

May -2026

ON SITE EMERGENCY PLAN

(AS PER RULE 68(J) OF GUJARAT FACTORY RULES)



हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड
Hindustan Petroleum Corporation Limited
(A Maharatna Company)

HINDUSTAN PETROLEUM CORPORATION LIMITED

PALANPUR TERMINAL

**Behind GIDC Chandisar, Village. Chandisar, Ta. Palanpur, Dist.
Banaskantha, Gujarat, India.**

:: Prepared by:



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HINDUSTAN Petroleum CORPORATION Limited

Palanpur Terminal

Behind GIDC Chandisar, Village. Chandisar, Ta. Palanpur, Dist. Banaskantha, Gujarat, India.

ON SITE EMERGENCY PLAN PREFACE

Banaskantha district is the second largest district in the Gujarat state of India. The administrative headquarters of the district is at Palanpur which is also its largest city. The district is located in the Northeast of Gujarat and is presumably named after the West Banas River which runs through the valley between Mount Abu and Aravalli Range, flowing to the plains of Gujarat in this region and towards the Rann of Kutch. Palanpur Junction railway station is the largest railway station of the district. It is connected to Mumbai-Ahmedabad-Jaipur-Delhi corridor thus linking it with four major cities of India. It is also connected to other towns of the district such as Chhapi, Deesa, Deodar, Dhanera and Bhabhar

The main activity of HPCL Palanpur Terminal is receiving products (MS, HSD & SKO) from Pipeline, storage into storage tanks, and tanker filling for supply to various outlets and customers in North Gujarat region.

FOR

HINDUSTAN PETROLEUM CORPORATION LIMITED

OCCUPIER



हिन्दुस्तान पेट्रोलेम कॉर्पोरेशन लिमिटेड/Hindustan Petroleum Corp. Ltd.

पालनपुर टर्मिनल, GIDC के पीछे/Palanpur Terminal, Behind GIDC
गांव. चंडीसर, तालुका. पालनपुर/Village. Chandisar, Tal. Palanpur
जिला. बनावलकांतगुजरात-385510/Dist. Banaskantha, Gujarat-385510

INDEX

Sr No	Details	Page No.
I	Introduction	03
II	Basic Objectives of the Plan	05
III	Introduction of the Unit	09
IV	Risk Assessment and Hazardous Scenarios	14
V	Safety and Mitigating Measures	16
VI	Organization Plan	19
VII	On-site & Off- site action plan	23
VIII	First Aid for Injured	28
IX	Training Rehearsal and Records	52
X	Definition and Glossary of Terms	53
-	Annexure	57

CHAPTER – I

INTRODUCTION

GENERAL

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

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

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

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

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

STATUTORY REQUIREMENT FOR PREPARATION OF ON-SITE EMERGENCY PLAN:

The factory, which defined as hazardous unit has to prepare the on-site emergency plan explaining measures taken against potential chemical hazards and how to fight with emergency. This plan has to submit to the specified authority. It is also provided that the periodical rehearsal/ exercise also required to be carried out.

The provision for preparing the On-Site Emergency plan is explained below:

A: The Factories Act, 1948: -

Rule 68 J (12) of the Gujarat Factories Rules 1963 (Amended 1995) providing that 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 with along with explaining specific responsibilities and actions by various persons.

B: The Environment (Protection) Act-1986: -

Rule 13(1) under the Manufacture, storage and import of Hazardous chemicals rule 1989 (amended 1994), rules framed under the environment (protection) Act-1986, 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.

C: Chemical Accidents (Emergency Planning, preparedness and Response) Rule 1996.

Under this rule, 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 unit 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.

D: OFF-SITE Emergency Plan.

The emergency planning for on-site and off-site are different but they should be dovetailed each other. On-site emergency planning is the responsibility of the site management, while off-site 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, and Explosive Department etc.

SCOPE OF THE PLAN:

The emergency procedure as outlined herein is designed with the primary 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 own operations, processes, storage, adjacent operations, or any other circumstances.

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

The success of this plan is accomplishing its purpose depends largely upon each individual carrying out his designated duties effectively and promptly.

This plan is in two sections. The first section provides basic requirements, which explains essential elements of the plan.

The second section is annexure section, which designed to give specific information needed during 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 functions and it should not be considered in isolation. The management should evaluate the activities, operations and process carried out within the works before starting to plan an emergency operation.

A check must be made to ensure that all required steps have already been 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 prepared this plan.

CHAPTER – II

BASIC OBJECTIVES OF THE PLAN

Emergency Plan:

The plan consists of the actual performance of duties & responsibilities by designated personnel. Further, the plan describes three zones. One is pre-emergency i.e. at Normal activities before emergency or preparedness, awareness and training parts. While second zone explains during emergency performed by using available resources & control measures taken by various persons.

The third zone, post emergency, describes the preserving evidences and records for remedial measures, safe rehabilitation and to face inquiry etc., as required by various authorities. It also explains corrective steps from the situation and providing the correct reason behind the emergency, so that such type of incident again will not occur.

Basic Objectives:

The basic objectives are to make maximum use of available resources in shortest time. This can be described as below:

1. To identify the emergency and affecting the area.
2. To disclose the type of emergency & to act accordingly.
3. Initially contain and ultimately bring the incident under control to minimize damages to property, life and environment.
4. Rescue & treat casualties and safe guard others.
5. Identify the personnel affected / dead, inform their relatives and provide for their needs.
6. Ensure the safe rehabilitation and return to normality in the affected areas.
7. Provide authoritative information to the news media & others.
8. Preserve relevant records & equipment's for subsequent inquiring into the causes and circumstances to lead the emergency.

Mode of Emergency:

While preparing the emergency plan, worst possible scenario of the limit should be considered. The maximum effect of the maximum quantity of hazardous chemical, which create major accident must be calculated. Mode of emergency may materials and maximum storage inventory. Fire emergency may arise due to flammable property of the Hazardous material. While explosive materials may create explosion emergency. Toxic gas dispersion in atmosphere creates Toxic release Emergency. Thus, the emergency can be divided in following types.

- Fire:

This is caused by an accidental ignition of the inflammable either in the process or in the storage (due to electric spark, electrostatic spark, chemical spark, welding/cutting etc.) At large scale this may lead to an explosion under certain circumstances or even an explosion can cause massive fire.

- Explosion:

Here this term has been used with reference to an accidental the detonation of an explosive mass either in the process or in the storage.

An explosion is generally followed by a fire and vice-versa. Hence in case of explosion, containing the fire to prevent its spreading around is of prime importance.

- Flammable Gas Release:

Sometime, flammable vapor leaks from the source and it will spread in the surrounding area. This spreading gas, it will come contact with spark / hot surface / Friction / Electric / Open flame, it will explode and fire along with blast wave creates serious effects on environment / pollution.

- Toxic Release:

Major possibilities of toxic release is an accidental release of storage / process chemicals can lead to an emergency situation and since many substances are highly toxic, corrosive, poisonous and reactive.

- Serious Accident:

Through generally, this is the result of the aforesaid emergencies; it has been kept separately, so that serious accident not falling under any of the previous classification, for example, falling from the height, serious electrical shock, and working in confined space etc.

- Dangerous Occurrences:

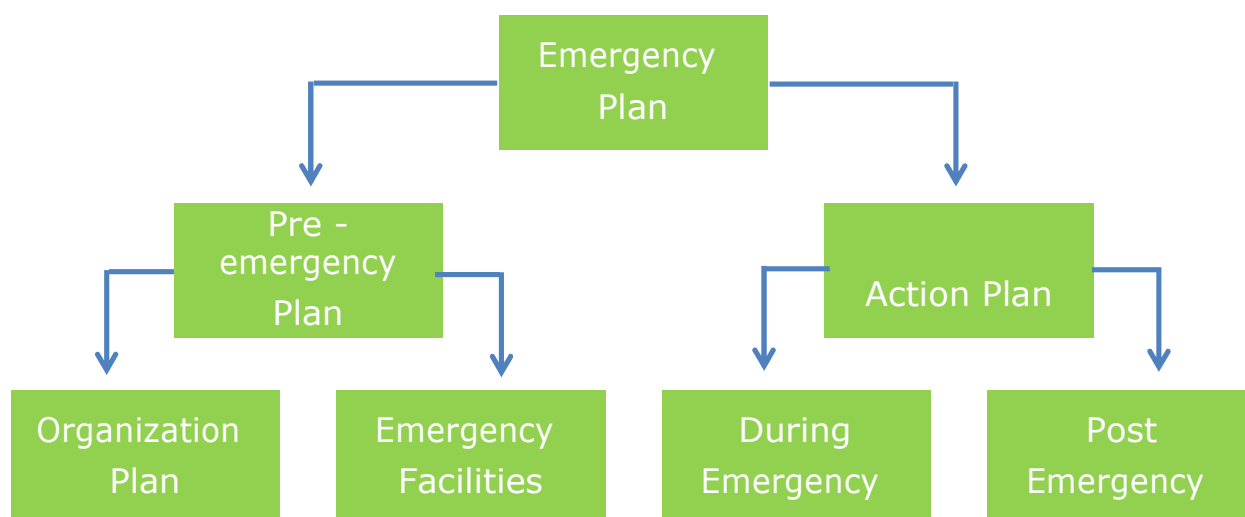
The dangers components, whether or not they are attended by personal injury of disablement, like bursting of plant, collapse of derrick, crane, which, collapse of building / structure etc. will consider in these categories.

Serious Accident:

Through generally, this is the result of the aforesaid emergencies; it has been kept separately, so that serious accident not falling under any of the previous classification, for example, falling from the height, serious electrical shock, and working in confined space etc.

-Basic Structure:

There are four basic structures to be considered for emergency planning, as described earlier:



- Pre-Emergency: -

To create Preparedness, Awareness, preventive & maintenance measures, preparatory action, training, and rehearsal.

- Organizational

It indicates the organizational aspect of the plan; clearly stating the line of command, each person's specific responsibilities, and organizational set up available for tackling Emergency effectively.

- Emergency Facilities:

This describes the equipment's appliances and facilities as required during the emergency.

- Action Plan:

This part gives guidelines to prevent, control and mitigate the emergency by various agencies / persons. It describes the actual response procedure to be followed by different categories of persons / services for different types of the emergencies.

- During Emergency: -

Real actions by using available resources in quick time. The level of Emergency can classify in the following manner.

Level of Emergency

Level – I	:	On-site,
Level – II	:	Mutual Aided local crisis,
Level – III	:	District Crisis,
Level – IV	:	National Crisis

2.4.6 - Post – Emergency: -

Actions, after emergency, summaries as, Safe termination of emergency. Resumption of normality & Rehabilitation, Essential & authentic information. Inquiring.

CHAPTER-III: INTRODUCTION OF THE UNIT

(IDENTIFICATION OF THE FACTORY)

3.1.1: Organizational Profile

Banaskantha district is the second largest district in the Gujarat state of India. The administrative headquarters of the district is at Palanpur which is also its largest city. The district is located in the Northeast of Gujarat and is presumably named after the West Banas River which runs through the valley between Mount Abu and Aravalli Range, flowing to the plains of Gujarat in this region and towards the Rann of Kutch. Palanpur Junction railway station is the largest railway station of the district. It is connected to Mumbai-Ahmedabad-Jaipur-Delhi corridor thus linking it with four major cities of India. It is also connected to other towns of the district such as Chhapi, Deesa, Deodar, Dhanera and Bhabhar

The main activity of HPCL Palanpur Terminal is receiving products (MS, HSD & SKO) from Pipeline, storage into storage tanks, and tanker filling for supply to various outlets and customers in North Gujarat region.

The unit holds Licenses under the Factories Act- 1948, Petroleum & Explosive Organization (PESO) for Class-A & Class-B, GPCB Consent etc; as per statutory requirements

The Hindustan Petroleum Corporation Limited has set up the 18" underground pipeline for transporting their different petroleum products viz. Motor Spirit, High Speed Diesel and superior Kerosene Oil from Mundra (Gujarat) to Bahadurgarh (Haryana). HPCL Palanpur Terminal receives products Motor Spirit, HSD & SKO through Pipeline (Mundra Delhi Pipe Line). Ethanol is received through TT by road from Authorized Suppliers and Ethanol mixed MS (Gasohol) is supplied to the market.

The HPCL, Palanpur Terminal is located in the route of MDPL pipeline and at very first tap off station. This terminal is located 16 kms away from Palanpur City towards Deesa.

The terminal itself is having intermediate pumping cum receiving station whereby the marketing of different products is being carried out catering to different districts of Gujarat like Ahmedabad, Mehsana, Banaskantha, Sabarkantha, Patan, Gandhinagar, Sabarkantha, Arvalli, etc.

The terminal is having total 18 nos. of above ground tank and 9 nos. of underground tanks for storing different petroleum products. Total storage capacity of terminal is 48806.9 KL.

The terminal is built up as per Oil Industries Safety Directorate Standard -118/244 and the Fire Fighting Equipment available with the terminal is as per Oil Safety Industries Directorate Standard-117. The terminal also confirms the Oil Safety Industries Directorate Standard-224.

The terminal is having two separated Gantries. Gantry-A is having 08 Bays and Gantry-B is having 04 Bays.

HPCL Palanpur Terminal, was commissioned in Sept.2007. It is spread over in Total Area: 61 Acre, Built up Area: 32.10 Acre, Solar Plant Area : 6.90 Acre, Green Belt Area : 22 Acre.

Terminal Automation system controls and co-ordinates all receipts & dispatch operations. The sub-system of the terminal automation system includes Tank Farm Management System (TFMS), Tank Truck Entry System (TTES), JDE and Operator Interface Console (OIC). All above sub-systems are inter connected through LAN and facilitates monitoring is done by trained and experienced personnel.

The installation is a Bulk Petroleum Terminal :: Its definition as per OISD Rule : A portion of the property, where combustible / flammable liquids are received by tanker, pipelines, tank wagons, tank trucks and are stored or blended in bulk for the purpose of distribution by tankers, pipelines, tank wagons, tank trucks, portable drums.

The HPCL Palanpur Terminal is registered under the Factories Act-1948. Storage of all the substances (MS, HSD, SKO) are more than specified threshold quantity. Thus, it is identified as an M.A.H. Unit. It is also falling under MSIHC Rules hence, it has to conduct Third Party Safety Audit periodically as per Rule 68-J (9) (2) of the Gujarat Factories Rules-1963(2004).

The Safety Audit is an important and useful technique for industrial management; whereby they can obtain a systematic critical appraisal of the effectiveness of the Factory / Plant's safety programme that is undertaken with a view to suggest improvements and up gradation.

Its aim is to disclose the strength and weakness and the wider area of risk. These are qualitative efforts on safety related matters rather than quantitative. Further, it is also an important tool to identify organizational & operational safety policy, practices, system, procedures and their effectiveness against accident preventative programme.

List of Raw Materials

This is only a Bulk Petroleum Terminal, no product is manufactured or altered. No output is generated physically as product. Only products received through pipelines are stored and tanker are loaded at gantry. There are tanks for MS, HSD, SKO, Bio-diesel & Ethanol. The storage detail of Hazardous substances is given here in table below: The major apparent hazards of the products are flammable and explosive.

Finished Products

The installation is basically a Bulk Petroleum Terminal. Products are received through MDPL Pipeline and Ethanol by road through Tank Trucks. At Terminal, no product is manufactured or altered. Products are received through pipeline, stored in tanks and tankers are loaded.

3.1.2: General Information

Name and address	HINDUSTAN PETROLEUM CORPORATION LTD, Palanpur Terminal Behind GIDC Chandisar, Village. Chandisar, Ta. Palanpur, Dist. Banaskantha, Gujarat, India.
Name Occupier	Manoj Kumar
Factory Manager	Sandeep Kumar
Asso. Executive HSSE	Yashpal Kashyap
Total No. of workers:	67
Factory License No.	31350
GPCB Consent:	AWH-123707
PESO License No.	P/HQ/GJ/15/4861(P-152221)
Fire Protection	Fire Hydrant System and Fire extinguishers
Manufacturing Process	No manufacturing process is undertaken
Assembly Points	1 Nos near main gate
Emergency Control Center	1 Available
Wind direction indicator	04 nos. Available
Lightning arrestors	18 on buildings and structure
DG Set:	3 Nos
List of Hazardous chemicals	MS, HSD, ETHANOL, SKO & Bio-diesel
Entry/Exit Conditions	Yes, All Clear

3.1.3 Storage of Chemicals

MS, HSD, ETHANOL, SKO and Bio-diesel are stored and handled. All these materials are classified as Hazardous Chemicals as defined under Rule 68-J(1)(a) of the Gujarat Factories Rules 1963(2004).

The major apparent hazards of the chemicals are flammable, toxic, etc.

Name of RM & Finish Products	Storage	Qty	Hazards	Control Measure	In charge person
MS (Motor Spirit)	As per requirement	As per requirement	Extremely volatile. Flashes and ignites at very low ambient temperatures (Class A petroleum, flash point $\backslash(< -20\backslash)^{\circ}\text{C}$). Static electricity generation creates a major fire risk.	Ensure all transfer equipment is bonded and earthed. Use only intrinsically safe/explosion-proof electrical tools and equipment. Store in closed floating-roof tanks or sealed, properly labeled barrels.	Mr.Sandeep Kumar
HSD (High-Speed Diesel)	As per requirement	As per requirement	Combustible liquid. Releases flammable vapours when heated above its flash point $\backslash(> 52\backslash)^{\circ}\text{C}$. Vapour-air mixture is explosive at elevated temperatures.	Keep away from open flames, hot surfaces, and strong oxidising agents. Provide localized exhaust ventilation where mists are generated.	
ETHANOL	As per requirement	As per requirement	Water-soluble, highly flammable liquid. Burns with an almost invisible blue flame in daylight. Ingesting can lead to severe poisoning.	Require the use of alcohol-resistant foams (AR-AFFF) for firefighting. Store in grounded tanks and restrict entry into confined spaces without proper respiratory gear.	
SKO (Superior Kerosene Oil)	As per requirement	As per requirement	Combustible, moderate flash point. Vapours can irritate the respiratory tract and eyes. Ingestion poses severe aspiration risks.	Ensure adequate ventilation in indoor usage areas (e.g., domestic heaters/stoves). Store in designated, cool, well-ventilated facilities	
Bio-diesel	As per requirement	As per requirement	Generally lower flammability, but can produce fine, irritating mists. Risk of contamination with highly volatile fuels (e.g., MS/Ethanol) lowers the flash point and increases fire risk.	Avoid using plastics or rubber (e.g., in pumps or hoses); use designated steel or compatible materials. Treat mixed-fuel storage areas with strict Class A/B fire safety guidelines.	

3.1.4 Our Philosophy

We are committed to the protection from accidental loss to its employees and property. In fulfilling this commitment, we will provide and maintain a safe and healthful work environment as indicated acceptable business practices and compliance with legislative requirements and we will strive to eliminate any foreseeable hazards which may result in fires, security losses, damage to property and personal injuries/illnesses. We believe accidental loss can be controlled through good management in combination with active employee involvement. Risk Management is the direct responsibility of all line managers and employees alike.

All management functions, including business, line and associated management, will comply with our loss prevention requirements as they apply to the design, operation and maintenance of the facility and equipment. All employees will perform their jobs properly in accordance with established procedures and operating philosophy.

3. 1.5 MAP OF THE AREA

A map of surrounding area of our factory is enclosed marked as ANNEXURE – 2 showing the following location of our factory such as;

- a) Exact location of our unit, b) Neighboring units c) Location of Mutual Aid Units with approximate distance d) Approach Roads, e) Off site emergency services
e) Fire Brigade, Police station. Moreover, North Direction, Normal Wind Direction and Wind Velocity is attempted to show.

This map is useful to know the surrounding area, location of above facilities in advance and to identify the area which could be affected due to emergency, if turned into an off-side emergency and if evacuation of worker and others' is necessary. Another Map is attached marked as

ANNEXURE – 3, FACTORY LAY-OUT showing all vital details of the unit such as

- 1) Main Gate
- 2) Main Plant, Storage & other plant area.
- 3) Location of Assembly Point
- 4) North Direction, Normal Wind Direction and Wind velocity

IMPORTANT DEFINITIONS

All definitions stated in the guidelines by CIF are adhered to in preparation of the plan. These definitions are accepted by all the concerned government, semi-government bodies and institutions are mentioned relevant to the emergency planning.

ABOUT OBJECTIVES OF THE EMERGENCY PLAN

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 purpose of this plan is to guide the facility in terms of people responsible in managing the facility in an emergency. It is intended to give a predetermined outline of considerations to facilitate the turn of events. This will ensure an efficient, confident and correctly managed emergency. We recognize that all employees should be made aware that a Emergency Management Action Plan is in place. For the most part, employees should continue their usual job duties during an emergency situation.

Emergency planning is a management functions and it should not be considered in isolation. Management should evaluate the activities, operations and processes carried out within the works before starting to plan an emergency operation. A check must be made to ensure that all required steps have already been 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 prepared this plan. In this plan, we have shown the clear instructions without overlap or confusion for all concerned staff members. The same details are prepared as per ANNEXURE – 33.

FACTORY LAY-OUT

Enclosed herewith a plan of the factory premises showing detail layout of hazardous points and emergency control centers inside the factory.

Indicate boundary walls all entry and exist gates, situation of various departments, hazardous storage and process area and Effluent Treatment plant, fire hydrant system, first aid center, emergency vehicle, canteen, assembly point, emergency control center, road approach, reception hall and firefighting and personnel protective equipment's.

STORAGE HAZARDS AND CONTROLS

Major storage hazards are flammable. The company has carried out safety audit by competent person (third party) to identify the potential hazard, company also has been conducted inspection to control hazard.

Its control measures are given in annexure-4 and all MSDS are in annexure -5

PROCESS HAZARDS AND CONTROLS

Process and operations with the process flow chart have been shown here under together with the details of various steps and situation of fire, explosion, toxic release etc.

Company has taken precaution against potential hazards of process and vessels hazards.

CHAPTER – IV

RISK ASSESSMENT AND HAZARDOUS SCENARIOS

Hazard Identification of the Unit:

Process Description:

HINDUSTAN PETROLEUM CORPORATION LTD, Palanpur Terminal Bulk Product Terminal, Palanpur, no manufacturing process is undertaken. This is only a product terminal. Products are received through Railway Wagons and pumped into above ground tanks. Products are tanker loaded at loading gantry and supplied to various customers. MS, HSD, ETHANOL, SKO & Bio-diesel are stored and handled. All these materials are classified as Hazardous Chemicals as defined under Rule 68-J(1)(a) of the Gujarat Factories Rules 1963(2004). Based on inputs from Operations Manual, Circulars on Operation/ Safety/Security, Intranet Portal, OISD guidelines and experience of Tank Farm operation across, they have made a broad frame work of Standard Operating Procedures for Tank Farm operation including Pipeline Transfer Operation.

Process hazard: Analysis & Description of Control Measures.

The associated hazards from the plant are fire and explosion.

PARAMETERS TO CONTROL THE PROCESS

Interlocking has been provided.

HAZARD IDENTIFICATION IN STORAGE & PROCESS

Data sheets showing toxicological, flammability and other characteristic data of the major chemicals handled in the plant are enclosed in **Annexure –V as MSDS.**

The information available on the plant and process has been studied in detail and credible loss of containment has been identified in Risk Assessment Study. Based on this, following potential risk scenarios have been studied for consequence analysis. The results of the Risk Analysis study are summarized

FIRE & EXPLOSION:

As fire or explosion is likely in the case of leakage, ignition, spark, overheating, vapors dispersal, material is kept isolated from any source of fire-ignition. Flame proof electric fittings in the plant, Jumpers, earthing & bonding provided to all pipes, joints, receiver tank, and reactors to mitigate static charges. Its use and handling are strictly monitored.

OTHER HAZARDS AND CONTROLS

Fire Control measures:

In earlier points hazards in process and storage of chemicals are identified and their controls are stated. The hazards other than above are classified as other hazards. They are: - Failure of non-chemical equipment's, Hazards arising from neighboring units – Hazard while transportation – structural collapse, natural calamities, (earthquake, fall of lightening, floods) and manmade hazards.

All raw materials are received by road transport, all precautions are taken while unloading, - truck engine is stopped – stoppers are put under wheels.

Cause of Such other hazards, their effect on plant and surrounding area, their preventive steps etc. are stated in ANNEXURE-7

TRADE WASTE DISPOSAL

The details about quantity of generation of waste per day or per batch method of their treatment and neutralizing is stated in ANNEXURE-8

RECORD OF PAST INCIDENTS (Annexure – 9)

So far, no such incident is recorded, during operation is mentioned in Annexure-9.

RISK ASSESSMENT

Identification of hazards constitutes the first step in the task of hazard analysis, which in turn produces a basis for Risk Assessment. Above information give us the hazard identification in the factory. Probability of frequency of such hazards will give risks, and analysis how they could occur and estimation to the extent, magnitude and likelihood of any harmful effects of consequences will give risk analysis. We have calculated fire risk considering the worst catastrophic disaster, which can be used as guideline at the time of an emergency. HAZARD ANALYSIS It is intended to identify deviation forming Normal operating conditions. It is an implicit assumption that the process will operate safely if normal condition prevails and operating conditions are scrupulously followed.

ENVIRONMENTAL IMPACT ASSESSMENT

EIA can be assessed in two ways.

- A. Impact on environment due to our day-to-day process
- B. Impact on environment due to major disaster affection both on & off-site life & property
- C. Environment Impact due to the day-to-day process: No any residue generated in day-to-day operation
- D. Environment Impact due to boiler fire, explosion: In such a case, area as per stated in hazard range table, may come under the impact.
Population i.e. of the surrounding area up to nearby 1 km. (radius) is given for day and time

Chapter-V

SAFETY AND MITIGATING MEASURES

5.1 SAFETY CONSIDERATIONIN THE DESIGN

We have an excellent safety record as Safety is given prime importance in all aspects. Safety considerations in the design of plant and other important mitigating measures provided to contain and control an emergency are outlined below:

General Safety Considerations

1. Adherence to international engineering standards in the design, construction and testing of the storage tanks, equipment and other hardware.
2. Statutory approvals for hazardous petroleum storage, waste treatment and disposal, etc.
3. 100% Emergency power back up from DG set so that plant can be operated safely even during powerfailure.
4. First Aid Fire Protection system.

Equipment and Process Safety

1. All electrical equipment's in hazardous area are flame proof.
2. All Coating and Turning/Grinding equipment Area Available in Emergency Stop Button.
3. All rotating machineries equipped with full proof guards.

Fire Protection & Fire Fighting Facilities

- Portable fireextinguishers
- Fire hydrant system
- Onsite emergency plan is prepared and responsibility is given to trained key / functional personnel

Furthermore, DCP, Mechanical foam and CO2 type portable fire extinguishers are available in requisite nos., all over the plant at the site.

COMMUNICATION SYSTEM

Communication is the lifeline of handling an emergency. When an emergency occurs, it is necessary to raise the alarm immediately, to declare an emergency, to inform the works emergency controllers, to inform the plant emergency services and affected areas within the plant as well as outside if necessary.

Therefore, the following facilities are provided in the plant for an effective two-way communication.

1. Intercoms, and Public Address System for normal and emergency in-plant communication.
2. Emergency alarm (siren) for raising an alarm for emergency and alerting all essential services.
3. Landline phones / mobile phone for emergency contacts with site man controller, fire

brigade, police and for all other contacts including District Authorities, Government Agencies, neighboring Industries etc.

4. When the internal telephones are not working, an emergency plant vehicle with a runner / messenger could also be used for outside communication. Communication to the neighboring public, if necessary, should be through police and their wireless van.
5. Only one pattern of siren sounded for declaring emergency and for declaring 'ALL CLEAR' situation is depicted below. The alarm system should be checked periodically to test the efficiency and its interpretation by all concerned.
6. There are one siren and hooters provided in the complex, which can be operated from the plant during any emergency.

ON HEARING EMERGENCY SIREN

- Non-essential personnel shall follow safe route for evacuation.
- Key personnel shall report to emergency control center / place of incident.

Emergency Communication Plan

This plan assumes that an emergency can strike at any time without warning. Each team member should have a copy or disk (if portable computing equipment is available) of the plan at all times. By the nature of this plan each emergency team member is on call 24 hours a day, 365 days a year. They must be available by phone at all times.

This plan is prepared to assist the facility in communicating proper, necessary and minimum information to the emergency core team.

The Emergency communication plan has been developed in a checklist format. The checklists have been developed to assist in quick identification of the emergency, evaluation of the situation, key players, needed information, and where additional information may be located. The checklists provide minimum information. They may refer the team to additional resources, which may be assigned to various team members of execution.

Emergency Communication Response Plan

Once an emergency is identified a structured response and action is of utmost importance. The kind of response to an emergency will be decided by the Emergency Core Team. For any emergency the responses can be of National Level Response and / or Local (Plant) Level Response

National Level Response:

During an emergency all responses at national level will be managed and handled either by the, Managing Director or VP Manufacturing as decided by the Core Crisis Team

Local Level Response:

During an emergency all responses at local level will be led by the Plant General Manager.

The General Plant Manager would take appropriate help from the emergency core team in

deciding on the future course of action

In case the emergency faced required one-on-one meeting then following will be the locations:

Onsite meeting location: Assembly Area

Offsite Meeting location: As per Situation

CHAPTER – VI

ORGANISATION PLAN

ABOUT EMERGENCY ORGANISATION

Emergency organization is the main aim of preparing this plan. Due weight is given to select and assign suitable responsibilities to the most appropriate persons from the respective departments in the factory. Care has been taken to earmark the emergency duties from their day-to-day responsibilities. **The organization shall prove effective if activities are carried out in a defined way.** To get maximum advantage of emergency organization, we have defined the activities of various workers in the following way.

DECLARATION OF EMERGENCY AND DISTRIBUTION OF DUTIES

In the event Leakage of flammable liquid, incident controller of particular shift or his next person will take charge of the situation and after consulting with the site main controller (SMC), he will be declaring the emergency, Essential workers will be called at the site of event to follow the emergency action as per the guidance of incident controller to deal with the emergency. Considering the scale of emergency, he will contact the fire brigade, Medical-hospital facilities, Ambulance and Factory Inspectors for an immediate help, if necessary, depending upon the situation he will give orders for evacuation of workers from the factory.

ABOUT INCIDENT CONTROLLER

Suitable and well experienced persons of our factory are selected as incident controllers. They are selected from the plant. On occurrence of an emergency, and noticing it, any person working in our factory will shout loudly to inform about the type and locations of accident and he will at once inform the incident controller, Who will assess the situation and try to control by internal resources, if the situation ins out of control, he will sound the alarm to announce the emergency in the factory/ and or for further vicinity. Designation, residence address of incident controllers in given in ANNEXURE – 11, their functions in emergency is mentioned in detail in ANNEXURE – 33.

ABOUT DEPUTY INCIDENT CONTROLLER

Deputy incident controller will carry out internal communication and he will confirm other service department about their actions he will also co-ordinate between incident controller and site main controller. Designation, residence address of deputy incident controllers is given in Annexure-12, their functions in emergency time is mentioned in Annexure-33.

ABOUT SITE MAIN CONTROLLERS

Senior persons of the unit are selected as site main controllers of our factory. The moment, the message is received; SMC's are supposed to reach the factory. Designations, residence address of the site main controllers is given in ANNEXURE-13, their function in emergency time is mentioned in ANNEXURE-33.

ABOUT RUNNERS

All the runners of the unit are selected as site main controllers; incident controller and deputy incident controller are to remain alert all the time. Runners are supposed to take charges if site main controller, incident controller are absent their functions will remain same as incident controllers

ABOUT KEY PERSONNEL

Key personnel of various departments will take directions from site main controller to control emergency in respective fields. We have nominated key personnel for different departments to

handle the situation of emergency.

Annexure – 14 will give names of key personnel, their place of availability, address, etc in case key personnel is not available, his next person is also nominated

ABOUT ESSENTIAL WORKERS

Workers trained for firefighting, and first aid, are identified as essential workers. Minimum 4 such workers in each shift will always be available in the unit. Details of their function are mentioned whereas their names, designation and place of availability are mentioned in ANNEXURE – 15.

ABOUT ASSEMBLY POINT

We have identified one assembly points considering the normal wind direction, distance from the plant and other dangerous locations.

ABOUT EMERGENCY CONTROL CENTRE (ECC)

The Emergency Control Centre (ECC) at HPCL Palanpur terminal is a fully equipped reinforced-concrete emergency management facility located in the Planning Room near B-Gate. It is situated away from hazard zones and includes a backup ECC in the OIC office. The ECC is provided, process/layout maps, updated contact directories, reliable communication systems (VHF, PA, landline, intercom, mobile), emergency power backup, event-recording tools, and computer systems with access to SOPs. During emergencies, the ECC functions as the central command hub for the CIC/SIC to coordinate firefighting, rescue, medical response, logistics, security, communication with external agencies, and issue evacuation and control instructions. The details regarding ECC are given in ANNEXURE – 17.

FIRE AND TOXICITY CONTROL ARRANGEMENT

HPCL Palanpur terminal has comprehensive Fire and Toxicity Control Arrangements, portable extinguishers (DCP & CO₂), hydrant systems, fixed/foam monitors, and an independent fire water system with storage and automatic diesel-driven fire pumps. emergency ventilation, and water-spray systems. The plant's ESD system, deluge arrangements, and strategic placement of manual call points ensure immediate isolation during hazardous events. Siren codes, monthly drills, and mutual aid support further strengthen emergency preparedness.

ARRANGEMENTS

We have kept a first aid box in the ECC, all required items for first aid, dressing materials are kept in the box, such items are very useful in minor injuries minor burns etc. For emergency Incident Controllers will have to arrange ambulance from main gate or any such information is given in ANNEXURE – 19.

ABOUT TRANSPORT AND EVACUATION ARRANGEMENTS

After declaring emergency, depending on the situations: (1) non-essential workers of the factory and from the adjacent areas will have to be evacuated to pre-determined safe areas. (2) Help of police, government organization, fire brigade will be taken for evacuation outside people. (3) Persons required to be shifted to medical care, will be taken to hospitals by ambulance of available vehicles of the factory & mutual aid units. (4) Site main controller along with respective key personnel will arrange for such activities including rescue and transportation of injured persons, casualties etc. Details are furnished in ANNEXURE – 20

POLLUTION CONTROL ARRANGEMENT

HPCL Palanpur terminal maintains a robust Pollution Control Arrangement ensuring zero discharge

of pollutants to the external environment. Preventive maintenance, regular audits, and mutual aid support ensure that accidental releases are controlled promptly, preventing any adverse impact on air, soil, water, or surrounding communities. Such details are given in ANNEXURE – 21.

OTHER ARRANGEMENTS

Arrangement which can be utilities during an emergency, such as transporters alternate power, utility, special equipment's. All such available in formations are given in ANNEXURE – 22.

ARRANGEMENT FOR ACCOUNTING OF PERSONNEL

A list of all the employees with their residential address, department, is maintained. Record of the employees present on a particular day or shift can be made available. Record of arrival and departure of all visitors is maintained by the security persons. In the immediate affected areas, the incident controllers / Site Main Controllers will have to search to locate any injured persons or casualties.

ARRANGMENT FOR REHABILITATION

After all clear signal has been given, care will be taken to re-enter into the affected area, and startup of the plant activities will not be done until a thorough examination by concerned authorities. Only authorized persons will be allowed to enter the place with personal protective equipment's.

ABOUT COMMUNICATION SYSTEM

HPCL Palanpur terminal is equipped with a comprehensive and multi-tiered communication system that includes landline phones, VHF communication, page phones, intercoms, intrinsically safe phones, and a plant-wide PA system. The Emergency Control Centre (ECC) houses dedicated computer systems with LAN/internet and updated SOPs, supported by both primary and backup communication channels. During emergencies, communication flows effectively from field responders to the Control Room, SIC/CIC, mutual aid members, police, fire brigade, medical authorities, and district administration. The Planning Officer, functioning as Communication Coordinator, ensures uninterrupted communication, activates backup communication when required, and coordinates external liaison. Emergency contact numbers are prominently displayed across strategic plant locations.

EXTERNAL PHONES

All-important external phone numbers are listed in ANNEXURE-26. It is essential to have a complete list of external telephone numbers to communicate in time of emergency.

DECLARING THE MAJOR EMERGENCY

Once an incident has been noticed by a person of the unit, shift in charges, supervisors, chemist will be informed at once about the type of incident and its location. Shift in charges, supervisor, chemist will act as incident controller. Following actions will be done immediately

- a) Manager and plant in charge will be informed immediately,
- b) Fire and safety key personnel will be informed at the earliest possible.
- c) It is very important to decide whether the incident is a major one or not making the judgment we shall have to declare accordingly.
- d) Persons are nominated who are authorized to declare the major emergency, their name, designation and other details are given in ANNEXURE – 27.

TELEPHONE MESSAGE

After knowing the emergency and emergency declaration or on receiving the emergency message on telephone. Our man on telephone has to play an important and crucial role. He requires to remain precise, sharp, attentive, quick in receiving and noting the important messages and then for immediate and subsequent action of further communication. A form is attached as ANNEXURE-28 to record emergency time telephone calls and messages.

ABOUT COMMUNICATION OF EMERGENCY

The state of emergency will have to be communicated to the following group of peoples.

- (1) Inside the factory to the workers including the key personnel and essential workers.
- (2) To the outside emergency services including govt. authorities.
- (3) To the neighboring firms and the general public in the vicinity.

INSIDE THE FACTORY TO THE WORKERS

- Following information will be given to workers including key personnel and essential workers:
- Details of hazard involved in the factory
- Information about various physical and health hazards in plant operations.
- Various safety methods and measures to ensure safety and control over physical and health hazards in plant operations
- Role of workers in emergency. Details about such information are stated in ANNEXURE – 31.
- Material safety data Sheets (MSDS) of every important chemical used as raw material and intermediates.
- How to make proper use of personal protective equipment's, respiratory protective equipment's, firefighting equipment's antidotes etc.

OUTSIDE EMERGENCY SERVICES AND AUTHORITIES

Once the emergency is declared, we have to inform the following services at the earliest possible:

- Trained persons of Mutual Aid Units.
- Doctors
- Fire Brigade
- Ambulance
- Factory Inspectors
- District Magistrate

(CENTRAL CONTROL ROOM) message of an emergency will be first conveyed to CCR and CCR will in turn inform all emergency services to rush to the place of emergency. A separate list of all emergency services and authorities with their telephone numbers is listed in the plan at the ECC.

CHAPTER – VII

ON-SITE AND OFF-SITE ACTION PLAN

ABOUT ON-SITE EMERGENCY PLAN

Following three stage activities are planned to perform, as these activities are co-related, provides better ideas for emergency preparedness, emergency actions and with subsequent follow ups. a) Pre-emergency activities b) Emergency time activities & c) Post emergency activities.

PRE- EMERGENCY ACTIVITIES

In pre-emergency activities, following important aspects are considered:

A. INTERNAL SAFETY SURVEY: -

ONCE A WEEK – Check all valves, Machines Gauge, Check earthing connections of all electrical equipment's, pumps motors etc.

DAILY BEFORE USE - All Hazardous machineries.

ONCE A MONTH – All pumps, pipes & Firefighting equipment's for adequate pressure, Personal protective Equipment's, Self-Contained Breathing Apparatus

ONCE IN SIX MONTHS – All tanks, DRY mixing, Batching, All Machines, Air Receiver Vessels. Moreover, regular checking of adequate stock of personal protective equipment's and fire extinguishers, Identification of various hazards is made and measures are taken to avoid them, assure that various firefighting and personal protective equipment's are kept in sufficient quantity.

B. PRESSURE VESSEL TESTING: - Regular testing of the pressure vessels, air receivers, boilers, is done within the required standards.

C. MOCK DRILL AND TRAINING: - Essential workers / other workers are trained for the use of firefighting equipment's and handling of process and hazardous chemicals and regularly they are provided know-how of safety measures and controls.

D. PRESSURE DRILL AND TRAINING: - Testing of all pressure vessels, reaction vessels, safety valves, SRV's will be done as per preventive maintenance schedule.

E. MUTUAL AID SCHEME: - An agreement is made with following emergency agencies, for providing technical help, to combat with an emergency if it is uncontrollable by us, safety equipment's, personal protective equipment's, firefighting equipment's, vehicles for evacuation and transportation etc.

F. TRAINING TO WORKERS: -Workers are given regular training for extinguishing fire, use of Safety Equipment's, maintaining good housekeeping. Moreover, workers are provided following personal protective equipment's. SAFETY GOOGLES, GUM BOOTS, SPECTACLES, APRON, SAFETY SHOES, - Sufficient

EMERGENCY TIME ACTIVITIES

During emergency time, the staff in the plant is expected to work in a co-ordinate manner to meet with the emergency situation and to bring the plant under normal condition with the help of the plan under normal condition, with the help of the resources available within and outside the plant.

ABOUT POST EMERGENCY ACTIVITIES

A) Collection of records B) making insurance claims c) conduction the inquiries and taking preventive measures D) rehabilitation of the affected persons within & outside the plant E) restart of the plant.

In case of an emergency due to fire, an assessment is made; area likely to be affected by uncontrollable fire engulfing entire stock of flammable material, At the moment, there is no factories of residential population within the assessed range. Workers of our factory would be evacuated.

In case of leakage of flammable material same will be controlled by clamping or sealing the leakage point. In case of the sudden rupture, the bund wall opening will be covered up with dry sand, and water will be sprayed. However, in case of inability to do so, siren will be sounded and runners will be sent to inform and evacuate the areas likely to be affected.

ABOUT EVACUATION AND TRANSPORTATION

At the time of emergency, non-essential workers will usually be evacuated from the incident area. First the peoples will assemble at pre-determined assembly point and then they will be moved to safer area by any vehicle.

ABOUT SAFE CLOSE DOWN

Depending upon the situation, temporary close down of plant can be done under the guidance of site main controller, in such a case first of all

- Stop charging of raw material by shutting off the valve.
- Shut off all the machineries.
- Stop, heating system.
- Start/ continue cooling and scrubbing if required.

ABOUT USE OF EXTERNAL AUTHORITY

Outside authorities like police, collectors, district emergency authority factory inspector, medical and health officer, pollution control board etc. will be contacted for tiding over the emergency. Some important telephone numbers of external authorities, mutual aid units, doctors, hospital, fire brigade, ambulance are listed on board and kept at important place of the unit. Such telephone numbers are listed in ANNEXURE-26.

ABOUT OFF-SITE EMERGENCY PLAN

Incident Controllers (I.C.), Dy. I.C., Site Main Controllers (SMC) are appointed. Arrangements are made for communication. Safe Assembly Points and Emergency Control Centre is identified. Pre-emergency, emergency time and post emergency activities are determined. A list of important telephone numbers is prepared. Arrangement is made to get provide emergency help from mutual aid units. Special knowledge, advise, experts will be available, Liaison will be made with offsite emergency authorities.

STRUCTURE OF OFF-SITE EMERGENCY

A – FIRE: A fire may be caused by even solvent While unloading solvent drums can ignite due to static charge generation and due to mechanical impact. Though, it will be a small fire. It must be noticed fast. In case of fire, the worker who finds it first, will shout

FIRE - FIRE" ("AAG LAGI – AAG LAGI")

- He will immediately run to the supervisor and inform about the incident. Supervisor along with essential workers, will run to the spot
- He will drive away all non-essential workers from the incident spot and will start extinguishing fire with water as water is the best media to fight fire. Also, with fire extinguisher wearing personal protective equipment's. (Before applying water cut-off electric supply to nearby electrical equipment's.
- Other essential workers will segregate other combustible or flammable material from fire prone area.
- If fire looks uncontrollable from internal resources, supervisor will immediately inform fire brigade by telephone, manage will be immediately be called. Supervisor will assess the scale of incident and if founds uncontrollable, will put the off-site emergency plan into action.

B - TOXIC RELEASE: In case of leakage of Toxic substance if any,

- Any worker who finds it or smell it, will run to the supervisor and inform him about the incident.
- Supervisor, along with essential workers will run to the spot and after putting respiratory equipment's, personal protective equipment's on, experienced essential workers will check the direction of wind and will judge the route to approach.
- Evacuate all persons in cross wind direction and gather at a safe place
- Communication to Central Control Room and inform Site main Controllers
- Close Isolation Valve to limit the inventory at the leak point.
- Communicate with neighboring industries to inform about the incident to keep them alert to evacuate in cross wind direction.
- If CCR is unable to communicate, approach nearby units to inform them to move to Cross wind direction
- Try to contain spillage/spread of substance in a limited area by bund wall, Recover the substance if it is safe to do otherwise, neutralize by suitable media.
- In case of storage tank outlet line failure. If it is impossible to close the internal valve, try to freeze the outlet pipe ahead of the leakage point by suitable method.
- Water should never be used for any purpose. Moreover, remove sources of water from this area.

In case of absence of any members of the squad, the next senior most person will be holding the charge. The duties of different members in case of major emergency will be as under:

SECURITY: (1) to maintain law & order. (2) Not to allow any outsider in the factory except fire brigade and men from mutual aid units. (3) To sound siren as per instructions of manager or supervisor.

RUNNERS: (1) to run and inform about the incident to mutual aid units as per instruction of supervisor. (2) To run to neighboring units / areas, to inform & to evacuate as per the supervisors' instructions.

ESSENTIAL

WORKERS: **(A) F I R E:** (1) To rush to the spot of fire (2) Start extinguishing fire extinguisher. (3) To segregate flammable or combustible materials from nearby. (4) To search for trapped workers after putting fire suit on and rescue them. (5) To guide and assist fire brigade personnel. (6) To give first aid to affected/ injured personnel.

(B) RELEASE OF TOXIC CHEMICAL: (1) In case of any toxic gas is leaking, run to the spot along with supervisor & fitter, drive away all workers and after putting respiratory equipment's on, try to stop leakage as per mentioned in earlier points (2) If leakage is un controllable, try to neutralize the contents with lime, or any other suitable media do it standing in cross wind direction

FITTER: (1) to help in dismantling or blanking any part as per instruction of supervisor. (2) To help essential workers.

AREA LEADER (INCIDENT CONTROLLER)

(A) FIRE: (1) to run to the spot of Fire along with essential workers on hearing shouts or on information. (2) To drive away workers and to ask them to gather at assembly point. (3) To make plan shut down. (4) To get fire extinguished by essential workers. (5) To isolate flammable and combustible material from fire area. (6) To communicate without side emergency services, fire brigade, police also to inform Manager of the plant if he is at his residence. (7) Give instruction to watchman to maintain law & order & not to allow any outsider to enter except fire brigade, also ask him to blow emergency siren. (8) Arrange for search and rescue of any trapped worker (9) Telephone Mutual aid factories for help if required.

(B) TOXIC GAS RELEASE: (1) In case of any toxic gas is leaking, run to the spot with experienced fitter and essential workers, equip them with SCBA set and respiratory equipment's, drive away all other workers and get leakage stopped by fitter or essential workers. He will see that they put on respiratory equipment's before doing their job (2) If leakage is uncontrollable. Get the contents diverted into another empty tank (3) Telephone CCR, Fire brigade, police (4) Ask all workers to gather at assembly point, if it is safe, otherwise ask them to move in perpendicular to wind direction. (5) Detect the wind direction/wind velocity and access the area likely to be affected, send runners to inform the people about emergency and evacuation in proper direction with dry clothes on mount. (6) Send runners to mutual aid units to inform them and ask for the required aid, assistance. (7) Ask watchmen to maintain law and order and not to allow to blow emergency siren. (8) Ask for search and rescue of trapped workers.

TERRITORY MANAGER (SITE MAIN CONTROLLER /SMC.):

(1) Rush to the factory on receiving the message about the incident. (2) Call other persons if required. (3) Inform Hospitals, Doctors, Police, Dirs. Authorities, Factory inspectorate. (4) Arrange for roll call of workers & find missing. (5) Arrange for first aid of injured and hospitalization. (6) Arrange food / water for persons controlling the emergency. (7) Arrange to inform relatives of casualties. (8) Arrange money. (9) Assess the situation and determine the area likely to be affected. (10) Ensure that runners are sent to inform and evacuate the area likely to be affected.

OCCUPIER: (1) Prepare a statement for press & public release and take responsibilities of press and public relationship. (2) He will plan out rehabilitation / post emergency activities.

ROLL OF MANAGEMENT

A copy of this emergency action plan to be submitted in duplicate to Factory Inspectorate office & District Authority.

ROLE OF POLICE AND EVACUATION AUTHORITY

Police may be required for maintaining law and order, outside the factory and on the road.

ROLE OF MUTUAL AID UNITS

Agreement with factories engaged in similar type of product. Is made for providing help, aid, assistance, vehicle, technical help, and expert to overcome the situation.

THE EMERGENCY TELEPHONE NUMBERS:

The emergency telephone nos. are appended herewith in annexure Members of the **Emergency Resource Team** are as per annexures: These members may be called by the **Emergency Core Team** to assist and add their expertise to the core team.

INTRODUCTION

Definition of first aid

First aid is the provision of immediate care to a victim with an injury of illness, usually effected by a lay person, and performed within a limited skill range. First aid is normally performed until the injury or illness is satisfactorily dealt with (such as in the case of small cuts, minor bruises, and blisters) or until the next level of care, such as an ambulance or doctor, arrives.

Guiding principles

The key guiding principles and purpose of first aid, is often given in the mnemonic "3 Ps". These three points govern all the actions undertaken by a first aider.

- **P**revent further injury
- **P**reserve life
- **P**romote recovery

Limitations

The nature of first aid means that most people will only have a limited knowledge, and in emergency situations, first aiders are advised to **FIRST** seek professional help. This is done by calling, or assigning an able bystander to call, an emergency number, which is 1-1-2 in Croatia and all other member states of the European Union.

In emergency situations, it is important that the responder seek help immediately, seeking professional help by other means, if telephone contact is unavailable. The risks of inadvertently doing further injury to a victim, and/or the responder sustaining injury themselves while applying aid, can often outweigh the benefits of applying immediate treatment

Improvisation

Many first aid situations take place without a first aid kit readily to hand and it may be the case that a first aider has to improvise materials and equipment. As a general rule, some help is better than no help, especially in critical situations, so a key first aid skill is the ability to adapt to the situation, and use available materials until more help arrives.

Some common improvisations include:

- Gloves → plastic bags, dish gloves
- Gauze → clean clothing (but not paper products)

- Splints → straight sections of wood, plastic, cardboard or metal
- Slings → the victim's shirt's bottom hem pinned to the center of their chest will immobilize forearm nicely

FIRST AID IN THE INJURED

What is trauma?

The word "trauma" is used to describe an injury to living tissue caused by an extrinsic agent. An injury is defined as damage or harm caused to the structure or function of the body by an outside agent or force, which may be physical, chemical, or even psychological.

Incidence of injuries

In developed countries, every year a serious trauma experiences about 3% of the total population. Trauma affects significantly more males (more than 60%). Of the total number of injured 4% of them being permanently disabled and 1.5% die. It is important to note that death and disability due to trauma affecting mostly young adult segment of the population, people ages 1-45.

The injuries are a major source of health care costs. An annual price of providing for injured gets to an amount which is almost a double price of providing for cardiovascular and malignant diseases together.

What cause injuries and how they are divided by cause?

Anything that can damage the body can cause an injury: blunt or sharp objects, impact at high speed, falls, animal or insect bites, fire or extreme heat, and exposure to chemicals and toxins. According to the cause the injury can be divided into:

- ***mechanical injury*** - injury to any portion of the body from a blow, crush, cut, or penetrating force (bullet)
- ***thermal injury*** - injury caused by exposure to excess heat and excess cold sufficient to cause damage to the skin, and possibly deeper tissue
- ***electrical injury*** - injuries caused by exposure to natural lightning or electricity in the home or workplace, and
- **Injury produced by ionizing radiation**

What are the symptoms and signs of injuries?

Injury symptoms and signs vary depending on the parts of the body involved and the type and severity of the injury itself.

Table 1: The parts of the body, symptoms and signs of injury

Head	Neck	Shoulders and chest	Abdomen and pelvis	Arms and legs	Back and Spine
Bleeding Fractures Bruising Swelling Tenderness or pain Cerebral spinal fluid (CSF) from ears.	Bleeding Fractures Bruising Swelling Deformity Tenderness or pain Numbness or tingling	Bruising Swelling Gently Tenderness or pain when gently 'spring' the ribs Unequal rise of the chest with each breath	Rigidity Tenderness or pain Swelling	Bleeding Fractures Soft tissue injuries Tenderness or pain Loss of strength	Bleeding Deformity Tenderness or pain Paralysis or inability to move a body part

In some cases, injury can be life threatening. Life-threatening symptoms related to injuries are:

- Bleeding or abdominal trauma while pregnant
- Bluish coloration of the lips or fingernails
- Change in level of consciousness or alertness
- Chest pain, chest tightness, chest pressure, palpitations
- Paralysis or inability to move a body part
- Respiratory or breathing problems, such as shortness of breath, difficulty breathing, labored breathing, wheezing, not breathing, choking
- Severe pain
- Trauma, such as burns, significant injuries to the head, neck or back
- Uncontrolled or heavy bleeding, hemorrhage
- Vomiting blood, major rectal bleeding, or bloody stool
- Weak or absent pulse

How is injury treated?

Treatment of injury depends upon its type and severity. Some injuries can be treated with basic first aid techniques such as wound cleansing, wound dressings, rest, application of ice, compression, and elevation. More severe injuries may require cardiopulmonary resuscitation (CPR) and other resuscitation procedures or surgery.

First aid in the injured

First aid in the injured is generally consists of a series of simple and in some cases, potentially life-saving procedures that an individual can be trained to perform with minimal equipment.

It is usually performed by non-experts (or sometimes by an expert in case of an emergency), but trained personnel to a injured person until definitive medical treatment can be accessed. In fact, certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention, but in other cases, first aid is only the first step in the treatment of injured persons.

The key aims of first aid in the injured can be summarized in three key points:

1. **Preserve life:** the overriding aim of all medical care, including first aid, is to save lives and minimize the threat of death.
2. **Prevent further harm:** also, sometimes called prevent the condition from worsening, or danger of further injury. This covers both external factors, such as moving a patient away from any cause of harm, and applying first aid techniques to prevent worsening of the condition, such as applying pressure to stop a bleeding which becomes serious.
3. **Promote recovery:** first aid also involves trying to start the recovery process from the injury, and in some cases might involve completing a treatment, such as in the case of applying a plaster to a small wound.

Key skills of first aid

Certain skills are considered essential to the provision of first aid to injured persons and apply before all others if indicated. Particularly the "**ABC**"s of first aid, which focus on critical life- saving intervention, must be rendered before treatment of less serious injuries. ABC stands for *Airway, Breathing, and Circulation*.

Obstruction (choking) is a life-threatening emergency. For these reasons, when we get to the injured, care must first be brought to his or her **airway (A)** to ensure it is clear.

Following evaluation of the airway, a first aid attendant would determine adequacy of **breathing (B)** and provide rescue breathing if necessary

Assessment of **circulation (C)** is now not usually carried out for patients who are not breathing. First aiders must conclude indirectly that unconscious patients, without breathing have no circulation and go straight to chest compressions. Pulse checks may be done on less serious patients.

Once the ABCs are secured, first aiders can begin additional treatments, as required.

First aid for wounds

A wound is any type of injury to the skin. In general, wounds can be classified as closed (where the skin stays intact) or open.



Figure 1. Open and closed wound

In open wounds, the skin is cracked open, leaving the underlying tissue exposed to the outside environment, which makes it more vulnerable to bleeding and infections.

In closed wounds, the skin is intact and the underlying tissue is not directly exposed to the outside world. Even with the skin intact, the damage can reach down to the underlying muscle, internal organs and bones. That is why these kinds of wounds can be complicated by severe bleeding, large bruises, nerve damage, bone fractures and internal organ damage.

Open wounds can be classified according to the object that caused the wound. The types of open wounds are:

- **Incisions or incised wounds**, caused by a clean, sharp-edged object such as a knife, razor, or glass splinter
- **Lacerations**, irregular tear-like wounds caused by some blunt trauma
- **Abrasions**, superficial wounds in which the topmost layer of the skin (the epidermis) is scraped off. Abrasions are often caused by a sliding fall onto a rough surface
- **Avulsions**, injuries in which a body structure is forcibly detached from its normal point of insertion.
- **Puncture wounds**, caused by an object puncturing the skin, such as a splinter, nail or needle.
- **Penetrating wounds**, caused by an object such as a knife entering and coming out from the skin.
- **Gunshot wounds**, caused by a bullet or similar projectile driving into or through the body. There may be two wounds, one at the site of entry and one at the site of exit, generally referred to as a "through-and-through."





Figure 2. The types of open wounds : A. incision, B. laceration, C. abrasion, D. avulsion, E. puncture wound, F. penetrating wound, G. gunshot wound

The types of **closed wounds** are:

- **Contusions**, more commonly known as bruises, caused by a blunt force trauma that damages tissue under the skin.
- **Hematomas**, also called a blood tumor, caused by damage to a blood vessel that in turn causes blood to collect under the skin.
- **Crush injury** is an injury that occurs because of pressure from a heavy object onto a body part or from squeezing of a body part between two objects. Depending upon their severity, crush injuries can be complicated by bleeding, bruising, broken bones, open wounds or so-called compartment syndrome. Compartment syndrome usually results from extreme swelling after an injury. The dangerously high pressure in the field of injury impedes the flow of blood to the affected tissues. Severe tissue damage can result, with loss of body function or even death.



Figure 3. The types of closed wounds: A. contusion, B. Hematoma, C. crush injury

The following measures need to be taken in giving first aid to a victim of a open wound:

1. Stop the bleeding

- Minor cuts and scrapes usually stop bleeding on their own.
- If they don't, apply gentle pressure with a clean cloth or bandage. Hold the pressure continuously for 20 to 30 minutes and if possible, elevate the wound (Figure 4.)



Figure 4.

2. **Clean the wound** (Figure 5)

- Rinse out the wound with clear water. Soap can irritate the wound, so try to keep it out of the actual wound.
- If dirt or debris remains in the wound after washing, use tweezers cleaned with alcohol to remove the particles.
- To clean the area around the wound, use soap and a washcloth.
- There's no need to use hydrogen peroxide, iodine or an iodine-containing cleanser.



Figure 5.

3. **Cover the wound** (Figure 6.)

- If the bleeding slows, cover the wound with a clean dressing and bandage.
- Dressings and bandages can help keep the wound clean and keep harmful bacteria out.

A dressing is a sterile pad or compress (usually made of gauze or cotton wrapped in gauze) used to cover wounds, to control bleeding and/or prevent further contamination. A dressing should be large enough to totally cover the wound, with a safety margin of about 2.5 cm on all sides beyond the wound.

A bandage is used to secure a dressing in place and to apply pressure to bleeding wounds.



Figure 6.

The following measures need to be taken in giving first aid to a victim of a closed wound :

1. **Application of direct pressure**, preferably with ice wrapped in a cloth, for several minutes, in order to arrest the bleeding as well as to reduce the swelling.
2. **Elevation of the affected region** will also support in reducing the pressure as well as the re-absorption process and it should be practiced as and when appropriate.



Figure 7. Place ice pack on wound to slow down bleeding and reduce the swelling

When to seek help from health professional:

- If the wound is in the head, chest or abdomen (unless it is minor).
- If there is blue, white or cold skin, numbness, tingling, loss of feeling, or the person is unable to move a limb below the wound.
- If your tetanus shots are not up to date, especially if the object that caused the puncture was dirty, such as a rusty nail or farm implement.
- If a deep wound to the foot occurred through a shoe.
- If an animal bite is severe and may need stitches, or if it is on the hand or face.
- If you are unable to remove an object from the wound.
- If signs of infection develop – increased pain, swelling, redness, tenderness – heat or red streaks extending from the wound – discharge of pus – fever of 38 °C with no other cause.

First aid for bleeding

Bleeding is the loss of blood escaping from the circulatory system. It arises due to either traumatic injury, underlying medical condition, or a combination and can occur *internally*, where blood leaks from blood vessels inside the body, or *externally*, either through a natural opening such as the mouth, nose, ear, urethra, vagina or anus, or through a break in the skin.

External bleeding is generally described in terms of the origin of the blood flow by vessel type. The basic categories of external bleeding are:

- **Arterial bleeding:** As the name suggests, blood flow originating in an artery. With this type of bleeding, the blood is typically bright red to yellowish in colour, due to the high degree of oxygenation. Blood typically exits the wound in spurts, rather than in a steady flow. The amount of blood loss can be copious, and can occur very rapidly.
- **Venous bleeding:** This blood is flowing from a damaged vein. As a result, it will be blackish in colour (due to the lack of oxygen being transported) and will flow in a steady manner. Caution is still indicated; while the blood loss may not be arterial, it can still be quite substantial, and can occur with surprising speed without intervention.
- **Capillary bleeding:** Capillary bleeding usually occurs in superficial wounds, such as abrasions. The colour of the blood may vary somewhat (distal portion of circulation with oxygenated and unoxygenated blood mixing), and will generally ooze in small amounts, as opposed to flowing or spurting.

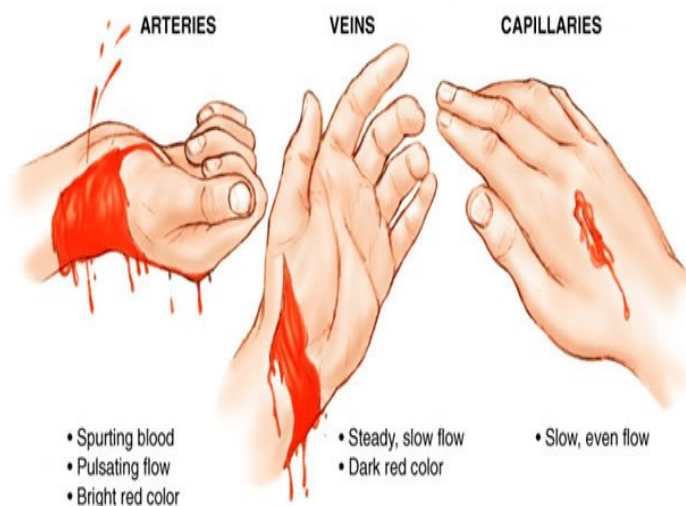


Figure 8. Division of external bleeding in terms of the origin of the blood flow by vessel type.

Internal Bleeding is one of the most serious consequences of trauma. It may occur after any significant physical injury. There are two main types of traumata, and either may cause internal bleeding:

- **Blunt trauma** - This kind of trauma happens when a body part collides with something else, usually at high speed. Blood vessels inside the body are torn or crushed either by shear forces or a blunt object. Examples are car accidents, physical assaults, and most falls.
- **Penetrating trauma** - This happens when a foreign object penetrates the body, tearing a hole in one or more blood vessels. Examples are gunshot wounds, stabbings, or falling onto a sharp object.

Almost any organ or blood vessel can be damaged by trauma and cause internal bleeding.

The most serious sources of internal bleeding due to trauma are:

- Head trauma with internal bleeding (intracranial hemorrhage)
 - Bleeding around the lungs (hem thorax)
 - Bleeding around the heart (hem pericardium and cardiac tamponade)
 - Tears in the large blood vessels near the center of the body (aorta, superior and inferior vena cava, and their major branches)
 - Damage caused by trauma to the abdomen such as liver or spleen lacerations or perforation of other soft organs
- Symptoms of bleeding are: Blood coming from an open wound
- Bruising
 - Shock, which may cause any of the following symptoms:
 - Confusion or decreasing alertness
 - Clammy skin
 - Dizziness or light-headedness after an injury
 - Low blood pressure
 - Paleness (pallor)
 - Rapid pulse, increased heart rate
 - Shortness of breath
 - Weakness

If the injured has internal bleeding, the aforementioned symptoms are joined by the following symptoms:

- Abdominal pain and swelling
- Chest pain
- External bleeding through a natural opening
 - Blood in the stool (appears black, maroon, or bright red)
 - Blood in the urine (appears red, pink, or tea-colored)
 - Blood in the vomit (looks bright red, or brown like coffee-grounds)
 - Vaginal bleeding (heavier than usual or after menopause)

Any of these signs of internal bleeding after a trauma should be treated as a medical emergency. The injured person needs to be evaluated in a hospital emergency room.

The following measures need to be taken in giving first aid to a victim of an external bleeding:

- 1. Wash your hands** to avoid infection **and put on gloves**
- 2. Lay on the injured person down and cover the person to prevent loss of body heat.**

- If possible, position the person's head slightly lower than the trunk or elevate the legs and elevate the site of bleeding (Figure 9.)
- 3. While wearing gloves, remove any obvious dirt or debris from the wound.**
- Don't remove any large or more deeply embedded objects.
 - Your principal concern is to stop the bleeding.



Figure 9.

4. Apply pressure directly on the wound until the bleeding stops (Figure 10.)

- Use a sterile bandage or clean cloth and hold continuous pressure for at least 20 minutes without looking to see if the bleeding has stopped.
- Maintain pressure by binding the wound tightly with a bandage or clean cloth and adhesive tape.
- Use your hands if nothing else is available.



Figure 10.

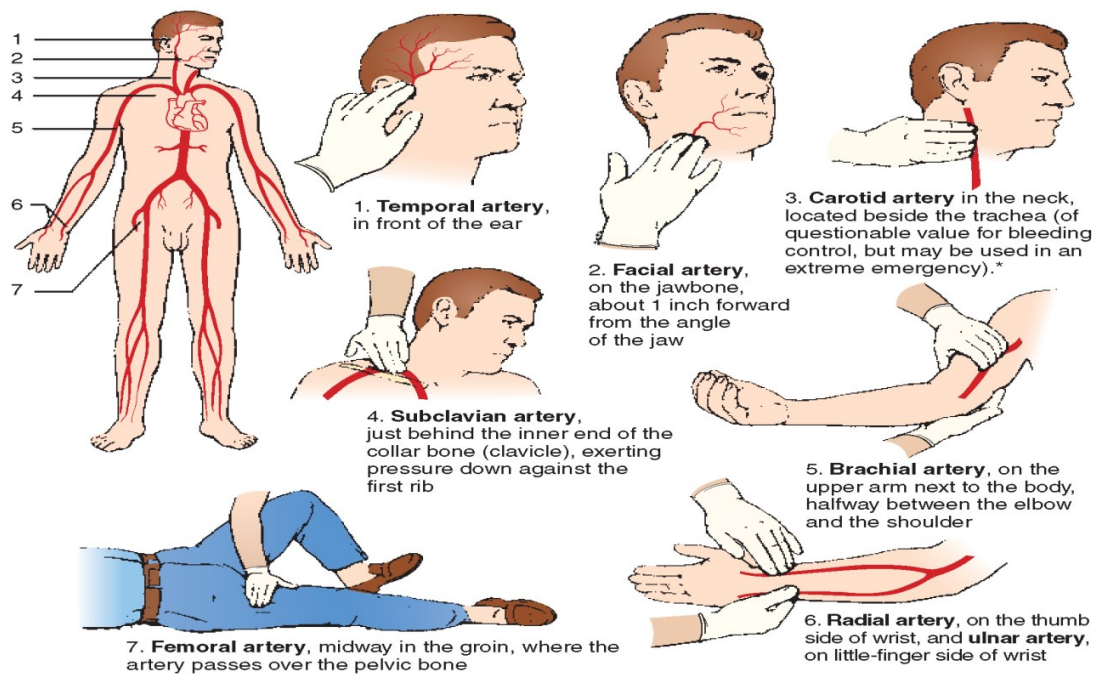
- If the bleeding continues and seeps through the gauze or other material you are holding on the wound, don't remove it. Instead, add more absorbent material on top of it (Figure 11.)



Figure 11.

5. Squeeze a main artery if necessary (Figure 12.)

- If the bleeding doesn't stop with direct pressure, apply pressure to the artery delivering blood to the area.
- Squeeze the main artery in these areas against the bone. Keep your fingers flat.
- With your other hand, continue to exert pressure on the wound itself.



*Note: Do *not* apply pressure to both sides of the neck at the same time. This would cut off the blood supply to the brain.

Figure 12.

6. **Immobilize the injured body part once the bleeding has stopped** (Figure 13.)

- Leave the bandages in place and get the injured person to the emergency room as soon as possible.



Figure 13.

7. If continuous pressure hasn't stopped the bleeding and bleeding is extremely severe, a

Tourniquet may be used until medical help arrives or bleeding is controllable (Figure 14)

- It should be applied to the limb between the bleeding site and the heart and tightened so bleeding can be controlled by applying direct pressure over the wound.
- To make a tourniquet, use bandages 5 -10 cm (2 to 4 inches) wide and wrap them around the limb several times. Tie a knot, leaving loose ends long enough

to tie another knot. A stick should be placed between the two knots. Twist the stick until the bandage is tight enough to stop the bleeding and then secure it in place.

- Check the tourniquet every 10 to 15 minutes. If the bleeding becomes controllable, (manageable by applying direct pressure), release the tourniquet.

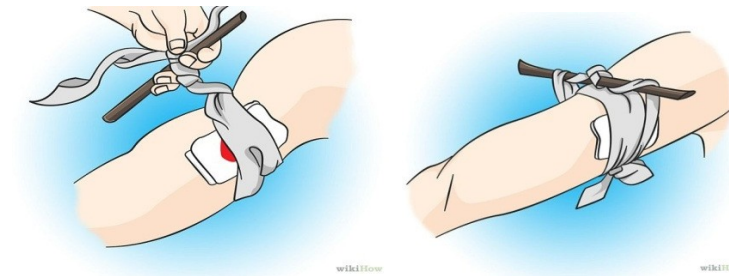


Figure 14.

NOTE :

- DO NOT apply a tourniquet to control bleeding, except as a last resort. Doing so may cause more harm than good.
- A tourniquet should be used only in a life-threatening situation and should be applied by an experienced person

The following measures need to be taken in giving first aid to a victim of an internal bleeding:

1. Call 108
2. If the victim has ABC complications, treat those first – CPR always has priority.
3. Administer CPR if necessary
4. Treat for shock
5. Assist the victim into the most comfortable position
6. Check the victim's vital signs regularly (until the ambulance arrives)

First aid for bone and joint injuries

Injuries of bones and joints can be bone fractures or dislocations and sprains of joints.

A **fracture** is the medical term for a broken bone. There are many types of fractures, but the main categories are open, and closed.

A **closed fracture** is when the bone breaks but there is no puncture or open wound in the

skin.

An **open fracture** is one in which the bone breaks through the skin. This is an important difference from a closed fracture because with an open fracture there is a risk of a deep bone infection.

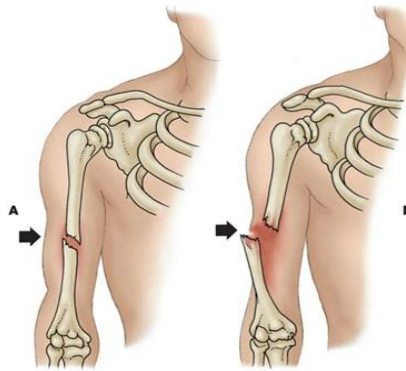


Figure 15. Closed and open fracture

The severity of a fracture depends upon its location and the damage done to the bone and tissue near it. Serious fractures can lead to serious complications if not treated promptly. Possible complications include damage to blood vessels or nerves and infection of the bone (osteomyelitis) or surrounding tissue.

Fractures can be identified by symptoms that can be represented by the acronym DOTS: **D** for deformity, **O** for open wounds, **T** for tenderness and **S** for swelling

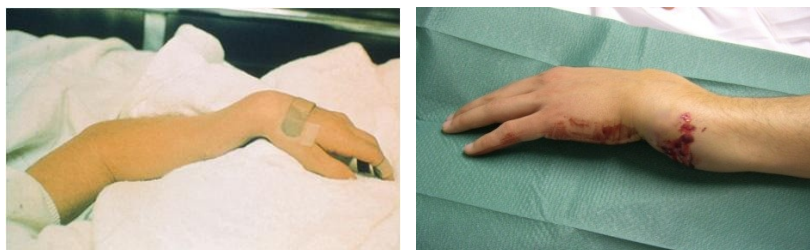


Figure 16. Symptoms of a broken arm

The following measures need to be taken in giving first aid to a victim with bone injury:

1. **Don't move the person except if necessary** to avoid further injury. Take these actions immediately while waiting for medical help:
 - Stop any bleeding
 - Apply pressure to the wound with a sterile bandage, a clean cloth or a clean piece of clothing.
2. Immobilize the injured area

- Don't try to realign the bone or push a bone that's sticking out back in.
- If you've been trained in how to splint and professional help isn't readily available, apply a splint to the area above and below the fracture sites.

Splinting reduces pain, prevents further damage to muscles, nerves and blood vessels, prevents closed fracture from becoming open fracture and reduces bleeding and swelling.

In an emergency, almost any firm object or material can serve as a splint such as sticks, boards, or even rolled up newspapers. If none can be found, use a rolled blanket or clothing. An injured body part can also be taped to an uninjured body part in order to prevent it from moving. For example, you can tape an injured finger to the finger next to it, or fractured leg to uninjured leg to keep it immobile (self-splint or anatomic splint).

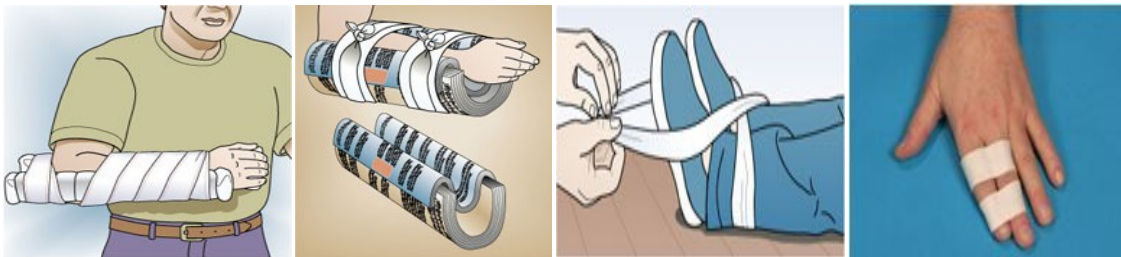


Figure 17. Improve materials and techniques for splinting

Splint must be well padded on the sides touching the body; if they are not properly padded, they will not fit well and will not adequately immobilize the injured part. Before applying splint open wounds must be covered. We have to immobilize in position found.

A basic rule of splinting is that the joint above and below the broken bone should be immobilized to protect the fracture site. For example, if the lower leg is broken, the splint should immobilize both the ankle and the knee.

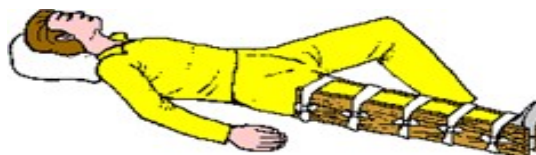


Figure 18. Splinting of the lower leg

Fasten splints in place with bandages, strips of adhesive tape, clothing, or other suitable materials (Figure 19.)

- Use opposite arm to measure length of splint!

- If possible, one person should hold the splints in position while another person fastens them.



Figure 19.

Although splints should be applied snugly, they should never be tight enough to interfere with the circulation of the blood.

- When you are applying splints to an arm or a leg, try to leave the fingers or toes exposed (Figure 20.)
- If the tips of the fingers or toes become blue or cold, you will know that the splints or bandages are too tight.



Figure 20

You should examine a splinted part approximately every half hour and loosen the fastenings if the circulation appears to be impaired. Remember that any injured part is likely to swell, and splints or bandages that are otherwise applied correctly may later become too tight.

3. Apply ice packs to limit swelling and help relieve pain until emergency personnel arrive.

- Don't apply ice directly to the skin — wrap the ice in a towel, piece of cloth or some other material (Figure 21.)



Figure 21

Treatment for shock.

- If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the

legs.

Injuries of joints can be dislocations or sprains of joints.

A **dislocation** is an injury in which the ends of bones are forced from their normal positions. The cause is usually trauma resulting from a fall, an auto accident or a collision during contact or high-speed sports.

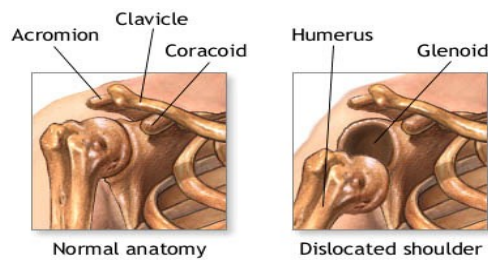


Figure 22. Normal and dislocated shoulder

A dislocation is likely to bruise or tear the muscles, ligaments, blood vessels, tendons, and nerves near a joint.

Rapid swelling and discoloration, loss of ability to use the joint, severe pain and muscle spasms, possible numbness and loss of pulse below the joint, and shock are characteristic symptoms of dislocations. The fact that the injured part is usually stiff and immobile, with marked deformation at the joint, will help you distinguish a dislocation from a fracture. In a fracture, there is deformity between joints rather than at joints, and there is generally a wobbly motion of the broken bone at the point of fracture.

A **sprain** is a stretching or tearing of ligaments — the tough bands of fibrous tissue that connect one bone to another in your joints. The most common location for a sprain is in ankle. Signs and symptoms will vary, depending on the severity of the injury but pain and swelling are the main symptoms.

The following measures need to be taken in giving first aid to a victim with joint injury:

1. For dislocations, splint and provide care as you would for fracture.
2. For sprains, use RICE procedure - R=rest, I=Ice, S=compression and E=elevation (Figure 23.)





Figure 23.

3. In both cases seek medical care (Referral).

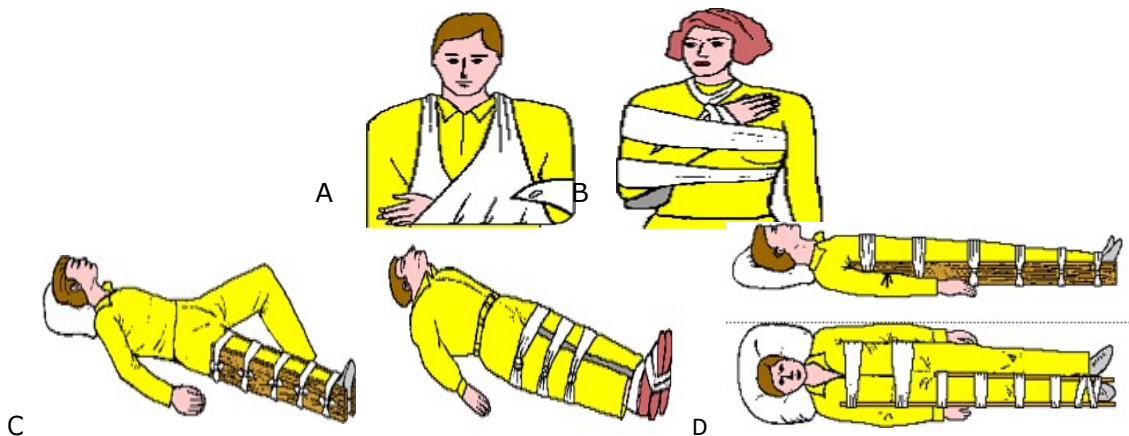


Figure 24. Examples of splinting: A - Forearm fracture, B - Upper arm fracture, C - Lower leg fracture (board and anatomic splint) D - Upper leg fracture

First aid for back and neck injury (spinal cord injury)

Any severe blow, fall, or other accident may result in injury to the neck, back, or spinal cord. Spinal cord injuries can cause long-term, irreversible damage and death. Symptoms can be loss of sensation, loss of motor functions (paralysis), loss of bowel/bladder functions, loss of involuntary functions like breathing, inability to control rate of heart beat, inability to sweat.

The following measures need to be taken in giving first aid to a victim with suspected spinal cord injury:

1. **Seek medical assistance immediately.** Call for EMS (108)
2. **Until EMS arrives:**
 - DO NOT move victim unless absolutely necessary to save victim's life.
 - DO NOT bend or twist victim's neck or body. Careful handling is extremely important.
 - Maintain position in which victim was found and immobilize head, neck, shoulders,

and torso - roll up towels, blankets, jackets, or clothing, and place around head, neck, shoulders, and torso (Figure 25.)



Figure 25.

- If the person is not breathing or showing signs of circulation, begin CPR but do not lift the chin to open an airway. Instead, you should gently pull the jaw forward (Figure 26.)

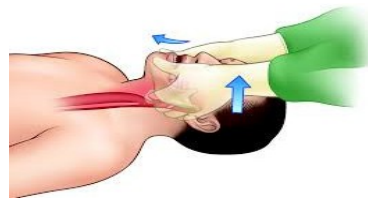


Figure 26.

- If victim must be moved to perform rescue breathing, to clean mouth of vomit or in danger of further injury, enlist help at least one other person to keep victim's head, torso, and legs in straight line as you turn victim.



Figure 27.

First aid for burns

Burns are thermal injury caused by exposure to excess heat. According to the depth of injury to the skin, we distinguish three (or four) types of burns:

1. Burns that affect only the superficial skin are known as **superficial or first-degree burns**.

- When damage penetrates into some of the underlying layers, it is a **partial-thickness or second-degree burn**.
- In a **full-thickness or third-degree burn**, the injury extends to all layers of the skin.
- Sometimes we talk about a **fourth-degree burns** when the injury affects deeper tissues, such as muscle or bone.

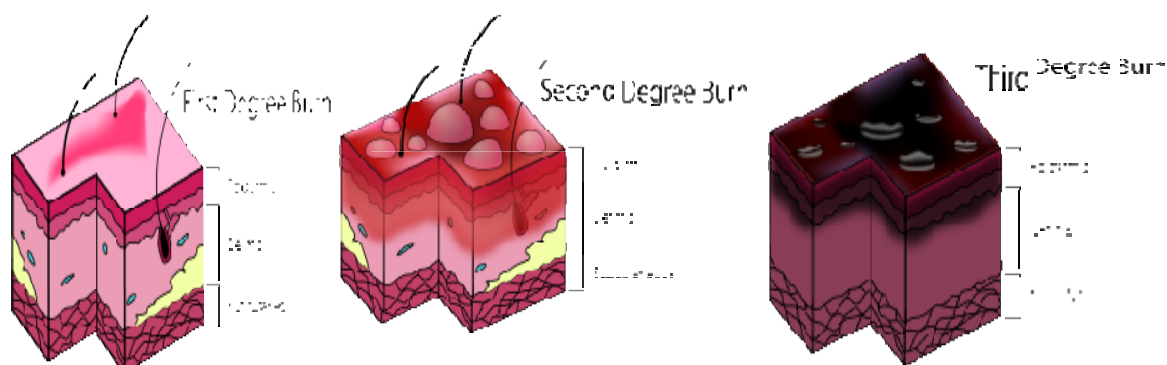


Figure 28. Three types of burns

Table 2 Symptoms and sign of various types of burns

Type	Layers involved	Appearance	Texture	Sensation	Healing Time	Prognosis	Example
Superficial (First degree)	Epidermis	Red without blisters	Dry	Painful	5–10 days	Heals well, Repeated sunburns increase the risk of skin cancer later in life!	
Superficial partial thickness (Second degree)	Extends into superficial (papillary) dermis	Redness with clear blister. Blanching with pressure.	Moist	Very painful	less than 2–3 weeks	Local infection/cellulitis but no scarring typically	
Deep partial thickness (Second degree)	Extends into deep (reticular) dermis	Yellow or white. Less blanching. May be blistering.	Fairly dry	Pressure and discomfort	3–8 weeks	Scarring, contractures (may require excision and skin grafting)	
Full thickness (Third degree)	Extends through entire dermis	Stiff and white/brown. No blanching	Leathery	Painless	Prolonged (months) and incomplete	Scarring, contractures, amputation (early excision recommended)	
Fourth degree	Extends through entire skin, and into underlying fat, muscle and bone	Black; charred with eschar	Dry	Painless	Requires excision	Amputation, significant functional impairment and, in some cases, death.	

To distinguish a minor burn from a serious burn, the first step is to determine the extent of damage to body tissues. In order to determine the need for referral to a specialized burn unit, the American Burn Association devised a classification system. Under this system, burns can be classified as major, moderate and minor. This is assessed based on a number of factors, including total body surface area affected, the involvement of specific anatomical zones, the age of the person, and associated injuries. Minor burns can typically be managed at home, moderate burns are often managed in hospital, and major burns are managed by a burn center!

Table 3. American Burn Association severity classification

American Burn Association severity classification		
Minor	Moderate	Major
Adult <10% TBSA	Adult 10-20% TBSA	Adult >20% TBSA
Young or old < 5% TBSA	Young or old 5-10% TBSA	Young or old >10% TBSA
<2% full thickness burn	2-5% full thickness burn	>5% full thickness burn
	High voltage injury	High voltage burns
	Possible inhalation injury	Known inhalation injury
	Circumferential burn	Significant burn to face, joints, hands or feet
	Other health problems	Associated injuries

For minor burns, including first-degree burns and second-degree burns limited to an area no larger than 8 centimeters in diameter, take the following action:

1. Cool the burn.

- Hold the burned area under cool (not cold) running water for 10 or 15 minutes or until the pain subsides.
- If this is impractical, immerse the burn in cool water or cool it with cold compresses.
- Don't put ice on the burn.

2. Cover the burn with a sterile gauze bandage.

- Wrap the gauze loosely to avoid putting pressure on burned skin.
- Bandaging keeps air off the burn, reduces pain and protects blistered skin.

3. Take an over-the-counter pain reliever.

- These include aspirin, ibuprofen, naproxen or acetaminophen
- Use caution when giving aspirin to children or teenagers.
- Talk to your doctor if you have concerns.

For major burns, call 108 or emergency medical help. Until an emergency unit arrives,

follow these steps:

1. Don't remove burned clothing.

- However, do make sure the victim is no longer in contact with smoldering materials or exposed to smoke or heat.

2. Don't immerse large severe burns in cold water.

- Doing so could cause a drop in body temperature (hypothermia) and deterioration of blood pressure and circulation (shock).

3. Check for signs of circulation (breathing, coughing or movement).

- If there is no breathing or other sign of circulation, begin CPR.

4. Elevate the burned body part or parts.

- Raise above heart level, when possible.

5. Cover the area of the burn.

- Use a cool, moist, sterile bandage, clean, moist cloth or moist cloth towels.

First aid for shocked

Shock may result from trauma, blood loss, an allergic reaction, severe infection, poisoning, severe burns or other causes.

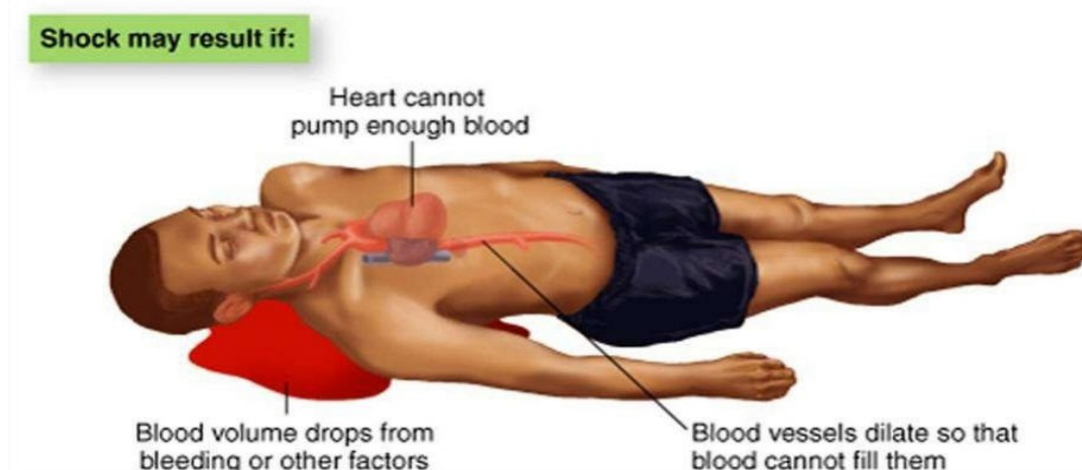


Figure 30. Three basic mechanism of shock

When a person is in shock, his or her organs aren't getting enough blood or oxygen. If untreated, this can lead to permanent organ damage or death. Shock can be a life-threatening problem. The best way to protect people from the serious damages that shock can have on the system is to recognize the symptoms before the person gets into serious trouble.

In most cases, only a few of the symptoms will be present, and many do not appear for some time. Common symptoms are:

- Pale, cold, clammy and moist skin
- Vacant or dull eyes, dilated pupils
- Anxiety, restlessness, and fainting
- Weak, rapid, or absent pulse
- Nausea and vomiting
- Shallow, rapid, and irregular breathing
- Excessive thirst
- Person may seem confused
- Look tired and fatigue

If you suspect shock, even if the person seems normal after an injury:

1. Call 108 or your local emergency number.
2. Have the person lie down on his or her back with feet higher than the head. If raising the legs will cause pain or further injury, keep him or her flat.
3. Check for signs of circulation (breathing, coughing or movement) and if absent, begin CPR.
4. Keep the person warm and comfortable by loosening any belts or tight clothing and covering the person with a blanket. Even if the person complains of thirst, give nothing by mouth.
5. Turn the person on his or her side to prevent choking if the person vomits or bleeds from the mouth.
6. Seek treatment for injuries, such as bleeding or broken bones.

CHAPTER – IX

TRAINING REHEARSAL AND RECORDS

ABOUT TRAINING, REHEARSAL AND RECORDS

An emergency plan needs to be tested when first devised and then rehearsed at suitable interval. Individuals with duties under the plan should generally be qualified by their normal training and experience in day-to-day operations. Rehearsal and exercise are important for all personnel likely to be involved in an incident, on or off site. After each such rehearsal of practice, the plan should be reviewed to take account of any short coming highlighted by the exercises. Following points are under consideration, implementation with the management for the success of emergency plan:

- On site & off-site emergency plan will be explained to all employees.
- Key persons, Incident Controllers, Dy. Incident Controller, Essential Workers, Runners, and Site Main Controllers will be called and their roles will be discussed with them.
- Arrangement will be made to send employees for first aid and firefighting training to the recognized institutions at regular intervals.
- Emergency actions in case of fire, explosion, and toxic gas release of spillage are considered in formulation the emergency action plan.
- Mock-drills / rehearsals will be arranged at least thrice in a year. And any lacunae found will be corrected. The emergency plan will be reviewed; updated and necessary changes will be incorporated.
- Date wise records for training mock-drills, names of persons will be maintained. Moreover, topics related to emergency plan will be considered for promotion evaluation of person.

ABOUT EMERGENCY INSTRUCTION BOOKLET

At many place of this plan, we have mentioned that the duties/ functions of particulars role is mentioned in the ANNEXURE-31

CHAPTER – X

DEFINITION AND GLOSSARY OF TERMS

DEFINITIONS:

DISTRICT CRISIS GROUP:

“District Crisis Group” means

The District Crisis Group is the apex body in the district to deal with major chemical accidents and to provide expert guidance for handling chemical accidents.

As described under Schedule 7 of Rule 8 of Chemical accidents (Emergency Planning, Preparedness & Response) Rule, 1996 as rule framed under the environment (protection) Act – 1986.

LOCAL CRISIS GROUP:

“Local Crisis Group” means

It is body constituted by Government, in the industrial pockets to deal with chemical accidents and co-ordinate efforts in planning, preparedness and mitigation of chemical accidents.

Schedule 8 of Rule 8 of Chemical Accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

HAZARDOUS CHEMICALS

“Hazardous Chemicals” means

Any Chemical, which satisfies any of the criteria, laid down in Part I of Schedule I and is listed in column 2 of Part II of the schedule of The Factory Act 1948 (amended – 1995).

Any Chemical listed in Column 2 of Schedule 2. Any Chemical listed Column 2 of Schedule 3.

The definition of “Hazard Chemicals” is given in the various statutes. The details of schedule as given in the statute are not reproducing here for brevity.

- a) Rule 68J 1 (a) of GUJARAT FACTORIES RULE 1963 (Amended – 1995)
- b) Rule 2(e) of MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICAL RULES, 1989.
- c) Rule 2(b) of Chemical Accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

INDUSTRIAL ACTIVITY

“Industrial Activity” means

- (i) An operation of process carried out in an industrial installation referred to in Schedule 4 involving or likely to involve one or more hazardous chemicals and Includes on-site storage or on-site transport which is associated with that operation or

- process, as the case may be, or
- (ii) Isolated Storage, or
 - (iii) Pipeline.

The definition of "Industrial Activities" is given in the various statutes. The details of schedule as given in the statute are not reproducing here for sake of brevity.

Rule 68(J) (1) (b) of GUJARAT FACTORIES RULES 1963 (Amended – 1995)

Rule 2(h) of MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICAL RULES, 1989.

Rule 2(c) of Chemical accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

MAJOR ACCIDENT HAZARDS (MAH) INSTALLATION

"MAH Installation" means

Isolated storage and industrial activity at a site, handling (including transport through carrier or pipeline) of hazardous chemicals equal to or in excess of the threshold in quantities specified column 3 of Schedule 2 and 3 respectively of the Gujarat Factory Rule 1995. Further, as defined under Rule 2(g) of Chemical Accidents (emergency Planning, Preparedness & Response) Rule, 1996.

SITE

"Site" means

Any location or processed, stored, handled, used, disposed of and includes the whole of an area under the control of occupier.

The "Site" as provided in the rules is given below:

- Rule 68(J) (1) (g) of GUJARAT FACTORIES RULES 1963 (Amended – 1995)
- Rule 2(m) of MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICAL RULES, 1989.
- Rule 2(k) of chemical Accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

MAJOR ACCIDENT

“Major Accident” means “A major emission, fire or explosion involving one or more hazardous chemicals and resulting from uncontrolled development in the course of an industrial activity or due to natural events, leading to a serious damage to persons, with immediate or delayed, inside or outside the installation or damage to property or adverse effects on the environments.”

The definition of “Major Accident” is given under various statutes.

- Rule 68(J) (I) (d) of GUJARAT FACTORIES RULES 1963 (Amended – 1995).
- Rule 2(J) of MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICAL RULES, 1989.
- Rule 2(f) of Chemical Accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

ON-SITE EMERGENCY PLAN (PREPARATION)

“On-site Emergency” means

- i) The onsite emergency plan deals with measures to prevent and control emergency within the premises and not affecting outside public or environment.
- ii) An emergency, the effect of which can be contained within the site premises. The step of emergency is unlikely to pose any threat to the neighboring environment / Population and the situation can be adequately handled by the emergency services on their own resources. In some cases, help from neighboring units may also be sought to tackle on site emergencies, which serve the purpose of mutual aid.

The preparations of On-site Emergency Plan have been explained in the different authorities.

Guidelines issued by Chief inspector of Factories, Gujarat State, Dt. 27/04/1989

Schedule II under Rule 13(1) of MANUFACTURE, STORAGE AND IMPORT OF HAZARDOUS CHEMICAL RULES, 1989.

Rule 9(2) (b) of chemical Accidents (Emergency Planning, Preparedness & Response) Rule, 1996.

ON-SITE EMERGENCY PLAN:

The Emergency planning for on-site and off-site are different but they should be dovetailed each other. On-site emergency planning is the responsibility of the site management while off-site 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.

An emergency affecting several parts of a unit with considerable damage and injury to equipment / personnel and is likely to affect neighboring population environment. This type of situation requires the help of outside agencies, like government authorities, also to tackle it, because of it cannot be controlled from own available resources.

For example, a major LPG gas release will affect the immediate environment or even a major fire or an explosion at site may have off-site implications like debris falling, gases spreading etc. the situation of on-site emergency, if uncontrolled runs into as off-site emergency. Hence a quick assessment of the scale of an on-site emergency is of paramount importance in order to trigger of the off-site emergency action procedure in time.

OFF-SITE EMERGENCY PLAN:

The Off-site emergency plan will deal with measure to prevent & control emergency affecting public and environment outside the premises. The manufacture should provide the necessary information / details on the nature, extent and likely effects of such incidents. The emergency plan of the district will be developed by the district authority based on on-site emergency plan of individual units in the district.

Annexures

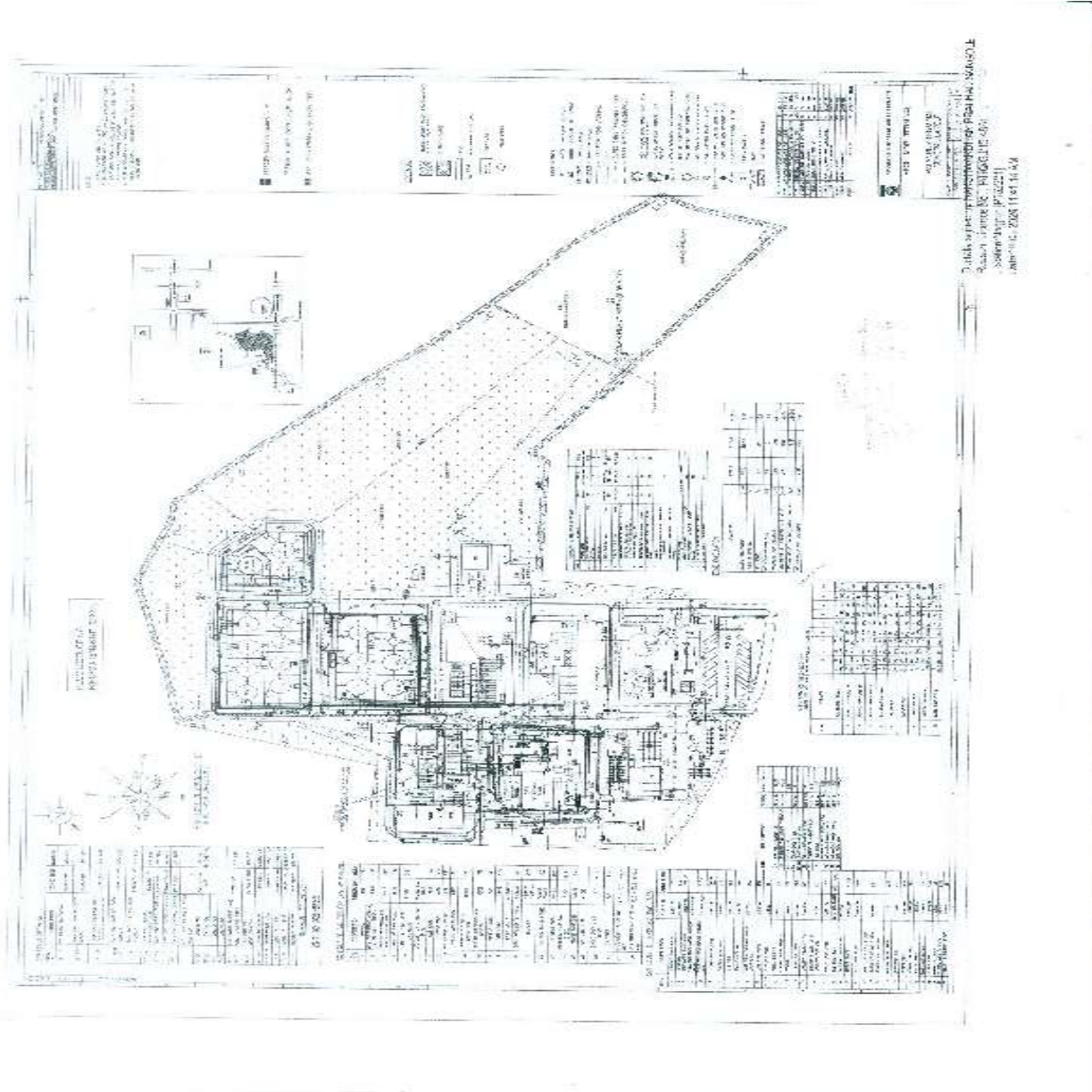
ANNEXURE – 1: IDENTIFICATION OF FACTORY

Full Name & Address of factory: M/S. HINDUSTAN PETROLEUM CORPORATION LIMITED, Palanpur Terminal.				
Behind GIDC Chandisar, Village. Chandisar, Ta. Palanpur, Dist. Banaskantha, Gujarat, India				
Phone: +91 84790 00333				
Fax No.	-		E-mail Address: sandeep@hpcl.in	
Full Name of the Occupier: Mr. Manoj Kumar			Phones	
			Office	Residence
			+91 9994431528	
Full Name of Manager: Mr. Sandeep Kumar			Phones	
			Office	Residence
			+91 84790 00333	
Manufacturing Process: The main activity of HPCL Palanpur Terminal is receiving products (MS, HSD & SKO) from Pipeline, storage into storage tanks, and tanker filling for supply to various outlets and customers in North Gujarat region.				
Name of the Shift	Maximum Worker at a time:			In “Workers “include all employees, Contract Workers, etc.
	Male	Female	Total	
General (G)	41	01	42	
(A) 1 st shift	07	01	08	
(B) 2 nd shift	09	-	09	
(C) 3 rd Shift	08	-	08	
Total Shift: 4	65	02	67	
First Person to be contacted in case of emergency: Security				
Name of the shift	Person to be contacted first in case of any emergency.			
	Name & Designation	Place of Availability	Phone No.	
General (G)	Ronak Mohankumar Sable	Factory	+91 9994431528	
(A), (B), (C) Shift	Vinodkumar Parmar	Factory	+91 98254 61767	
On Holiday	Kalubhai S. Patel	Factory	+91 96241 38944	
Any Other information, if any: Above persons will be available alternately on Holidays and round the clock.				

Annexure-2 (Map of the Area)



Annexure-3 (Detailed Plant Layout)



Annexure – 4 Storage Hazards & Control

Name	Storage	Qty	Hazards	Control Measure	In charge person
MS (Motor Spirit)	As per requirement	As per requirement	Extremely volatile. Flashes and ignites at very low ambient temperatures (Class A petroleum, flash point $\backslash(< -20\backslash)^{\circ}\text{C}$). Static electricity generation creates a major fire risk.	Ensure all transfer equipment is bonded and earthed. Use only intrinsically safe/explosion-proof electrical tools and equipment. Store in closed floating-roof tanks or sealed, properly labeled barrels.	Mr. Sandeep Kumar
HSD (High-Speed Diesel)	As per requirement	As per requirement	Combustible liquid. Releases flammable vapours when heated above its flash point $\backslash(>52\backslash)^{\circ}\text{C}$. Vapour-air mixture is explosive at elevated temperatures.	Keep away from open flames, hot surfaces, and strong oxidising agents. Provide localized exhaust ventilation where mists are generated.	
ETHANOL	As per requirement	As per requirement	Water-soluble, highly flammable liquid. Burns with an almost invisible blue flame in daylight. Ingesting can lead to severe poisoning.	Require the use of alcohol-resistant foams (AR-AFFF) for firefighting. Store in grounded tanks and restrict entry into confined spaces without proper respiratory gear.	
SKO (Superior Kerosene Oil)	As per requirement	As per requirement	Combustible, moderate flash point. Vapours can irritate the respiratory tract and eyes. Ingestion poses severe aspiration risks.	Ensure adequate ventilation in indoor usage areas (e.g., domestic heaters/stoves). Store in designated, cool, well-ventilated facilities	
Bio-diesel	As per requirement	As per requirement	Generally lower flammability, but can produce fine, irritating mists. Risk of contamination with highly volatile fuels (e.g., MS/Ethanol) lowers the flash point and increases fire risk.	Avoid using plastics or rubber (e.g., in pumps or hoses); use designated steel or compatible materials. Treat mixed-fuel storage areas with strict Class A/B fire safety guidelines.	

Annexure – 5

No	Name Of Material
1	DCP Fire Extinguishers (Various Capacities)
2	CO ₂ Fire Extinguishers
3	Foam Type Extinguishers
4	Fire Hose Pipes
5	Fire Nozzles & Branch Pipes
6	Gas Detectors
7	SCBA Sets
8	PPE (Gloves, Helmets, Goggles)
9	Tools & Tackles
10	DG Set Fuel (Diesel)
11	Lubricants & Grease
12	First-Aid Materials

Annexure – 6: Process & Vessel Hazards and Controls

Sr . N o.	Name of the plant, department or place	Name of the process and operation	Materials in the process/oper ation with their quantity	Name of the vessel and its location	operating parameters pressure, temperature	Type of Hazards possible (Exothermic, run away, pressure release, toxic, fire, explosion etc.)	Control measures provided	Inchar ge Name & design ation	In charge person/ Telephon e number
1	Air Receivers / Air Compressors	Storage of compressed air	Air	Utility/air compressor room	The air compressors operate at a normal pressure of 6–8 kg/cm ² with a high-pressure trip at 10–11 kg/cm ² . Normal discharge temperature remains below 100°C, and the compressor trips automatically at 110°C due to high temperature. Lubricating oil temperature remains within 60–80°C. These operating limits are monitored continuously to prevent overheating, air receiver overpressure, and potential fire hazards.	Explosion / Burst joint / parts. Fire	➤ Air receivers are protected with pressure relief valves and periodic hydro-testing. Emergency conditions include high discharge temperature, over-pressure, excessive vibration, electrical faults, and oil leakage. ➤ Control measures include PRV testing, temperature cut-outs, cooling system maintenance, ventilation, earthing, and provision of CO₂/DCP extinguishers at the compressor area.	Mr. Ronak Mohankumar Sable (Location Incharge) +91 99944 31528	

Annexure – 7: Other Hazards and Controls

Sr. No.	Name Of The Possible Hazards or Emergency	Its Source & Reasons	Its Effects on Persons, Property & Environment	Place Of Effects	Control Measures Provided	In-charge Person at Source	
						Name and Designation	Telephone Number
1	2	3	4	5	6	7	8
1	Structural Failure	Within the Factory	Injury/Death of persons Damage to Property	Within the factory	- Periodic Checking - Stability Certify by competent person - Evacuation, rescue & shelter made available	Mr. Ronak Mohankumar Sable (Location Incharge)	+91 99944 31528
2	Natural calamity- Earth Quake,	Outside the factory	Injury/Death of person, damage to property	Within and outside the factory	Alarm, Evacuation facility, rescue, Shelter, welfare		
3	ELECTRICITY Burning Fire Shock	Loose contacts, weak earthing short circuit improper insulation	Burning, shock, Death	Surrounding the accident area	Proper Earthing, Periodical Checking of joints, proper insulations of Equipment, etc. flame proof fitting in solvent storage area, bounding and jumpers to all solvent barrier lines provided. Eclectic shock proof hand gloves used during any kind of electrical jobs.		
4	PIPELINE LEAKAGES Spillages etc. Corrosion Toxic gas release	Leaking of pipe line to corrosion. Loose contact etc.	Physical / Chemical Thermal Burn injury (Major / Minor)	Plant area	Proper maintenance, Proper selection of material for pipe lines, immediate attention, Earthing provided, flame proof fitting.		
5	Fire	Transformer Transfer oil short circuit etc.	Electrical power failure Production hindrance Loss of transformer	Transformer near power control center	- Fire Fighting Equipment's - Graved bed for oil spillage or soaking isolated fenced area - Lightening arrestor - DG set for emergency power supply		

Annexure – 8: Trade Waste Disposal

Sr . N o.	Type and name of the trade waste	Its generati on per day	Place of its Generati on	Place of its safe disposal	Treatment method of safe disposal (treatment plant, vent gas scrubber, flare, incinerator, water, blanketing etc.	Alarm indicating accidental release or release in excessive proportion	Monitoring & control measures provided	In charge person	
								Name & designa tion	Telepho ne No
1	Solid: Qty mentioned as per GPCB consent	As per GPCB consent	Production / Stores	Registered Recycler	Not Applicable	--do--	--do--	Mr. Ronak Mohankumar Sable (Location Incharge) +91 99944 31528	

Annexure – 9: Records of Past Incidents

Sr. No.	Type of incident, major accident, emergency or disaster	Date & Time of occurrence	Its place	Duration	Time required in controlling it	No of workers working at that time	Persons effected		Persons died		Effects on the survivors		Subsequent safety measures provided	Other details if any (e.g. antidotes used etc.)
							Inside the factory	Outside the factory	Inside the factory	Outside the factory	Immediate	Delayed		
1	No major incident reported	-	-	-	-	-	-	-	-	-	-	-	-	-

Records Available In plant

Annexure – 10: Weather Conditions

Sr. No.	Period of the year Dates		Wind Velocity M/Second	Wind direction	Weather conditions dry, moist, rainy cold, hot, stable, unstable stormy	Pasquill Classification A to F
	From	To				
1	2	3	4	5	6	7
1	01-Jan	28-Feb	02-05	N / NE / NW	Cool, dry, clear sky, low humidity;	F (night), D (day)
2	01-Mar	31-May	04-07	W / SW	ery hot, dry, dusty; high temperatures; unstable afternoons	C (day), D (evening)
3	01-Jun	30-Sep	05-08	SW / SSW	Humid, rainy, cloudy, unstable; frequent gusty winds	D (neutral), E (slightly stable)
4	01-Oct	30- Nov	03-05	W / NW	Warm to mild, partly humid, decreasing rainfall; clear skies	C–D (day), D–E (night)
5	01-Dec	31-Dec	02-04	N / NE	Cool, dry, stable atmosphere; clear	F (night), D (day)

Note:

1. Atmospheric Stability (Pasquill A–F)

- **A/B** = Very Unstable (fast vertical mixing; summer afternoons)
- **C/D** = Neutral (monsoon and typical daytime conditions)
- **E/F** = Stable (winter nights, calm winds → gas dispersion slow)

2. Operational Considerations:

- SW monsoon winds (Jun–Sep) → Gas dispersion moves NE–E direction, affecting emergency planning.
- Winter stable nights (Class F) → Higher risk of low-level gas cloud accumulation.
- High wind speeds (Apr–Jun) → Faster dispersion but dust load increases ignition risk.
- Assembly points should be kept perpendicular to prevailing wind direction.

Annexure – 11: Incident Controllers

	Incident Controllers							Runner's		
Sr. No	Name	Designation	DEPT	Place of availability		Phone No.		Name & Designation	Place of availability	Phone No.
				In Factory	Residence Address	In Factory	Residence			
1	2	3	4	5	6	7	8	9	10	11
1	Preeti Singh	Manager	Operations	Company Premises	As per Company Record	9650298606	-	Kanubhai Vaghela	Company Premises	9726382501
2	Sonkusre Rohit	Assistant Manager	Operations	Company Premises	As per Company Record	9770560801	-	Prahlad Thakor	Company Premises	8347130225

Note:

1. In absence of the Incident Controller, the Alternate Incident Controller (Sonkusre Rohit- Assistant Manager Operations) shall assume full responsibility for managing and controlling the emergency at the incident location.
2. Designated Runners shall support the Incident Controller by carrying messages, coordinating between emergency teams, and ensuring communication reliability during failure of telephone or wireless systems.

Annexure – 12: Deputy Incident Controllers

Sr. No.	Deputy Incident Controller's							Persons to be called if IC & Dy-IC both are not available		
	Name	Designation	DEPT	Place of Availability		Phone No.		Name & Designation	Place of availability	Phone No.
				In Factory	Residence Address	In the Factory	Residence			
1	2	3	4	5	6	7	8	9	10	11
1	Vivek Katariya	Operations Officer	Operations	Company Premises	-	9530239097	-	-	Company Premises	-

Annexure – 13: Site Main Controllers

Sr. No.	Site Main Controller							Runner's		
	Name	Designation	Dept	Place of Availability		Phone No.		Name & Designation	Place of availability	Phone No.
1	2	3	4	5	6	7 Factor y	8 Residen ce	9	10	11
1	Mr. Ronak Mohankumar Sable	Location In-Charge	Operations	Company Premises	As per Company Record	+91 9994431528	As per Company Record	Vivek Katariya Operations Officer	Company Premises	+91 9530239097
	Alternate Site Main Controller							Runner's		
	Name	Designation	Dept	Place of Availability		Phone No.		Name & Designation	Place of availability	Phone No.
2	Sandeep Kumar	Senior Manager-Operations	Operations	Company Premises	As per Company Record	+91 8479000333	As per Company Record	Sonkusre Rohit Assistant Manager Operations	Company Premises	+91 9770560801

Note : In absence of the Site Main Controller, the Alternate Site Main Controller shall assume full responsibility and authority to manage the emergency.

Annexure – 14 Key Personnel

Key Person's									Next Person's				
	Depart ment	Name	Designation	Qualific ation	Place of available		Phone No.		Name	Place of availability		Phone No.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Operations	Ronak Mohankumar Sable	Location In-Charge	-	Company Premises		9994431528		Sandeep Kumar	Company Premises		8479000333	
2	Operations	Sandeep Kumar	Senior Manager-Operations	-	Company Premises		8479000333		Yashpal Kashyap	Company Premises		9998527044	
3	Operations	Yashpal Kashyap	Manager- HSSE	-	Company Premises		9998527044		Preeti Singh	Company Premises		9650298606	
4	Operations	Preeti Singh	Manager - Operations	-	Company Premises		9650298606		Sonkusre Rohit	Company Premises		9770560801	
5	Operations	Sonkusre Rohit	Assistant Manager - Operations	-	Company Premises		9770560801		Vivek Katariya	Company Premises		9530239097	
6	Operations	Vivek Katariya	Operations Officer	-	Company Premises		9530239097		-	Company Premises		-	

Note: In case the designated key personnel are not available during emergency, the next person listed shall assume full responsibility for the assigned emergency role.

Annexure – 15: Essential Workers

First Aider Team						
Shift	G/A		B		C	
Department	Name	Contact No	Name	Contact No.	Name	Contact No.
HSSE	YASHPAL KASHYAP	9998527044	VINODBHAI PARMAR	9825461767	GUNVATBHAI	8238643620
Operations	ISWARBHAI		CHANDRESH	9316477988	HASMUKH JUDAL	9409394856
Operations	BHARAT THAKOR	9925168206				
Operations	NANJIBHAI CHHATRAYA	7016457495				
Operations	PRAHALAD THAKOR	8347130225				
Operations	KANUBHAI VAGHELA	9726382501				
Operations	JAYESH MAKWANA	9998597809				
Operations	NATHUBHAI	9727280023				
Operations	ASHOK KOTADIYA	9737898943				
Operations	DEEPAK YADAV	6267271865				
Operations	MUKESH SOLANKI	9409051264				
Operations	MUSTAFA MEER	9979314620				
Operations	NARESH SHEKALIYA	6355480017				
Operations	ASHABEN	6351950225				
Operations	HITESHKUMAR RAJGOR	9662062327				

Note : A trained First Aider Team is designated to provide immediate medical assistance to injured persons during emergencies and to arrange their safe transfer to hospital if required

Fire Fighting Team

Shift	G/A		B		C	
Department	Name	Contact No	Name	Contact No.	Name	Contact No.
Operations	Ronak Mohankumar Sable	9994431528	Main Gate Guard/ Head Guard	02742 283210	Main Gate Guard/ Head Guard	02742 283210
Operations	Yashpal Kashyap	9998527044	Security Post-1, Security Post-2		Security Post-1, Security Post-2	
Operations	Sandeep Kumar	8479000333	Electrician		Electrician	
Operations	Bharat A Thakor	9925168206	Visitor gate Guard		Visitor gate Guard	
Operations	Kanubhai Vaghela	9726382501				
Operations	Prahlad Thakor	8347130225				
Operations	Dalpat Chapiya	9574438806				
Operations	Nanjibhai Chhatrya	7016457495				
Operations	Suresh Meshara	9737489198				

Note : A trained Fire Fighting Team has been designated to respond immediately to fire incidents within the plant. The team is responsible for operating fire protection systems, controlling fire at the initial stage, and assisting the municipal fire brigade during major emergencies

Annexure – 16: Safe Assembly Points

Identifica tion Sr. No. of the Assembly Point	Location	Accommod ation capacity	At the time of emergency						
			Person In charge					Nearest Phone Number	PPE that may be required
			Name & Designation	Place of Availability		Phone Number			
				In the Factory	Residence Address	In the Factory	Residence Contact		
01	Nr. Main Gate	200+	PATEL KALLUBHAI S. Security supervisor	In Plant	KUNDOL RAJPUR DISTRICT SABRKANTA GUJARAT PIN 383460	9624138 944	As per company records	Security Gate	Safety PPEs at work place
			VINOD KUMAR PARMER Relieving supervisor	In Plant	90 VANKAR VAAS SAKLANA BANASKANTHA GUJARAT PIN 385421	9825461 767	As per company records	Security Gate	Safety PPEs at work place

Annexure – 17: Emergency Control Center

Location of the Center : Main Gate
Telephone Nos. of the Center : Internal: Security In charge Mobile: +91 96241 38944

Sr. No.	Items Kept in the Centre [See (1) to (10) Page 32 - 33]	Numbers or Quantity	Person who will handle/operate this item	Its Period of operation		Notes
				Last	Present	
1.	Fire Hooter	Records available with Incharge	Admin & Security Team	ROUTINE	ROUTINE	
2	Telephone System			Daily	Daily	
3	Internal & External Phone List			Daily	Daily	
4	Electrical PPEs			Daily	Daily	
5	Hand Gloves			ROUTINE	ROUTINE	
6	Gum Shoes/Safety Shoes			ROUTINE	ROUTINE	
8	Cartridge masks & Gas masks			ROUTINE	ROUTINE	
9	Safety Goggles, Helmets			ROUTINE	ROUTINE	
10	First Aid Boxes			ROUTINE	ROUTINE	
11	Torch			ROUTINE	ROUTINE	
12	Rain Coat/Umbrella			ROUTINE	ROUTINE	
13	On Site Emergency Plan			ROUTINE	ROUTINE	
14	Stationery Note Pad, Pens, Pencils, Rubbers, etc.			ROUTINE	ROUTINE	

ANNEXURE – 18: FIRE & TOXICITY CONTROL ARRANGEMENTS (A)

For flammable & toxic substances storage see Annexure –2 and for their processes see Annexure –3.

For key personnel & essential workers see Annexure – 15 & 16.

Fire water: 8800KL

Other source & capacity	No. of hydrant points	No. of fire pumps, type & capacity	No. of Hose reel & Hose Pipe	No. of fire tenders and capacity	No. of Sprinklers/Monitors				Alternate power arrangement	No. of extinguishers
					Fixed		Portable			
					Manual	Total	Lifting height	Pressure		
1	2	3	4	5	6	7	8	9	10	11
Bore well-01	27	6 Nos. Diesel Driven Fire Water Pumps-Capacity: 550 m³/hr each, 2 Nos. Jockey Pumps-Capacity: 60 m³/hr each	62 x hose pipes, 27 x branch nozzle	Nos-01 Capacity-6KL	Sprinklers Monitors Portable Monitor	2160 17 02	45M	13KG	Alternate power arrangement consisting of two DG sets of 315 KVA and 200 KVA capacity, along with a solar power system	149

ANNEXURE – 18 FIRE & TOXICITY CONTROL ARRANGEMENTS (B)

For Flammable & Toxic substances see Annexure-4 and for the processes see Annexure-6

For Key personnel & workers see Annexure-14 & 15

Dry Powder Type			Foam Type			Water Jet Products		Other Extinguishers		Personal Protective Equipment's		
Type of powder & total Quantity	No. Of Portable		Type of Foam & total Quantity	No. Of Portable		No. of size of blankets	Other jet products, quantity	Type	No. or quantity	Respiratory		Non-respiratory
	Extinguishers	Tonners		Extinguishers	Tonners					Type	Nos.	Type
12	13	14	15	16	17	18	19	20	21	22	23	24
75 kg DCP (Wheeled) [3 nos]	03	-	-	-	-	-	-	4.5 kg CO ₂	15	-Cartridge Respirators (Half-Face), -Full-Face Gas Masks (Canister Type), -SCBA Sets, -Spare SCBA Cylinders, -Escape Respirators		Other safety PPEs glove, shoes and helmet
								2 kg CO ₂	09			
09 kg DCP [96nos]	96	-										
25kg dcp	08											

ANNEXURE-19 MEDICAL ARRANGEMENTS

For key personnel & essential workers

First - aid Centre's / Ambulance Room / CHC / Hospital										Ambulance van or alternate arrangement			
Sr. No.	Name & Location	Telephone Nos.	In charge Person			Facilities & Equipment's	Antidotes available	First aiders available	Accommodation	Place of availability	Capacity	Facilities in the van	Driver's name & address
			Name & Designation	Residence									
				Phone	Addresses								
1	2	3	4	5	6	7	8	9	10	11	12	13	14

First Aider list available in Annexure – 15,

Doctors (all nearby)			Other Medical Staff			Mutual Aid Arrangements									
Name, Address & Phones	Residence		Name, Address & Phone s	Residence		Name & Address of the factories & Hospital	Approximate distance	Contact		Facilities available					
	Phone No.	Addresses		Phone No.	Addresses			Person	Phone Nos.	Accommodation	Doctors	Other staff	Equipment's	Antidotes	Ambulance van
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

With IOCL, BPCL [As per annexure 21]

Annexure – 20: Transport & Evacuation Arrangement

For key personnel & essential workers see Annexure - 15 & 16 and for Assembly point See Annexure - 17.

Type of siren, if any, for evacuation: As per Siren Code___ Yes Siren available

Own Transport Centre

Own Vehicle

Name & Location	Phone Nos.	In charge Person			Sr. No.	Type & No.	Capacity	No. & type of public warning instruments (refer Page 40)	Driver's Name & address
		Name & Designation	Residence						
			Phone	Address					
1	2	3	4	5	6	7	8	9	10

HPCL Palanpur terminal maintains an in-house emergency vehicle which is stationed within the premises and used for medical emergencies, evacuation of personnel, and movement of key response team members.

Outside shelters for evacuated persons

Sr. No.	Name, Address & distance	Phone Nos.	In charge Person			Accommodation Capacity	Facilities available
			Name & Designation	Residence			
				Phone	Address		
11	12	13	14	15	16	17	18

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ANNEXURE -21 MUTUAL AID ARRANGEMENT

No	Name of Company	Distance	Contact Person	Contact Number	Facility to be provide
1	IOCL				
2	BPCL				

MUTUAL AID RESPONSE GROUP (MARG)

DATE: 19.12.2025
Time: 12:00 to 13:30hrs

MINUTES OF MEETING
Quarter: 3rd

LOCATION: IOCL PL Sidhpur
FY: 2025-26

1) MARG GROUP:

1. IOCL Marketing Division, Sidhpur	2. BPCL Marketing Division, Sidhpur	3. HPCL Marketing Division, Palanpur
4. HPCL Pipelines Division, Palanpur	5. HMEL Pipelines Division, Juna Raviyana	6. GSPL, Kalol
7. IRM Energy Limited, Palanpur	8. IOCL Pipelines Division Sidhpur	

2) MEMBERS PRESENT:

S.N.	NAME	ORGANISATION
1	Sh. Amit Kumar Tripathi (Chaired the meeting)	IOCL PL SIDHPUR
2	Sh. Sourav Kumar Bhakat	BPCL SIDHPUR
3	Sh. Sandip Kumar Patel	HMEL Raviyana
4	Sh. Chitransh Katliyar, Secretary	IOCL PL SIDHPUR
5	Sh. C B Prasanna	IOCL Sidhpur Terminal
6	Sh. Chetan Kumar	HPCL-TERMINAL
7	Sh. Ajit Singh	HPCL-MDPI
8	Sh. Rishi Singh	GSPL- Kalol
9	Sh. Milind Sharma	IRMEL
10	Sh. Radhe Patel	IRMEL
11	Sh. V K Solanki	IOCL PL SIDHPUR
12	Sh. Shubham Singh	HPCL-MDPL

1 | Page

ANNEXURE -22: POLLUTION CONTROL ARRANGEMENTS (A)

Water Pollution Controls					Air Monitoring					
Type & Capacity of effluent treatment plant	No. of Sample monitoring centres & its frequency	Other control measures	Logbook & Records	In charge person's name address & phones	No. and place of sample monitoring centers	Type parameters & frequency of tests	Wind direction & velocity meters	Instruments available	Logbook & records	In charge person's name address & phones
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ETP / STP / MEE /ATFD as mentioned in GPCB consent	Water sample Before treatment After treatment	Primary Treatment	Logbooks	Sandeep Kumar (Senior Manager-Operations) +91 8479000333	As per GPCB Consent	As per GPCB Consent	As per GPCB Consent	As per GPCB Consent	As per GPCB Consent	Sandeep Kumar (Senior Manager-Operations) +91 8479000333

ANNEXURE-22 POLLUTION CONTROL ARRANGEMENTS (B)

Stack Monitoring						Scrubbers Incineration etc				Land Pollution Controls				Pol. Con. Board	
No. & Location of sample places	Type, Parameters & frequency of tests	Control measure provided	Instruments available	Logbook & records	In charge Person's Name, Address & Phone	Location	Type & Capacity	For what	In charge Person's Name, Address & Phone	No. of sample monitoring centers & frequency of monitoring	Other control measures	Logbook & records	In charge Person's Name, Address & Phone	Permission obtained	Condition fulfilling
1 2	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Plant does not involve chemical processing or combustion-based operations and therefore does not generate stack emissions, effluent, or process pollutants. Pollution control arrangements consist of DG stack compliance, ground/soil protection measures, zero liquid discharge, paved areas for spill prevention, bunded storage, and periodic monitoring as per GPCB norms. Sandeep Kumar (Senior Manager- Operations) +91 8479000333														GPCB Consent (CTE/CTO) obtained as applicable for LPG Bottling Plant.	Compliance with consent conditions. No trade effluent discharge. Submission of monitoring reports as required. DG stack compliance maintained.

Annexure – 23: Other Arrangements

For key personnel & essential workers see Annexure – 17 & 18

Sr. No.	Type and name of arrangements available	Qty	Place of availability	Phone No.	In charge Person's		In charge Aid Arrangements						
					Name & designation	Residence		Place from where the same thing is available	Quantity available	In charge Person's			
						Phone	Address			Name & designation	Phones		Address
											Office	Resi.	
1	Heavy Vehicles	NIL	–	–	–	–	Nearby mutual aid industries / transport contractors	As available	To be coordinated by SMC/IC	–	–	–	–
2	Lifts, cranes etc.	NIL (Not maintained inside plant)	–	–	–	–	Available from approved vendors / local crane contractors	As per requirement	Maintenance In-charge / Admin	–	–	–	–
3	Transporters for materials	All flammable & hazardous materials handled as per Petroleum Act / Rules	–	–	Plant Manager / Safety Officer	–	Authorized transporters approved Tanker rules	As per requirement	Transport Contractor	–	–	–	–
4	Power alternatives	DG Set	DG House	Plant Number	Maintenance In-charge	–	External DG rental agency (if required)	As available	Maintenance In-charge	–	–	–	–

5	Utilities alternatives	Details available under Maintenance Dept. (compressed air, water supply, lighting, etc.)	–	–	Maintenance In-charge	–	Utility vendors / AMC contractors	As per requirement	AMC Vendor Engineer	–	–	–	–
6	Special equipment/instruments	List available under Maintenance Dept. (gas detectors, SCBA, PPE, testing tools, etc.)	As per plant records	–	Safety Officer / Maintenance In-charge	–	Mutual aid / partners equipment rental agencies	As available	Safety Officer / Mutual Aid Coordinator	–	–	–	–
7	Special Materials	–	–	–	–	–	Through approved suppliers	As required	Procurement / Stores In-charge	–	–	–	–
8	Test facilities	NIL (No in-house chemical/advanced testing facility)	–	–	–	–	NABL / GPCB approved labs	As required	Approved Lab Representative	–	–	–	–
9	Special information	Safety manuals, ERDMP, OEP, SDS, layout drawings available in Control Room	Control Room / Admin Block	Plant Number	Safety Officer	–	District authorities / Mutual aid partners	–	SMC / IC	–	–	–	–

10	Others	-	-	-	-	-	As required during emergency	-	SMC / IC	-	-	-	-
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All additional emergency support such as heavy vehicles, cranes, testing facilities, special materials, and utilities can be mobilized from authorized vendors, mutual aid partners, district emergency authorities, or AMC contractors. The Site Main Controller (SMC) and Incident Controller (IC) will coordinate availability during emergencies

Annexure – 24: Alarms & Sirens

Sr · N o.	Plant wise Alarm Points							The alarm (signal) is heard (seen) at	Sound difference if any			
	Plant / Dept. / Location			Sr. No. of the alarm point	Its place of location (with floor No. if any)	Type of the alarm or siren	Its period of checki ng		Type of emergency	Type of alarm or siren	Duration of soundin g	Type of sound of alarm/ siren
	Name & Location	No. of Floors	Area of each floor									
1												
2												

Annexure – 25: Internal Phones

Sr.No	Name	Designation	Department	Mobile
1	Ronak Mohankumar Sable	Location In-Charge	Operations	9994431528
2	Sandeep Kumar	Senior Manager- Operations	Operations	8479000333
3	Yashpal Kashyap	Manager- HSSE	Operations	9998527044
4	Preeti Singh	Manager - Operations	Operations	9650298606
5	Sonkusre Rohit	Assistant Manager - Operations	Operations	9770560801
6	Vivek Katariya	Operations Officer	Operations	9530239097

Annexure – 26: External Phones

	AGENCY	CONTACT NO.
1	District Collector – Rajkot (Dr. Om Prakash, IAS)	+91-2742-252001 / 252002
2	District Collector – Banaskantha (Palanpur)	+91-2742-252051
3	Director, Industrial Safety & Health (Gujarat)	079-25502349
4	Dy. Director, Industrial Safety & Health – Mehsana Region (Covers Banaskantha)	02762-240864 (Regional Office)
5	Police Station – Palanpur	100
6	Banaskantha Police Control Room	100 / 02742-252500
7	Fire & Emergency Services – Palanpur Nagarpalika	02742-253300 / 101
8	Fire Fighter – District Fire Station (Banaskantha)	02742-256600
9	UGVCL – Palanpur Division (Emergency Power)	1800-233-1553 / 19121
10	Gujarat Pollution Control Board (GPCB) – Palanpur Regional Office	02742-257212
11	District Emergency Operation Center (DEOC) – Banaskantha	1077 / 02742-256080
12	Civil Hospital – Palanpur (Emergency)	02742-253061
13	Ambulance – 108 Emergency Response	108

Annexure – 27: Nominated persons to declare major emergency

Sr. No.	Name of the plant, department or location	Name & designation of the nominated persons to declare major emergency	Duty or designation given, if any, under the on-site/off-site emergency plan	Phone No.	Residence	
					Phone No.	Address
1	Operations	Mr. Sandeep Kumar (Senior Manager- Operations)	Site Main Controller	+91 84790 00333	As per company records	

Annexure – 28: A form to record emergency telephone call Part A: Essential Information

Details of call as reported

Caller's Name & Designation		Date		Time		Phone No.	
Purpose of call Is any particular advice required immediately?							
Name of Chemicals To be spelt out clearly							
Brief description of incident							
Fire / Explosion / Liquid spill / Gas release							
Quantity involved							
Packaging / Storing / Handling / Using details							
Location of incident							
Cause, if known, in brief.							
Part A : Essential Information							
Has anyone been injured? Yes/No, (If Yes how many)							
Affected by chemicals? Yes/No, (If Yes how many)							
What first-aid has been given?							
Has any one been taken to hospital? Yes/No If yes, address of the hospital.							
Is the road blocked? Yes/No							
Closed to traffic? Yes/No							
Who owns the chemicals? Has the owner been informed? Yes/No							
If caused by vehicle, Vehicle Number							
Name & Address of the owner							
Has the owner been informed? Yes/No							
To whom was the load consigned?							

Annexure – 29: Statutory Communication

Statutory information to be given to:	Periodicity of such information to be given	Date of last information given	To how many persons	Suggestions, Received, if any.	Last date of implementation of Useful suggestions.
The workers	Notice Board, safety information Booklet as per GFR-68K/P	--	To all employees	Applicability and need of suggestions discussed in safety committee meeting	It is an on-going process
The general public and neighboring firms	Notice Board (outside) Announcement	--	To the neighboring firms and general public		
District Emergency Authority	By post By Telephone copy of on-site emergency plan	--	Copy of emergency plan	None	None
Factory Inspectorate	By post By Telephone copy of on-site emergency plan	--	Do	No	It is an on-going process

Annexure – 30: Separation Distances

Sr. No	Substance	Tanks Capacity (M³)	Nos.	Séparation distance (M)
1	MS	21796 KL	8	11M
2	HSD	29855 KL	8	11M
3	SKO	3065 KL	3	11M
4	Ethanol	2463 KL	6	11M
5	Bio-diesel	70 KL	1	11M

Annexure – 31: Emergency Instruction Booklet

Sr. No.	Role to be Played as..... Name emergency designation Viz. incident controller, Particular Key person or see. Worker	His Emergency Duties/Functions	Also refer other relevant document	He should report at
1	2	3	4	5
1.	Incident Controller (I.C.) As per Annexure – 11	1. Rush to accident site, ask field operator to close the required valves. 2. Take charge at the scene if incident and assess the scale of emergency and take necessary action to control and confine the emergency. 3. Decide for continuing the operation of the plant 4. Ensure that outside emergency services have been called in 5. Ensure that SMC and key personnel are informed and called 6. Direct Fire-Fighting operations to internal as well external agencies. 7. Direct essential works to carry out their duties to control the situation and to mobilize their sources. 8. Brief site main controller. 9. Preserve evidences for subsequent fact-finding investigations.	-	Accident Site
2.	Deputy incident Controller (Dy. I. C) As per Annexure – 12	1. Immediately reach at the scene of incident and help I.C. 2. Will act as IC in his absence. 3. Call outside emergency services. 4. Will ensure about the emergency with other depts. Of the company. 5. Will actase link with ECC(SMC)and I.C. (accident site) 6. Arrange for any control devices to stop the leakage.	-	Accident Site

3.	Site Main Controller (S.M.C.) As per Annexure – 13	1. In consultation with I.C. will declare major emergency. 2. Ensure for mutual aid help with CCR. 3. Will direct key personnel for transportation evacuation, medical help, and traffic control etc. 4. Will appraise Govt. and statutory authorities. 5. Take action for rehabilitation of victim's at Hospitable. 6. Take account of all the personnel those who were on duty.	-	Accident Site ECC
4.	Alternate Site Main Controller (S.M.C.) As per Annexure – 13	1. Take control when present in plant 2. Provide management support 3. Coordinate with corporate management	-	Accident Site ECC
5.	Key Personnel As per Annexure – 14	4. Individual key person will act in his respective pre assigned duties to help control emergency. 5. Will take over directives from IC&SMC 6. Come at site with all required equipment's and gadgets.	-	-do-
6.	Essential workers (E.W.) As per Annexure – 15	1. On hearing the bell for continuous 2. minutes, will rush to scene of incident to take directives from I.C. 2. Help in firefighting, first-aid and other work. Check the wind direction & rush to the scene of incident with personal protective equipment's.	-	Accident Site
7.	Fire, Medical, Pollution and Security Team (as per Annexure- 18)	1. Essential workers trained for Fire Fighting and First Aid will act initially in the respective field till the arrival of help from outside. 2. Respective key personnel those who are in charge of said fields will take action for firefighting, will call for Ambulance from Deepak	-	Accident Site
8.	Public Relations Team	1. Team to headed by a Factory Manager / Occupier 2. Appraise Management about outside affected area and public. 3. Make all kind of arrangements including medical treatment for the victims including blood donors if	-	ECC
9.	Non-Essential Workers	1. Take instructions from shift in charge for the plant activities. 2. Assemble at assembly points if situation demands. 3. Do not get panic. 4. Do not obstruct any activity being done for	-	Assembly Point