Collector, Factory Inspector, Police Department, Fire Brigade, Health & Medical Services, Pollution Control Board, Explosive Department etc.

1.3 Scope of the Plan

The emergency procedure as outlined herein is designed with the primary aim of protecting, to the greatest extent possible, all employees, persons, in the vicinity and company property against fire, explosion, spills, or other major accident of disastrous proportion, which might arise as a result of our

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own operations, processes, storage, adjacent operations, or any other circumstances.

This plan is prepared basically to cope with any emergency, which could occur during storage or process, at any time of the day or night or weekends.

The success of this plan in accomplishing its purpose depends largely upon each individual carrying out his designated duties effectively and promptly. This plan is in three sections. The first section provides basic requirements, which explains essential elements of the plan.



The second section is Annexure Section, which is designed to give specific information needed during emergency.

The third section is Appendix Sections, which gives additional useful information and details for preparation & handling of emergency.



An emergency cannot be always prevented, but it can be controlled within limits and its effects can be minimized by using the best available resources, at the time.

The emergency planning is a management function and it should not be considered in isolation. The Management should evaluate the activities, operations and processes carried out within the works before starting to plan an emergency operation. A check must be kept to ensure that all necessary steps are taken which are included in emergency planning.

Considering the number of employees, material and process, availability of resources, location of site, size and complexity of the works, we have



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prepared this plan. This plan may be updated in case any new material is added, revision of process or change of method etc.

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CHAPTER – 2

OVERVIEW OF THE UNIT

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2.1) INTRODUCTION

Assam Gas Company Limited (AGCL) is one of the pioneers in India for carrying out gas transportation business to different industries. From 1965 onwards Company has been in the business of collection, processing and distribution of natural gas to industries through integrated gas transportation system.

AGCL is transporting natural gas at present to industrial, commercial and domestic consumers for use as energy source and raw materials. They are: 1) Natural gas for generation of Power, 2) Natural gas for production of Fertilizer and Petrochemicals, 3) Natural gas as energy source.

The Head Office is established at Duliajan, Dist: Dibrugarh, Assam – India.

2.2) LAYOUT OF FACTORY:



The Company is one of the pioneers in India for carrying out gas transportation business to different industries. From 1965 onwards Company has been in the business of collection, processing and distribution of natural gas to industries through integrated gas transportation system. Company has started supplying piped natural gas to commercial and domestic consumers in various towns of upper Assam since 1985.

It has its present headquarters in the oil town of Duliajan in the district of Dibrugarh, Assam, India.

The AGCL has its business over the following areas.

1. Power Sector:

Namrup Thermal Power Station, Namrup (APGCL)

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Lakwa Thermal Power Station, Lakwa (APGCL)

NEEPCO, Kathalguri

EIPL Power station, Adamtila, Karimganj District

EIPL Power station, Baskandi, Cachar

2. Fertilizer and Petrochemicals:

Brahamaputra Valley Fertilization Camical Ltd. (BVFCL, Namrup)

Assam Petro Chemical Ltd. (APL, Namrup)



3. Tea Industry

More than 300 Tea Factories in upper Assam

4. Town Gas Supply for commercial and domestic consumers

Town Gas Supply in Duliajan, Digboi, Dibrugarh, Moran, Naharkatia, Sibsagar,

Nazira, Tinsukia, Margherita and Jorhat.

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2.3) Details of the Factory:

Sr. No.	Descriptions	Details
1	Name & Address of Unit	Assam Gas Company Ltd. P.O. DULIAJAN DIST DIBRUGARH ASSAM 786 602 INDIA
2	Regd. Office Address	
3	Telephone No.	+91-374-2800556 / 2800202 / 2800221
4	Fax No.	-
5	TELEX	-
6	E-mail	assamgas@sancharnet.in
7	Name & Address of Occupier of Factory	-
8	General Manager of Factory	--
9	Process involved	Transportation of Natural Gas
10	Hazardous Chemicals	-
11	Factory License from Factory inspection Department	-
12	License from Department of Explosives	-

2.3 Details of Units (Continue...)



Sr. No.	Descriptions	Details
13	Facility/System	<ul style="list-style-type: none"> (1) All electrical equipments, wiring & fitting shall be flameproof type. (2) Provision of D.G. Set to meet emergency. (3) Provision of water storage. (4) Provision of portable fire extinguishers & fire buckets. (5) Well ventilated storage area. (6) Provision of Earthing (7) Smoking is prohibited (8) Trained & Experienced persons. (9) Arrangement of Siren/Bell/Messages (10) Auto control, Control Room, Internal Phone. (11) Communicator system, Mobile phone, Fax, E-mails, etc. (12) Displayment of Notices (13) Color Code system for Pipe Lines. (14) First Aid Trained Person.

2.4 Organization Structure:

The detail of Organization Structure is given in the Annexure 2.



2.5 Legal requirements:

It shall be necessary to comply with statutory rules, regulations and act such as the Environment Protection Act, 1986, the factories act, 1948, the inflammable substance act, 1952, the motor vehicle act, 1988, the public liability insurance act, 1991, the petroleum act, 1934, explosive act, 1988.

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CHAPTER – 3

UNIT HAZARD & CONTROL

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Hazard Identification:

The first step shall be to identify potential on site and off site hazards such as gas leaks, spills, fire, explosion, transportation incidents, pipeline ruptures, equipment failure, natural calamities and the type of damage caused by them. The hazard identification shall include –

- Information on toxicological, physical and chemical properties of the substances being handled in the format of material safety data sheet.
- The identification of potential impact on downstream water quality from an incidental release and possible danger to human, flora and fauna and health.
- Hazards to the installation shall also include natural perils such as floods, earthquakes, cyclones or landslides etc.
- Check points for hazard identification are given at check lists.

3.1 Evaluation of Hazards:

Hazard is a physical situation which may cause human injury, damage to property or the environment or combination of these criteria. Hazard identification provides vital information to risk management.



The unit is engaged in transporting of natural gas.

3.3 Hazards

As far as hazards concerned, the following probable emergency situations may arise, while handling, transporting and using these types of materials.

(1) FIRE:

1. Generation of Static Electricity
2. Electrical Short Circuit
3. Transformer area

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4. Solvents Storage
5. Tank farm area
6. Electrical Sub Station

(2) EXPLOSION

(3) LEAKAGE & SPILLAGE

(4) OPERATION & MAINTENANCE

(5) FAULTY DESIGN OR EQUIPMENT FAILURE



3.4 PROCESS DESCRIPTION

The company was incorporated as a wholly owned company of govt. of Assam. The company is one of the pioneers in India for carrying out gas transportation business to different industries. From 1965 onwards Company has been in the business of collection, processing and distribution of natural gas to industries through integrated gas transportation system. Company has started supplying piped natural gas to industries through integrated gas transportation system. Company has started supplying piped natural gas to commercial and domestic consumers in various towns in upper Assam since 1985.

3.5 Safety Measures

Natural gas, being highly volatile and inflammable liquid, poses the greatest potential for fire and explosion. The following Safety measures shall be installed.

1. Fire Hydrant System

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2. Portable Fire Extinguishers
3. Sand buckets

3.7 Utility

Common utility services shall be provided to the plant. The utility services Compressor and D.G. set are provided.



3.8 Other Safety measures shall be provided as follow:

- a. Level Indication & transmitters to all storage tanks interlocked with respective unloading and loading pumps.
- b. Electrical installations, sensors and interlocks shall be of A Class.
- c. Temp transmitters with control interlock in reaction section.
- d. Nitrogen inlet lines to reactors for purging with interlocked On/Off valves
- e. High/Low level alarms switches to storage tanks and interlocked with respective pumps
- f. PSV in transferring lines wherever needed.
- g. Flow control valves in raw material/Product transferring lines, wherever needed.
- h. Electrical tracing wherever required with proper insulation.
- i. Oxygen Analyzer in Nitrogen Line
- j. Safety Vent System
- k. Safety inert lock
- l. Personnel will be provided all PPE's during working

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CHAPTER – 4

ENVIRONMENT IMPACT ASSESSMENT

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4.1 Introduction:

The environment elements (attributes) that are likely to be affected are identified and categorized as air, water, land, sound, ecology, human aspect, economics and resources.

The environment includes human being, other living creature, plants and properties.

Amongst these, the human beings are the most important and need protection from any adverse impact. We have to consider two Groups:

- (1) Those at work on site, and
- (2) Those living and/or working in the vicinity.



The necessary instruction, training and precaution shall be taken to protect these people against the anticipated situation by the management.

In case of unexpected happening, if not controlled, it may spread in the vicinity, may result into its effect on human beings, other living organism, plants, properties, depending upon the type of chemicals which contained in the tank and gravity of incident.

4.2 Layout of the Unit

4.4 Noise Level

The green belt area shall be developed within premises and around the periphery to prevent the noise pollution in surrounding area. Development of green belt with carefully selected native plant species is of prime importance due to their capacity to reduce noise and air pollution impacts by

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attenuation / assimilation.

4.5 Solid Waste

Waste is an unavoidable byproduct of human activity. Economic development, rapid urbanization & improved living standards have led to the increase in quantity & complexity of the waste generated. Proper disposal of waste is essential for preservation and improvement of public health.



Hazardous waste management:

Hazardous waste management is one of the most essential services for maintaining the quality of life in the plant and for ensuring better standards of health and sanitation. Waste generated in the plant area can be handled under two main categories, namely domestic wastes and industrial wastes. Effective measures shall be taken to effectively implement the waste management systems in the plant. The hazardous waste shall be handed over to authority for further disposal as per Hazardous Waste Management & Handling Rules (2000) and MSIHC.

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CHAPTER – 5

ACCIDENT HISTORY

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5.1 Introduction

The company is one of the pioneers in India for carrying out gas transportation business to different industries. From 1965 onwards Company has been in the business of collection, processing and distribution of natural gas to industries through integrated gas transportation system. Company has started supplying piped natural gas to industries through integrated gas transportation system. Company has started supplying piped natural gas to commercial and domestic consumers in various towns in upper Assam since 1985.

Thus, the Potential Risk can be divided in to two parts: (1) Mechanical Hazard (2) Potential Risk of FIRE & EXPLOSION.

Accident History

One Major accident occurred in 1987, bursting of High pressure gas pipeline.



One accident took place in Compressor station where a causal worker engaged in repairing of ceiling fell down and died.

5.2 Accident Reporting System

The statutory requirements shall be fulfilled by maintaining accident register in Form No.29 and form NO.21 shall also be kept for reporting to the Factory Inspectorate, as required.

Incident Reporting System

All incidents shall be reported in the format specified as in Appendix 4. The report should be submitted within 48 hours after occurrence of the incidents.



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5.3 First Aid Box

The first Aid Box shall be maintained at Security cabin and all other departments. The security staffs and operative personnel shall be trained in First Aid.



5.4 Medical Examination

The medical examination of employees shall be carried out and record in Form NO.32 as prescribed format shall be maintained.

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CHAPTER – 6

ORGANIZATION PLAN

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6.1) Introduction

Pre - Emergency means the preparatory stage. It is the planning period and it should come out to ensure that the plan should contain required provisions and facilities to handle and contain the emergency successfully. The unit has to consider worst possible scenario for emergency while planning. Further, the unit has to develop and maintain the essential facilities, so that emergency can be controlled & minimized the damages in shortest period by use of existing resources.



The unit has to be ready for any possible emergency, whether it may strike or not. Being a Chemical handling unit and knowing the hazards of the chemicals stored and handled in the unit, response actions must be created within unit.

The structure of the plan may vary depending on the number of employees, materials, process, and availability of resources, location of site, size and complexity of the unit. It should work out a plan with possibilities of various emergencies likely to arise within unit. Further periodical rehearsal is also to be carried out to check and examine the effectiveness, awareness and preparedness of the plan as well as services. The emergency planning is not a substitute for good design, operating and maintenance practices. Therefore, these must always be followed to avoid emergency.

No plan will succeed without effective emergency organization. The organization plan has been described the role and function of various categories, as explained in previous Chapter. It also provides a list of facilities with the units.

6.2 Identification of Hazards and Control Measures

The management shall take ample safety measures against the potential

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threat of risks. However, the possibility which may lead to emergency has been explained in previous chapters. The management is keen to maintain highest level of safety at the unit. The various control measures on safety have been provided in the plant.

6.3 Planning for Emergency

The management shall identify the maximum credible scenario and has planned to tackle the emergency which may strike at any time. The following specific details in respect to create the emergency Preparedness & awareness are listed as required into Annexure Section and Appendix Sections.

These details shall be updated time-to-time.

- (1) Participants shall be fully conversant and trained in their function or role (As explained in for going paras) –
- (2) To keep and update the emergency equipments, communication system, neutralizing agents, medicines, antidotes etc.
- (3) Up-dated emergency telephone Nos. with contact persons.
(Annexure 4)
- (4) Emergency control center.
- (5) Emergency alarm / siren system.
- (6) Marking of safe assembly point.
- (7) M.S.D.S.
- (8) Storage, process, vessels, utility, trade waste disposal, Pollution control arrangements.
- (9) Fire & Toxicity - Details, Gas Dispersion, Evacuation Details, Transport and Evacuation Arrangement
- (10) Medical arrangement

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- (11) Meteorological details (Annexure 6)
- (12) Personal Protective Equipments Details
- (13) Charts, Maps (Annexure1, 2)
- (14) Maintenance of Records
- (15) Updation of On-site Emergency Plan to Conduct Mock Drill and Training.
- (16) Liaison with emergency services, Govt. Authorities, Voluntary organizations, suppliers etc.

The arrangement of communication system should be foolproof so that correct message reaches to the proper person in shortest time. The chart at Annexure-2 indicates initiation of actions and where to report.

The role and responsibilities of each acting person shall be explained in brief with Command & Control during emergency period. All the persons involved in Emergency management shall be aware of the roles & responsibility.

Emergency Control Centers (ECC):

- Each installation shall have the provision of ECC preferably with a back up arrangement.
- The ECC shall be away from potential hazards and provide maximum safety to personnel and equipment.
- Preference should be given to a non combustible building of either steel frame or RCC.
- The ECC should have at least two exits and proper ventilation.
- The Emergency Control Room shall be fully equipped with the facilities. A safe assembly point shall be marked with alternate safe assembly point in case of sudden change of wind direction.

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Assembly points:



The pre designed areas in safe zone as per QRA, where the personnel like workers, staff, contractor workers etc. not involved in emergency operations shall assemble in case of emergency. For each potential hazardous zone, a specific assembly points shall be identified and clearly marked on the maps. During emergency, pre designated persons would take charge of this point and take the roll call of the people reporting. Provision should be made for assembly points, communication and headcount facilities at assembly points and personnel to control the movement of assembled employees.

In affected and vulnerable plant, all non - essential workers (who are not assigned any emergency duty) shall evacuate the area and report to a specified assembly point.

The assembly point should be clearly marked at a conspicuous place. Assembly point must be sited in a safe place, well away from areas of risk and least affected by the down wind direction. It may be in the open or in a building depending on the hazard involved. The nominated person for recording the names and departments of those reporting should be posted there. He should have a means of communication with the site main controller in case it is necessary to establish the whereabouts of people and to receive further instructions concerning the deployment of the evacuated personnel.

Further, an alternative Safe Assembly point shall be marked considering the prevailing wind direction, incase of sudden change of wind direction.

Gate Cabin & Amenity block will be used as Assembly point in case of emergency.

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Classification of emergencies

(1) Emergencies can be categorized into three broad levels on the basis of seriousness and response requirements;

(a) Level 1: This is an emergency or an incident which

- Can be effectively and safely managed, and contained within the site, location or installation by the available resources
- Has no impact outside the site, location or installation
- is unlikely to be danger to life, the environment or to company assets or reputation

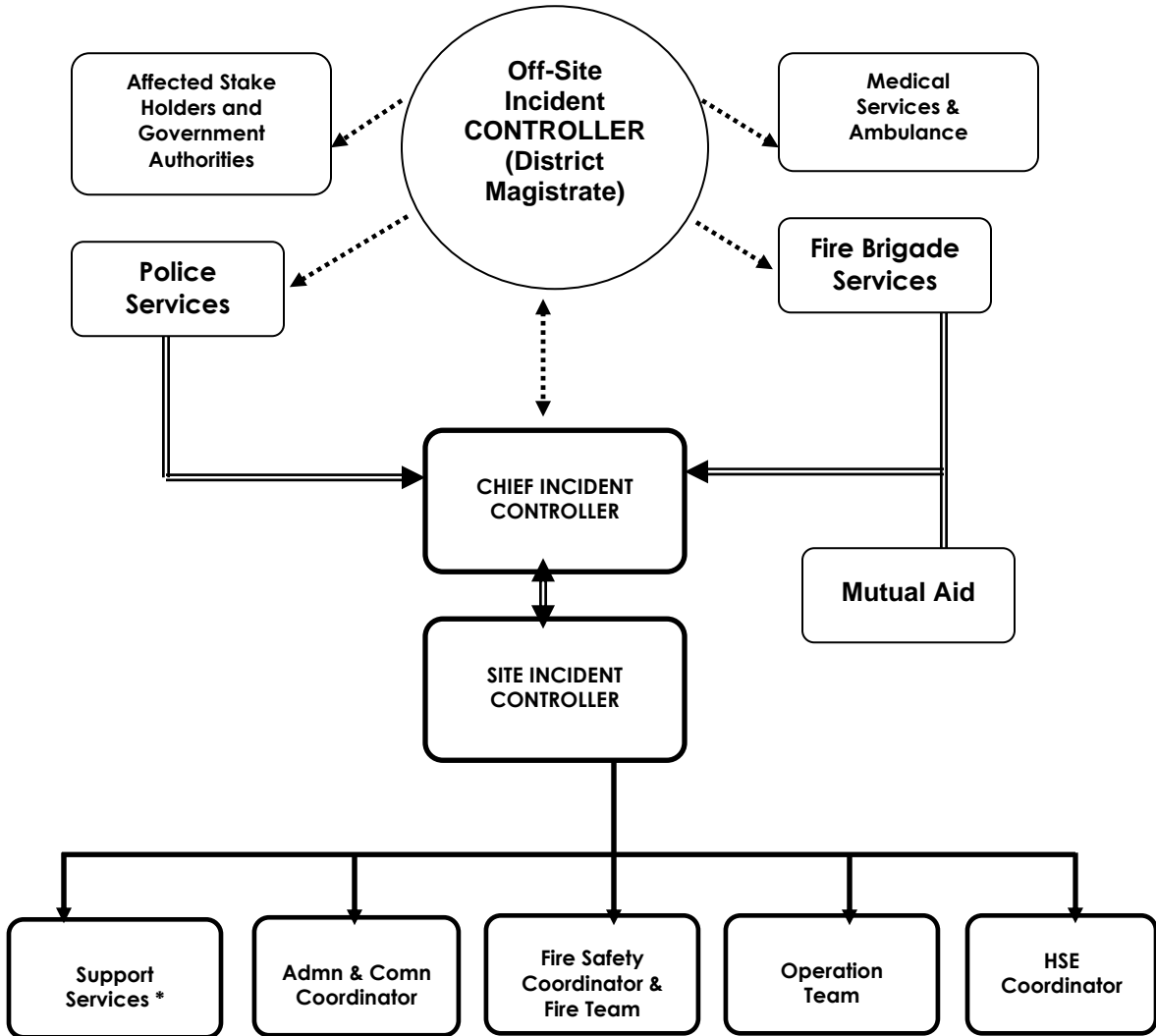
(b) Level 2: This is an emergency or an incident which

- Cannot be effectively and safely managed or contained at the site, location or installation by available resource and additional support is required.
- Is having, or has the potential to have an effect beyond the site, location or installation and where external support of mutual aid partner may be involved.
- Is likely to be danger to life, to the environment, to company assets or reputation.

(c) Level 3: This is an emergency or an incident which



- Is catastrophic and is likely to affect the population, property and environment inside and outside the installation, and management & control is done by District Administration. Although the level-III emergency falls under the purview of District Authority but till they step in, it shall be responsibility of the unit to manage the emergency.

Organization Plan:



Note:

- Level – I** _____
- Level II** _____
- Level III** _____

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6.4 Command & Control

Organization chart is given in Annexure-2, which gives organizational structure. Chart of Initiation of Actions for the emergency plan explains the order of command, Channel of information flow, and actions as required during the emergency. The single organization structure has been created and the same shall be continued till the emergency is over. The Safety Officer shall take the initial charge, as Incident Controller, and he will co-ordinate with various agencies effectively to combat the situation. The Office room will be used as emergency control Room. The gate cabin & Amenity block will be used as Assembly point. The Director/General Manager will act as site main controller for the unit. On arrival, he will supervise all activities with the help of Incident Controller (Safety Officer).



The duties & responsibilities have been defined as per below:

6.5 Chief Incident Controller

The Chief Incident Controller (CIC) shall have overall responsibility to protect personnel, site facilities and the public before, during and after an emergency or disaster. The CIC shall be present at the emergency control centre for counsel and overall guidance. Responsibilities of the CIC shall include following:-

His responsibilities include:

- (a) Preparation, review & updation of the plan
- (b) Assessment of situation & declaration of emergency
- (c) Mobilize main coordinators & key personnel
- (d) Activate Emergency Control Centre
- (e) Decide on seeking assistance from Mutual Aid members & external agencies like Police, Fire Brigade, Hospitals etc.
- (f) Continuous review of situation & decide on appropriate response

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strategy



- (g) Take stock of casualties & ensure timely medical attention
- (h) Ensure correct accounting & position of personnel after the emergency
- (i) Order evacuation of personnel as & when necessary
- (j) Decide in consultation with District Authorities when an Off-site emergency to be declared.

6.6 Site Incident Controller (SIC)

The site main controller shall be identified by the chief incident controller and will report directly to him. SIC should be nominated

His responsibilities include:

- (a) The SIC shall maintain a workable emergency control plan, establish emergency control centers, organize and equip the organization with the plan and train the personnel.
- (b) The Site Incident Controller shall organize and direct all emergency control activities before, during and after a disaster or an emergency based on disaster potential.
- (c) The SIC shall be capable of making quick decisions and taking full charge.
- (d) The SIC should communicate to the Emergency Control Centre where it can coordinate activities among groups
- (e) SIC shall be responsible for ensuring that appropriate local and national government authorities are notified, preparation of media statements, obtaining approval from the CIC and releasing such statements once approval received.
- (f) SIC shall also ensure the response to incidents/emergencies is in line with Company procedures, coordinating business continuity or recovery plan from the incident. He must ensure next of kin are notified in a timely manner.
- (g) SIC shall also co-ordinate if any specialist support is required for the above purpose.

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6.7 Key Personnel

The key personnel shall be available at any time on duty or on call when off or on holiday. The Role of key personnel is to perform the following functions:

- (1) Take the charge of managerial activity and support to Site Main Controller and Incident Controller.
- (2) Immediately communicate to various authorities with specific details and request for helps.
- (3) Supervise and execute the work as instructed by Site Main Controller and Incident Controller.
- (4) Handle the situation & cope up the work by fair dealing.
- (5) Report time to time to the Site Main Controller and Incident Controller about your work status.
- (6) Advice, Counsel, Guide, Suggest, or Caution in respect to the handling of emergency to the SMC/IC as per your knowledge.

The List of Key Personnel & their contact numbers shall be displayed & updated on regular bases.

6.8 Essential Workers

They are a task force of trained workers or expert teams to carry out specific job or work at the time of emergency and perform the duty under guidance of Incident Controller/Site Main Controller.

The essential workers include, -



Administration and Communication coordinator

Fire safety coordinator

Human Resources and Welfare Services

Administration & Communication Coordinator

Responsibilities of the Administration & Communication Controller shall

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include the following:

- Inform & coordinate with Mutual Aid members and other external agencies
- Direct them on arrival to respective coordinators / desired locations
- Coordination with Police for control of traffic
- Activate the Medical Centre & render first aid to the injured. Arrange ambulance & coordination with hospitals for prompt medical attention to casualties.
- Ensure head counts at Assembly Points
- Arrange procurement of spares for fire fighting and additional medicines & drugs
- Mobilize transport to various teams for facilitating the response measures
- Monitor entry / exit of personnel into & out of premises. To ensure only authorized personnel into the premises. With the assistance of the Police, control the mob outside if any & regulate the flow of traffic into & out of premises.
- Provide administrative & logistics assistance to various teams.
- Arrange evacuation as directed by the Main Incident Controller, and in coordination with the civil authorities like Police, Panchayat/ Municipal authorities etc.

Fire Safety Coordinator and Fire Team

Responsibilities of the Fire & Safety Coordinator shall include the following:



- Activation of Emergency sirens as per the practiced codes
- To take charge of all fire fighting and rescue operations and safety matters.
- To ensure that key personnel are called in and to release crew of fire fighting operations as per emergency procedure.
- Assess functioning of his team and communicate with the Main Incident Controller & Administrative Controller for any replenishment or,

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- replacement of manpower / firefighting equipment.
- Direct the Fire Brigade personnel & mutual aid members to their desired roles as also proper positioning of the manpower & equipment.
 - To decide the requirement of mutual aid and instruct Fire Station, who, in turn will contact mutual aid members through fire control room.
 - To coordinate with outside fire brigades for properly coordinated fire fighting operation.
 - To ensure that casualties are promptly sent to First Aid Centre / Hospital.
 - To arrange requirement of additional fire fighting resources including help from mutual aid partners.
 - Where the emergency is prolonged, arrange for the relief of personnel and provision of catering facilities.
 - Ensure empty & loaded trucks are removed to safer area to the extent possible so as not to affect emergency handling operations.
 - Continually liaise with the Chief Incident Controller and implement the emergency combat strategies as communicated by him.
 - Ensure adequate hydrant pressure in the mains and monitor water level in the reservoir.

Support & Auxiliary Services for major installations

- **Human Resources & Welfare Services**
- The Human Resources and Services coordinator shall provide professional HR and Services advice and guidance to the Site Incident Controller for implementing the emergency response actions described below.
- For maintaining accurate and up-to-date information on all of the Company's national and international staff, their location and identification details.
- Responsible for gathering information regarding all personnel at the incident location and information about any casualties and or missing persons.

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- Responsible for making arrangements for the timely notification of the next of kin of all personnel at the incident site and their condition
- Responsible for maintaining personal and next of kin data for staff members and contractor personnel (including expatriate persons) at all Installations.
- Responsible for ensuring that an auditable list of all personnel at the scene is maintained by the Human Resource Department.
- Responsible for ensuring the provision of all appropriate support to next of kin
- Responsible, in coordination with company doctor, for making onward medical arrangement for casualties who have been evacuated from the incident location



- **Transport & Logistics Services**

(1) The Transport & Logistics Co-coordinator shall provide professional logistics and guidance to the Site Incident Controller for the implementation of the emergency response actions as given below:

- The initiation and co-ordination of appropriate details of road, rail, air and marine transports required during the management of an emergency situation and co-ordination of the logistics and transport required in the event of a partial or total evacuation of personnel from an incident or emergency location.
- Initiation and co-ordination of the resources required for the controlling and cleaning up in the event of a land or sea pollution.

(2) The Media / Public Affairs Coordinator's emergency response role shall provide professional public affairs and media communications advice to the Site Incident Controller for the implementation of the emergency response actions described below:

- Gathering accurate information from and about the incident or

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emergency situation from Site Incident Controller and for preparing the media statements.

- Briefing the Chief Incident Controller who is to brief the media or making any media releases if designated to do so
- Responsible for arranging and coordinating liaison with the Community in the location of the incident or emergency and its handling with external agencies including district authority.

Health, Safety and Environmental (HSE) Coordinator



The HSE Co-ordinate's emergency management role is to provide professional health, safety, environmental and regulatory authority advice to the Chief Incident Controller and for implementing the emergency response actions described below:

- Ensuring that Company procedures are being applied appropriately to the incident or emergency situation.
- Ensuring that appropriate level of Health, safe working and environmental practices are being followed while dealing with the emergency.

Operations and Technical Coordinator

The Operations and Technical coordinator's emergency management role is to provide professional operations, engineering and technical advice to the Site Incident Controller at the time of an emergency and implementing the emergency management actions as below:

- Identifying the type of incident and the level of technical advice and support required
- Mobilizing the appropriate technical expertise from within or outside the company in order to provide advice and support to the emergency location
- Identifying appropriate equipment and personnel to be sent to the

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emergency location if required

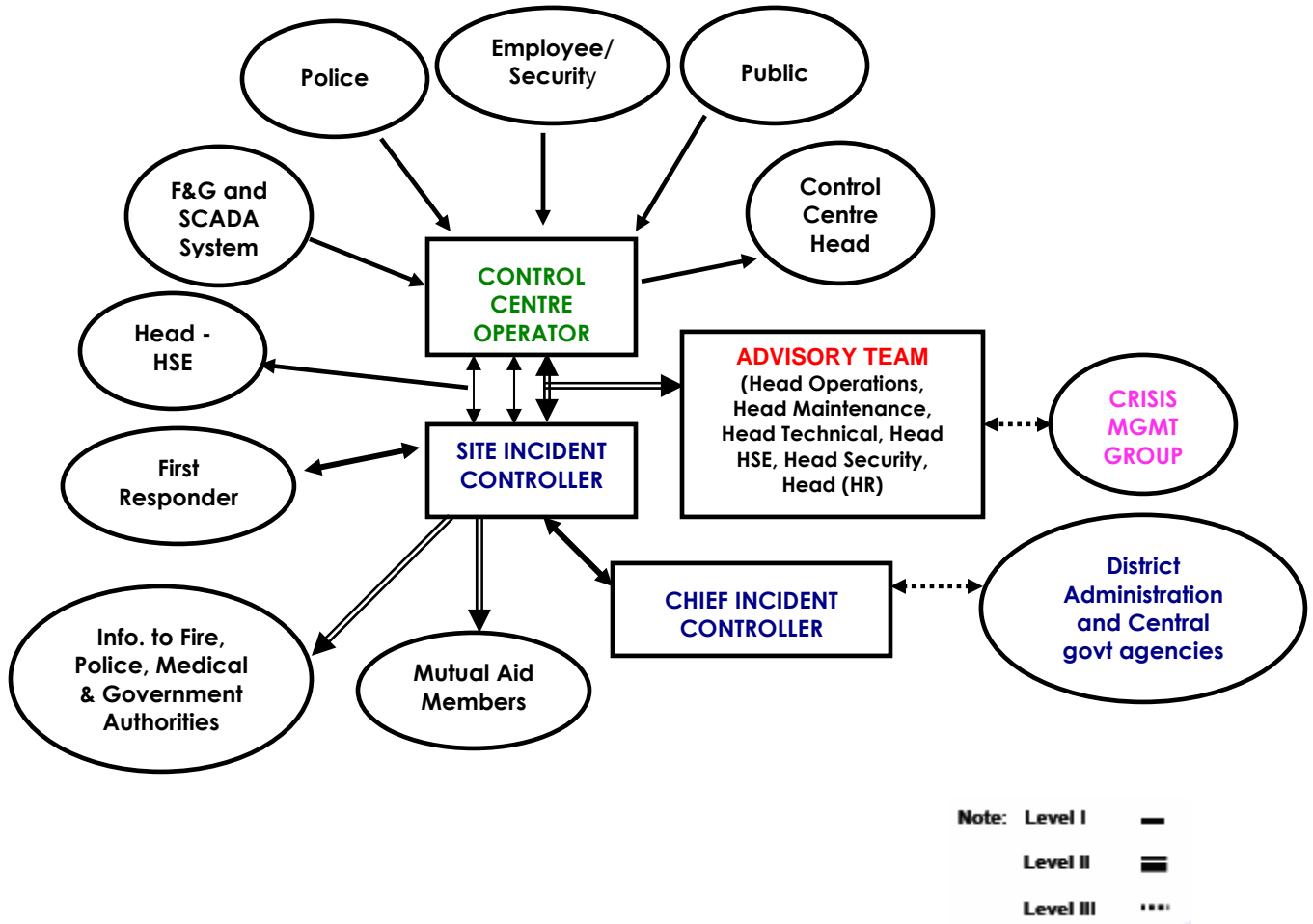
- Liaising with the Transport & Logistics coordinator in order to arrange for the transportation of equipment and personnel to the emergency location
- Liaising with HR for coordinating contractor representative

Communications Services

The Communications Coordinator shall ensure the following actions below:

- Ensuring the ECC equipment and systems are maintained to a high standard to ensure they remain functional throughout the Emergency.
- Ensuring a back-up communication system is available in the event of the ECC Room not being available
- Providing quality and diverse communication systems for use in routine and emergency situations.

Communication Flow Chart





Flow of Information:

Control centre shall receive the information from field either in person or from the various systems available in the installation.

On receipt of information, the control room shift in charge will actuate the ERDMP and notify the emergency to site incident controller.

Control room shift in charge will act as site incident controller till arrival of

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designated person.

SIC or CIC depending upon the level of emergency will actuate the plan and inform the concerned authorities as depicted above in the chart.



The list shall be updated from time to time.

Such work will include:

- (1) Fire fighting, gas leak and spill control till a Fire Brigade takes the charge.
- (2) Shutting down plant and making it safe.
- (3) Emergency engineering work e.g. Isolating equipments, materials, process, providing temporary by-pass lines, safe transfer of substance, urgent repairing or replacement, electrical work etc.
- (4) Provision of emergency power, water, lighting, instruments, equipments, materials etc.
- (5) Movement of equipments, special vehicles and transport to or from the scene of the incident.
- (6) Search, evacuation, rescue and welfare.
- (7) First - aid and medical help.
- (8) Information to surrounding factories and the public as directed by the site Main Controller.
- (9) Assistance at communication centre, casualties, reception centre, liaison with police etc.
- (10) Any special help required.

6.10 Check Schedule

The following arrangements are to be maintained and up-dated for preparedness, of emergency purpose during pre-emergency period.

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6.10.1 M.S.D.S.

M.S.D.S. for Hazardous materials, which are handled and stored are given in Annexures-5. Any updation or new information about hazardous materials should be incorporated in M.S.D.S.

6.10.2 Weather Condition Data

The Meteorological data is given in Annexure-6, which will be updated periodically and record should be maintain accordingly.

6.10.3 Communication System

Emergency Telephone Nos. with name of contact person etc. are given in Annexure – 4. Time to time modification should be carried out for changes.



6.10.4 Emergency Control Center

The Equipped Central Control Room should be in working order. The plant layout maps, drawing, storage details, M.S.D.S, emergency operations, manuals etc. should be kept and should be up to date. List of Emergency telephone Nos. shall also be maintained up to date. The senior and expert person shall be posted as in charge of the control room.

6.10.5 Fire Protection:

To fight the fire, Systems like Fire Hydrant system, Fire extinguishers, sand buckets are provided.

Check all the fire - fighting equipments, units and machineries for their conditions, physical availability, workable and take necessary actions on replacement and maintenance, if required. Check resources of water and keep necessary telephone Nos. of suppliers for the same. Maintain the co-ordination with other fire - services. The water showers should be checked periodically for working conditions.

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6.10.6 Personnel Protective Equipments

Check all the personnel protective equipments provided at different places for their condition, working, maintenances and replacement, whenever required. Also keep sufficient stock of required personnel protective equipments. Also, maintain the relation with the mutual aiders for their supply of Personnel Protective Equipments at the time of emergency.

6.10.7 Safety Systems

Check the working of all safety devices; interlock systems, safety-guard, railing, and fencings, in position. The safety equipments should be kept available with working condition. The safety motivation and safety training is a continuous process and arrange such type of training, periodically. Check the monitoring instruments, if provided, for correct working. Check the alarm systems for its working condition. The details shall be up-dated.



6.10.8 The Medical Facilities

A Medical Centre with treatment facilities for employees & dependents along with full time Doctor, 2 Nurses, 1 Pharmacist, etc. 2 ambulances are available.

The First Aid Boxes shall be provided at the plant area shall be adequately filled with requisite medicines and equipments. Arrangement should be made that at least one trained person should be available during the working hours. The name and address with telephone No. of Doctors shall be displayed in the Control Room along with General Hospital & Ambulance Van facilities.

6.10.9 Monitoring the Environment

A suitable type of flameproof and portable combustible gas indicator / sensor shall be provided and sample of various locations shall be measured & record shall be maintained.

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Provisions shall be made for in the event of power failure, DG sets shall be provided.

6.10.11 Maintenance of Records

Keep the records of the monitoring conditions, safety systems, storage levels, process condition, etc. and maintain the log - books, registers etc. keep the M.S.D.S. and onsite emergency plan with required details.

6.10.12 Exercises/Mock Drill/Rehearsal



Organize the periodical mock drill/ rehearsal as per suggested format on emergency situation so as to keep up preparedness & awareness to overcome shortcomings. Give prior information with reasonable time to the emergency services and public for proper response & training. Record the deficiencies of the system during the trial and take appropriate action to improve the effectiveness of the plan in terms of preparedness and response.

Drill shall present a variety of emergency scenarios and designed to challenge each segment of the organization. The warning system, first aid evacuation procedures and the definitive treatment procedures shall be tested periodically. Some of the drills should also include the participation of outside groups and agencies such as police, fire, ambulance services, civil defense organizations and mutual aid groups.

Testing and mock drills for on site emergency plan shall be carried out once in six months and for off site emergency plan twelve months.

6.10.13 Potentiality on Liaison

Keep constant liaison with mutual aiders, fire services, police department,

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medical services, statutory authorities, District administration, during pre-emergency situation. Keep liaison with local Crisis Group and District Crisis Group.

6.10.14 Public Education



Efforts to be made to educate the surrounding public about the existing hazards of the plant, the possible emergency actions and the precautions required to be taken in such condition. Leaflet containing such details can be distributed amongst the public. The training program can be arranged in the school, public institution. It can be circulated to news media, TV, Video- channels, newspapers etc.

6.10.15 Training (Internal)

With the help of efficient plant supervisors, inspectors, the education & training of the workers to be kept alive all the time to ensure good housekeeping, discipline and display of safety slogans, operative instructions and motivation on safety. All the persons from the emergency services, organization is to be trained to response the emergency.



6.10.16 Siren Testing

The siren shall be checked & tested periodically at certain intervals so that awareness & preparedness can be checked.

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CHAPTER – 7

EMERGENCY PROCEDURE

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7.1 Actions during Emergency

It is not possible to include and discuss every action, which should be taken during emergency; it is also not possible to describe entire actions on emergency situation. The basic principle of handling emergency is to rely upon person, who has the knowledge and experience to assess the situation and give direction as per the objectives as quickly as possible. However, the aim is to control the situation by safest way in limited time within available resources. Further, it should handle with care so that loss of life, property and environment is minimized. In short, the plan should be successfully complied with.



7.2 Sequential Actions during Emergency

Various actions are required to be initiated according to the situation. However, some systematic codification is required to control such emergency, the following sequential actions may be helpful to contain emergency.

7.2.1 Incident

There are possibilities of various types of accidents or mishaps occurring in the factory/premises. Most are of minor type, while few cases may be major type. Some times there is no single incident during the life span. However, when any incident occurs, it cannot be distinguished immediately, the subsequent development or seriousness of such occurrence is required to handle safely.

It should be general practice that any person noticing the accident/fire/explosion/mishap at the site, should shout "FIRE", "FIRE" or "HELP", "HELP" and such message should reach to Supervisor/Shift Engineer/ Senior Person of the unit. This way first information will reach to responsible person.

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7.2.2 Responding Actions

It is said that root cause should be removed immediately. Similarly, if any incident takes place in the premises it should be tackled with available resources, it should be so responded that it is contained immediately before spreading. If the incident looks severe and cannot be controlled by simple efforts, the Shift Engineer or senior person should rush to the place and try to control by using resources at the site.

Further, if it is uncontrollable even after using own resources, immediately call for further help from outside e.g. mutual aiders, fire-brigade etc. He takes over as incident controller & initiate following actions.



- ❖ Sound the siren or ring the emergency bell.
- ❖ Continuous responding actions, with the use of other helps.
- ❖ Call the higher authority / Site main controller.

7.2.3 On-Site Emergency

On arrival of Incident Controller/Site Main Controller, he assesses the situation and handles the incident as site crisis. The incident can be said as On Site-Emergency.

He will,

- ❖ Activate the fire brigade, police, mutual aiders and essential workers, expert persons.
- ❖ Mobilize more resources from the neighboring industries and other available resources.
- ❖ The messages regarding prevailing situation to concerned authorities, agencies, neighbors etc. will be communicated through the control

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room.

- ❖ Non-essential person will rush to safe shelter and their roll call to be taken.
- ❖ Try to contain by using all available resources within his command.

Now, if situation is uncontrollable by the management of the unit, he should immediately call the local crisis group to handle the situation.

7.2.4 Off-Site Emergency:



a) Local Crisis Group:

The Chairman of Local Crisis Group with committee members handles the situation by responding actions. The Chairman of the Committee pools the entire local resources at site and tries to mitigate the situation. However, if it is presumed that the magnitude of the event is such high that it is uncontrollable by the Local Crisis' Group, than The District Crisis Group will be intimated to handle the emergency.

b) District Crisis Group:

The Chairman, along with members of District Crisis Group takes over the charge of escalating situation. After, assessing the situation, he declares the "District Crisis" in action. To combat the emergency, he mobilizes the emergency services; and handles the situation as off-site emergency.

The Central Control Room will activate and communicate the messages to the various District resources. Thus, all the resources from entire District will be called on and diverted to the scene and mobilize to control the incident in an efficient & coordinated way.

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7.2.5 Messages:

While conveying the messages regarding the incident, the following details should be incorporated.



- ❖ Brief description of incident.
- ❖ Type of help required & direction.
- ❖ Chemical involved & quantity.
- ❖ Action immediately taken.
- ❖ Development of the incident.

7.3 Emergency Actions (General)

1. On receiving information, the control room activates and establishes the contact with Key Personnel, Essential workers, services, agencies & authorities, urgently.
2. The essential workers, who are responsible to carry out certain specific functions, have to work immediately.
3. The non-essential workers should go to the assembly center.
4. Ensure the cordoning of the incident area.
5. Spray the water on the flammable storage tank, even if not caught under fire.
6. Consult the experts for responding the emergency, if required.
7. Give authorized information to Press / Public.
8. Arrange to remove the flammable, dangerous materials, cylinders etc. at safe places and try to isolate from fire.
9. Provide all assistants to fire brigade to control spreading of fire.
10. Rescue the trapped personnel.
11. Eliminate possibility of re-ignition or Explosion.

7.4 Emergency Communication:

Anyone from Factory, if notice or observe any type of fire, explosion, gas cloud,

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leak, toxic release,

He has to -

- ❖ Inform security officer, who will then actuate fire Siren or emergency alarm after consultation with authorized person
- ❖ In case of injury, inform Assistant Manager.
- ❖ Get back to your normal work station if safe or else report to the nearest emergency control point.

7.5 Action Plan for Emergency in Charge (IC/SMC) (On receiving information on incident/Accident)

- ❖ Immediate rush to the scene/place
- ❖ Assess the situation & start remedial measures
- ❖ If situation is more severe than activate emergency control center, initiate following action;
 - Communications with top management ~ Start responding actions
 - Preserve evidence.
 - Organize investigation team
- ❖ If necessary set up of forward control centre and start following immediate actions;
 1. Inform security person to sound fire siren or emergency alarm.
 2. Start emergency action with the help of key personnel and essential workers.
 3. Cordon incident/accident area and restrict unauthorized entry.
 4. Ensure immediate starting of fire fighting system like fire hoses, monitors, sprinklers system, sprays, and neighboring equipments.



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5. Ensure shut down of various plants in right sequence.
6. Communicate with top management / head office.
7. Communicate with statutory bodies like Factory Inspector, Insurance, District Magistrate etc.
8. Issue authorized statement to news media.
9. Search of affected area for casualties.
10. Call mutual aiders and inform local crisis group.
11. Preserve evidence; arrange photographs, and logging of events.
12. Before ordering the re-entering check that it is safe for.
13. Do not restart till steps taken to prevent the returns recurrence.

7.6 Action Plan for In-Charge of Emergency Control Center i.e. Communication Officer

(On Hearing Alarm Emergency information)

- ❖ Proceed to Emergency control central and perform the duties.
- ❖ Follow the line of action with IC/ SMC.
- ❖ Inform fire brigade / police / mutual aiders.
- ❖ Ask key personnel & essential worker to report IC/SMC.
- ❖ Inform all non-essential workers to reach the assembly point.
- ❖ Inform neighboring factories, companies, units.
- ❖ Communicate with statutory bodies like Factory Inspector, Insurance Agency, Police Authority, Magistrate etc.
- ❖ Arrange to rescue of missing & trap persons.
- ❖ Arrange to search affected area for casualties.
- ❖ Ensure cordoning of affected area.
- ❖ Instruction to emergency vehicle, e.g. fire tender, etc.
- ❖ Inform surrounding population with the help of police.
- ❖ Requisition cars, buses, ambulance, if required.

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- ❖ Additional ambulance and treatment for victim.
- ❖ Reserve injuries, hospitalization for victim. (e.g. Burns, casualties)
- ❖ Inform relatives of victims
- ❖ Evacuation of neighboring population, if required.
- ❖ Check rehabilitation of victims.



7.7 Action plan for Key Personnel and Essential Workers

(On Hearing Fire/Emergency Alarm)

- ❖ Inform security officer of location and nature of emergency.
- ❖ Minimize consequence by:
 - Eliminating ignition source
 - Shutting down plants as quickly as possible
 - Transferring flammable material to safer places
 - Switch on water sprays / sprinklers
 - Stopping of loading unloading operations
 - Removal of tanker lorries from the unit
 - Cordoning of area / incident place
 - Monitoring atmosphere water channels for further action.
 - Operation of fire fighting equipments, foam type extinguishers.
 - Ensure that fire pumps are in working order.
 - Provide engineering assistance to emergency in charge
 - Other duties as allocated by IC/SMC.

7.8 Action plan for Security Guards/ Officer

- ❖ Inform emergency in-charge by telephone
- ❖ On receipt of information in case siren is not actuated, sound/blow the siren, if directed by IC/SMC
- ❖ Depute security guards to control traffic around area of emergency

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and cordoning of incident area.

- ❖ Keep visitors out & prevent unauthorized entry
- ❖ Control Traffic of gate / inside and outside
- ❖ Await further instructions from emergency center/in charge
- ❖ Inform others as directed by emergency center/ in charge
- ❖ Evacuation of site - Partially or full
- ❖ Search affected areas for casualties
- ❖ Eliminating ignition sources
- ❖ Removal of tank lorries from unit
- ❖ Evacuation all non essential workers to the assembly point and Head Count.
- ❖ Guide the mutual aiders, fire brigade, govt. officers, emergency vehicles, etc. for safe way towards emergency incident and safe parking.

7.9 Action Plan for Workers/Officers /Contractor

Upon hearing emergency siren/alarm

- ❖ Leave site immediately by safest route to assembly point.
- ❖ Proceed at right angles to wind direction.
- ❖ Do not re-enter site unless directed personally or via PA system.
- ❖ Assist in head count at assembly point
- ❖ Inform contractor personnel to stop work upon hearing fire / gas alarm and ask to assemble at the main security, gate.
- ❖ Do not go to incident place unless specifically instructed by Emergency in-charge.
- ❖ Avoid Panic

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7.10. Discipline

The plan assumes certain discipline at site during emergency, as follows;

- ❖ Do not get panicky.
- ❖ Do not approach the site of incident, as a spectator.
- ❖ Do not Engaged telephone unnecessary;
- ❖ Do not move about unnecessary.
- ❖ Do not approach unnecessarily for information or more inquiry.
- ❖ Arrange medical first aid care to the injured.
- ❖ Do not allow unnecessary crowd nearby incident.



7.11 Shut down Procedure

We cannot neglect the adverse effect of the running plant during emergency. Therefore, it is advisable and safe that the safe shut down procedure should be adopted, if running. First of all main electrical supply line should be cut-off. Similarly, the pipelines carrying flammable gas, liquid or chemicals are to be isolated immediately. If reaction in the any vessel is in process, it should be stopped & safely shut down.

Arrange to transfer or remove the flammable, toxic, dangerous, explosive, poisonous materials, goods, cylinders, drums etc. to safe place or try to isolate from the fire.

Arrange the water shower on flammable storage tanks to keep it in cool conditions, if near the fire.

The shut down procedure shall be laid down in the process manual, which will be useful during such emergency.

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7.12. Post Emergency

The following actions are suggested as per prevailing situation depending upon the level of emergency.

1. In Case of On-Site Emergency

After controlling the emergency and ascertained for no possibility of re-occurrence, the management will indicate the following actions.

1. Declare termination of Emergency & blow the siren accordingly.
2. Disclose the authentic statement on incident to the authority & news media.
3. Collect & preserve the documents, records, instruments, evidence etc. on incident.
4. To set up the internal enquiry committee, appearing the internal or external expert person.
5. Cleaning work after obtaining the permission from Authority.
6. Preparation of restarting the process work.
7. Detailed related work & procedure, as described below;
 - o Sound the emergency clear siren.
 - o The rehabilitation work will start in the affected area.
 - o To ensure that all fires are extinguished and there is no risk of re-ignition, before starting work.
 - o To ensure that there is no chance of secondary explosion.
 - o Do not disturb wreckage and debris except to rescue the injured or recover bodies, until permitted to do so by statutory authority.
 - o All victims, dead or alive, are' systematically identified and keep the records accordingly. Give information to their



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relatives, if asked.

- o Record all relevant information.
- o Take photograph / video or make suitable sketches of the incidence.
- o Report the accident / incident, with details, to the statutory, authorities, if not informed.
- o Permission for restarting is required to be obtained from statutory authorities.
- o Keep registers for recording the entries, details, inventory, list of persons etc. & preserve the all the documents, log books, maps, registers all records taken from the site.
- o Keep the record of help; Co-operation, Mutual aiders sought from others & write thanks giving letters to them.
- o Arrange the compensations to the affected persons, injured persons, dead etc. as per circumstance and if applicable, keep the records accordingly.
- o Estimate the expenses incurred during the emergency.
- o Estimate the various expenses under different head & prepare the total expenditures statement.
- o Appoint the internal committee to investigate into the causes of the accident / incident, if necessary and get report.

2. In Case of Off-Site Emergency Plan:

Being apex body during the Off-Site Emergency Period, the Crisis Group will get the report from emergency services for safe rehabilitation and Pollution Control Authority for safe environment condition and then decide the declaration of termination of emergency. The authority may constitute the enquiry committee, by appointing inclusive of expert persons and ask to submit the said report within specified period. Then, Crisis Group will ask the explanation from management on the said report. On winding up the



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actions, the Crisis Groups will permit the management to clean and re-starting the work for process and other related work as mentioned in above Para 7.12.1- point No. (7).



7.13 Corrective Actions

The accident is eye opening toward the irregularities. Similarly, the occurrence of major emergency directly indicates the shortcomings or weaknesses of the plant, handling method, transportation, working procedure, storage procedure, unsafe condition or unsafe actions etc. It may reveal from the investigation or recommendations of the committee.

Necessary corrective steps / actions in light of the investigation report or findings are required to be taken to ensure that such emergency accident does not repeat. Therefore, modification, alterations, changes in operation, instruction, process, and handling are suggested, should be implemented accordingly to make working safe.

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ANNEXURE SECTION



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List of Annexure:

- Annexure 1: Plot plan / Plan Lay out
- Annexure 2: Organization Plant
- Annexure 3: Accident reporting Form
- Annexure 4: Emergency Telephone numbers
- Annexure 5: MSDS
- Annexure 6: Meteorological Data
- Annexure 7: Fire Fighting Layout

List of Appendix:

- Appendix 1: Fire fighting equipments
- Appendix 2: Medical Facilities available
- Appendix 3: Transport Facility provided

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