

SINGAPORE CIVIL DEFENCE FORCE



GUIDELINES FOR COMPANY EMERGENCY RESPONSE PLAN (ERP)

COMPANY'S NAME: ADDRESS : TEL / FAX : EMAIL : DATE OF ISSUE :

EMERGENCY RESPONSE PLAN

PERPARED BY
NAME: _____
APPOINTMENT: _____
DATE OF ISSUE: _____

<u>Contents</u>	<u>Page</u>
Content Page	3
Table of Records	5
1) Emergency Plan Revision	
2) Emergency Exercise Conducted	
Schedule of Clearance*	5
<u>Main Plan</u>	
1 Situation	6
1.1 Introduction	6
1.2 Area of Operation	6
1.2.1 Location of Installation and its main access road	
1.2.2 General Description of site area (including Neighboring buildings and installations)	
1.2.3 Description of Process Areas (including summary of the processes and operations carried out)	
1.2.4 Location, storage and quantities of Hazmat in facility map.	
1.2.5 Layout of installation	
1.3 Hazard and Risk Assessment	7
1.3.1 Main Areas where hazards present on site	
1.3.2 Inventory list of Hazardous Substance handled, stored at the facility	
1.3.3 Descriptions of all Possible Scenario(s)	
2 Aim	8
3 Execution	9
3.1 Concept of Operations	9
3.2 Emergency Actions by installation	9
3.2.1 Procedure to notify SCDF and POLICE	
3.2.1.1 Office Hours and after office hours	
3.2.1.2 Details of workers population during day and night	
3.2.2 Evacuation Procedure	10
3.2.3 IPP Procedure	10
3.3 Grouping and Tasks	10

* **Schedule of Clearance** refers to the issuing of License & permit by regulatory agencies such as SCDF, NEA, MOM, HSA, etc.

3.4	Coordinating Instructions	10
3.4.1	Key Personnel Emergency Contact Numbers	
3.4.2	Factory listing of Neighboring Companies	
3.4.3	Sector Boundaries	
3.4.4	Reporting / Alerting SCDF	
3.4.5	Control Points	
3.4.6	Safety and Others	
3.4.6.1	Emergency Shutdown Procedures	
3.4.6.2	Containment of Hazardous Substances (Spill, Leak and Vapor Release)	
3.4.6.2.1	Containment Procedure	
3.4.6.2.2	List of containment equipment	
3.4.6.3	Monitoring of Release Hazardous Substances (Spill, Leak and Vapour Release)	
3.4.6.3.1	Monitoring Procedure	
3.4.6.3.2	List of monitoring equipment	
3.4.6.4	Fire fighting and rescue	
3.4.7.4.1	Fire fighting and Rescue Procedure	
3.4.7.4.2	List of fire fighting and rescue equipment	
3.4.6.5	Clean up Operations	
3.4.7.5.1	Clean up Procedure	
3.4.7.5.2	List of clean up equipment available	
3.4.7.5.3	Contact List of clean up contractors	
4	Service Support	14
4.1	Equipment	14
4.1.1	Fire Protection Facilities	
4.1.1.1	Detection System	
4.1.1.2	Extinguishment System	
4.1.1.3	Other Extinguishing agents available	
4.1.2	Containment equipment	
4.1.3	Other Protection and General Equipment	
4.1.4	Safety and First Aid Equipment	
4.2	Manpower	15
4.2.1	In-house Emergency Response Team	
5	Command and Signal	16
5.1	Command	16
5.1.1	Incident Organisation Chart	
5.1.2	Location and Component of Command Centre	
5.2	Signal	16
5.2.1	Communication Flowchart	

Table of Records of Emergency Plan Revision

S/N	Plan Version	Date of Exercise*	Date of Approval	Name and Appointment of Approving Officer	Signature of Approving Officer	Remarks

Note:

Date of Exercise – Date where the newly drafted / revised emergency plan been validated the plan. Emergency Plan should only be endorsed and approved after it has been exercised and validated with SCDF.

Table of Records of Emergency Exercise Conducted

S/N	Date of Exercise	Comments	Appointment of Conducting Officer	Signature of Conducting Officer

Note:

Emergency Exercise shall be conducted at least once a year.

EMERGENCY RESPONSE PLAN

1 SITUATION

1.1 Introduction

State the ownership and management of the installation. Write up of the **nature of business, products and method** of the installation's activities and the various agencies involved in the operation such as supplying raw material, etc. (If any other companies are used in the process, state down the company)

*Eg: ABC's plant is owned and managed by XYZ company
(Multi National Company – consist of UK, US and Dutch).*

*The main business of the plant is to produce chlorine gas for
supplying to consumers all over the island of Singapore.*

MNE company (local company) supplied all the raw materials.

1.2 Area of Operations

1.2.1 Location of Installation and its main access road

State the address of the Installation. State all the possible entrances to the installation from the main access roads (Indicate the entrances on the site plan, surrounding lands should be included in the site plan.)

1.2.2 General Description of the surroundings and neighboring premises of the installation

Identify and describe the neighboring occupancies (such as highly populated residential or environmental sensitive areas) surrounding the installation.

1.2.3 Layout of installation

To provide a brief description of the layout of the site such as the location of the admin block, process plants, tank farm, storage warehouse etc with the aid of a schematic site map.

1.2.4 Location, storage and quantities of Hazardous products, chemicals and gases (See Annex 1)

Detailed description of the location, quantity stored and the storage conditions of hazmat such as storage temperature,

pressure etc at site. Location of the Hazmat must be indicated on the site plan(s) clearly.

1.2.5 Description of Process Areas (including summary of the Process and operations carried out)

A brief summary of the processes, operations and other activities such as hot works carried out within the process areas. State the duration of the each processes and operations (24 hours daily, only normal office works)

Provide a summary table of all process at various location of the installation.

1.3 Hazard and Risk Assessment

1.3.1 Main Areas where hazards present on site

State the main areas of hazards (flammable, toxic, etc) and the Safety / Emergency Control Measures that are in place to handle the hazards. The MSDS of each hazmat that could be found at site must be included in the ERP.

Eg. Releases from XXXX Handling

(1) Hazards

The two principal potential hazards following a release of XXXXX are evaporation of the volatile liquid leading to the formation of a flammable vapour cloud in the atmosphere, and radiation from an ignited pool fire. Ignition of the cloud might also lead to a vapour cloud explosion.

If XXXXX were spilled onto open, flat ground, it would spread out to form a shallow pool. If the releases were not stopped, the pool would continue to spread until it reached an equilibrium size where the spill rate was equal to the evaporation rate (for unignited releases) or burning rate (for ignited releases)

(2) Emergency Control Measures

XXXXX vapour is normally 1.5 times heavier than air and the vapour produced as XXXXX vaporises from the liquid at its normal boiling point is even heavier. Therefore, it will tend to spread along the ground assisted by the visible fog of condensed water vapour created. Ignitable mixtures extend beyond the visible area. Such escape can be controlled by water spray. Water should be applied to fire-exposed tanks and cool surrounding risks. Eliminate all sources of ignition and the flow of gas should be stopped, if possible.

(3) *Safety Control Measures:*

- a. *XXXXX gas leak detectors are installed to detect gas leaks.*
- b. *Automatic water spray system with heat detectors is installed to activate and drench the tanks when the temperature is high.*
- c. *Daily monitoring by shift personnel for leakage*

1.3.2 Descriptions of ALL possible scenarios

Identify and describe all the possible scenario(s), including the worst case scenarios that could happen. State briefly all the assumptions, risk studies methodology adopted and mitigation measures identified in these scenarios. Tabulate and draw all the possible hazard zones, consequence distances and safety distances necessary for each scenario involved on the site plan. See [Annex 2](#) for the criteria for determining hazard distances.

2 AIM

The aim of this emergency response plan is to detail the various preventive measures and operational actions that need to be undertaken by the company to contain any hazmat leaks, spill and control or extinguish any fire in the event of a emergency situations that occur within the installation so to prevent and reduce injury to personnel and minimize property damage and loss.

3 EXECUTION

3.1 Concept of Operations

The emergency operation to be conducted in phases is as follows:-

Phase	Action
I	Company personnel to carry out initial response and alert SCDF / Police
II	SCDF / SPF predetermined turnout response to the scene for mitigation, containment, security cordoning, evacuation and rescue activities.

III	To conduct major operations for containment and minimise risks with other related agencies
IV	To clean up / decontaminate and resume normal operations.

3.2 Emergency Actions by installation

Detail description of the emergency actions to be carried out by Company Emergency Response Team (CERT) [See Annex 3](#) as follows:

3.2.1 Procedure to notify SCDF and POLICE

3.2.1.1 Notification procedure during office hour and after office hour

Standard Operating Procedures (SOP) to be adopted to notify SCDF and Police in the event of an emergency discovered during and after office hours.

Eg: During office hour, any occurrence of incident resulting in an emergency alarm, the shift supervisor on duty will activate in house emergency response procedure. The site incident commander (SIC) will be notified and he will inform SCDF Control Room by telephone after initial assessment of the situation. The SIC will be the liaison officer with SCDF ground commander. He will provide information and necessary assistance to SCDF ground commander.

3.2.1.2 Workers population during day and night

State the working population of during day and night including Sundays and public holidays.

3.2.2 Procedure for emergency evacuation

See guidelines in <http://www.scdf.gov.sg>

3.2.3 Procedure of implement In-Place Protection

See guidelines in <http://www.scdf.gov.sg>

3.3 Grouping and Tasks ([See Annex 4](#))

State the role and responsibilities of various group (Site main controller, site incident controller, emergency response team, security personnel, key personnel) in Annex.

3.4 Coordinating Instructions

3.4.1 Key Personnel Emergency Contact Numbers

The key personnel to be notified must be contactable during office hour and after office hour (Contact No. must include both the contact numbers during office hour and after office hour, eg individual Handphone / Pager or Home contact no.)

3.4.2 Contacts of Neighboring Companies

To provide the contact number of the neighboring companies within 500m radius, whereby in the event of the incident escalating beyond the boundaries of the installation, the company will have to inform its neighbors.

3.4.3 Sector Boundaries

To identify the various sectors of operations so as to determine the potential hazard zones and evacuation zones.

Note:

The incident site will be sectorised into HOT, WARM and COLD zone during emergency. The definitions of the various zones are as follows:

Hot Zone – This is the area around the incident that required all personnel entering to be fully protected by means of Breathing Apparatus sets and proper protective clothing and to be decontaminated upon leaving the zone.

Warm Zone – This is the area directly outside Hot Zone. All personnel in this zone should be equipped with Breathing Apparatus and if situation requires, done the mask for full protection against toxic hazard gas,

Cold Zone – This is non-hazard zone outside the Warm Zone.

3.4.4 Reporting / Alerting SCDF

Detail the procedures and method of activation of SCDF and upon arrival of SCDF ground commander.

For Example:

- (1) *For activation of SCDF:
The message to be used to activate SCDF and Police Force during emergency shall include the following information :-*
- (a) *Location of the incidents.*
 - (b) *Type of incident.*
 - (c) *Chemical involved.*
 - (d) *Leakage with or without fire.*
 - (e) *Chemical company name and contact number.*
 - (f) *Casualties involved.*
- (2) *Upon arrival of SCDF Ground Commander
Site incident commander will marry up with SCDF Ground Commander, brief him on the incident and the actions that the ERT had done prior to arrival of SCDF and provide him all necessary information (such as location map, etc) and necessary communication equipment.*

3.4.5 Control Points

Explain the purpose of each control point (Reporting Point, Evacuation Assembly Area, First Aid Point, etc). Indicate the location of all control points on the layout map.

3.4.6 Safety and Others

Details of other safety measures adopted by company to minimize the risks involved during an emergency.

3.4.6.1 Emergency Procedures

3.4.6.1.1 Emergency Shutdown Procedure

To describe briefly the emergency shutdown procedures for various process and equipment, during an emergency such as the gas leakage, loss of containment storage tank etc. Attach details of shutdown procedure of various process and equipment as Annex.

3.4.6.1.2 Evacuation Procedure

General description of how evacuation will be conducted. Attach the company's emergency evacuation plan as an Annex.

3.4.6.2 Containment of Hazardous Substances (Spill, Leak and Vapor Release) [See Annex 5 for the sample report](#)

3.4.6.2.1 Containment Procedure

To describe briefly of the containment procedures in-place for hazmat spill, leak and vapor release. Attach full plan as an Annex

3.4.6.2.2 List of containment equipment

Tabulate the information (Type, quantity and function) of the containment equipment or facilities that are available in the company.

3.4.6.3 Monitoring of Release Hazardous Substances (Spill, Leak and Vapour Release)

3.4.6.3.1 Monitoring Procedure

Describe how monitoring activities will be carried by the company. Attached monitoring plan as an Annex.

3.4.6.3.2 List of monitoring equipment

Tabulate the information (Type, quantity, general functions / capabilities and location) of the monitoring equipment (portable gas detectors, pH meters, organic vapor monitor, etc) that are available in the company.

3.4.6.4 Fire Fighting and Rescue

3.4.6.4.1 Fire fighting and Rescue Procedures

Descriptions of the fire fighting and rescue procedures that will be carry out by the installation to mitigate the incident. Attached full details of the fire fighting and rescue procedure / plan in Annex.

3.4.6.4.2 List of fire fighting and rescue equipment

Tabulate the information (Type, quantity, general functions / capabilities and location) of the fire fighting and rescue equipment (fire hydrant, tug boat, fixed monitor, fire hoses, fire nozzles, portable pump, foam carrier, foam tender, fire engine, etc) that are available in the installation.

3.4.6.5 Clean up Operations

3.4.6.5.1 Clean up Procedure

Descriptions of the clean-up procedures that will be carried out by the company at the recovery stage. Attached full details of containment procedure / plan in Annex.

3.4.6.5.2 List of clean up equipment

Tabulate the information (Type, quantity, general functions / capabilities and location) of the clean up equipment (boom, absorbent, overpack drums, etc) that are available in the installation.

3.4.6.5.3 List of clean up contractors

Tabulate the information (Name, Address, Contact Person and Contact No, type of the clean up actions take will be done) the clean-up contractors used by the installation.

4 SERVICE SUPPORT

4.1 Equipment

4.1.1 Fire Protection Facilities

4.1.1.1 Detection System

Description of the detection system such as smoke, fire fighting monitoring and gas detection, leakage detection system, wind vane/wind sock etc available in installation. Indicate the location of detection

system on the site installation map.

4.1.1.2 Extinguishment System

Description of the extinguishing system (such as fire-water extinguishing, sprinkler system, drencher system for fuel oil tanks, hydrant, fire extinguishers carbon dioxide and foam system) available in installation. Indicate the location and quantities (if any) of the various extinguishment system on the site map.

4.1.2 Extinguishing Agent

Tabulate the information of the extinguishing agents (type – foam concentrate stock, chemical powder, brand name, package, location and quantities) used.

4.1.3 Containment equipment (leak control, spill control, Absorbents, etc)

Tabulate the information (name, quantity and location) of the containment equipment used.

4.1.4 Other Protection and General Equipment

Tabulate the information (name, quantity and location) of other protection and general equipment used in the installation.

4.1.5 Safety and First Aid Equipment

Tabulate the information (type, capacity, quantity and location) of the safety and first aid equipment such as breathing apparatus, resuscitators, stretcher, blanket, first aid box, etc.

4.2 Manpower

4.2.1 In-house Emergency Response Team

Show the organization structure of the in-house emergency response team. Describe the roles, responsibilities and functions of the in-house company emergency response team (CERT). [See Annex 3](#)

5 COMMAND AND SIGNAL

5.1 Command

5.1.1 Incident Organisation Chart

Show the incident organisation chart. Describe the roles and responsibilities of the key personnel in the incident organisation chart.

5.1.2 Location and Component of Command Centre

Indicate the location of the command centre on the installation map

Indicate the location of site incident controller, site main controller, etc.

5.2 Signal

5.2.1 Communication Flowchart

Communication flowchart showing details on the linkage between Site Main controller, site incident controller, in-house emergency response team commander and SCDF ground commander. State also means of communication (walkie-talkie, etc) between each party.

Inventory List of Hazardous Substances

Table 1: Summary

UN Class	Maximum Quantity Stored On-Site (MT/Kg)
<u>Class 2</u> Flammable Gas, Non-flammable Compressed Gas, Poison Gas	
<u>Class 3 & 4</u> Flammable Liquid, Flammable Solid, Spontaneously Combustible, Dangerous Wen Wet	
<u>Class 5</u> Oxidising Agent, Organic Peroxide	
<u>Class 6</u> Poison, Harmful, Infectious Substance	
<u>Class 8</u> Corrosive	

Table 2: Details

Chemical	UN Class	PSA DG Grouping	NFPA H/F/R*	Physical Form	Type of Packaging / Container	Unit Capacity of packaging / Container (Metric Tonnes / Kg)	Total No. of Packaging / Container	Maximum Qty Stored On-site (Metric Tonnes / Kg)

*** State the Health / Flammability / Reactivity value of chemical**

Criteria for calculating consequence distances

Hazard Model	Results
Thermal Radiation	Distances to:
	(1) 4.0 kW/m ²
	(2) 12.5 kW/m ²
	(3) 37.5 kW/m ²
	(4) Maximum fireball radius (5) Duration of fireball
Blast Overpressure	Distances to
	(1) 5.0 psi
	(2) 2.0 psi
	(3) 1.0 psi (4) 0.5 psi
Exposure to Toxic Release / Gases	Maximum Downwind distance to:
Fatality Zone: 3% fatality	Fatality Zone
Injury Zone: IDLH (< 1% fatality for 30 mins exposure)	Injury Zone
Hot Zone: IDLH	Hot Zone
Warm Zone: TLV	Warm Zone
	Using meteorological input: <ul style="list-style-type: none"> • Wind speed = 1 m/s, Stability F • Wind speed = 2 m/s, Stability B • Wind speed = 3 m/s, Stability C • Wind speed = 1 m/s, Stability D

Annex 3

ROLES AND RESPONSIBILITIES OF CERT

Site Main Controller (SMC)

SMC is the senior member of the installation management. He is the person who is overall in-charge of the emergency response operations in the installation and liaises with senior officials of government agencies such as SCDF, SPF, NEA, etc. Under circumstances whereby the SMC is unable to leave the plant, he/she may appoint another suitable representative to link up with the Incident Manager at TACT HQ.

The Key Responsibilities of the SMC includes:

- (a) Coordinate the activities of external emergency organizations and work closely with the Incident Manager at TACT HQ during consequence management.
- (b) Provide TACT HQ with the following information
 - i) Site Layout Map
 - ii) Building plan
 - iii) Company emergency response plan
 - iv) Company's hazmat inventory and location of hazmat inventory
 - v) Overall workers population
 - vi) Incident resources available at site

- (c) Provide the Incident Manager with the necessary information and decisions to any actions that concerns the company SOPs and policies
- (d) Authorize the shut down of operations in the installation
- (e) Authorize the release of information to the media and government agencies
- (f) Assist the Incident Manager in determining the termination of the emergency and authorizing re-entry upon complete recovery

Site Incident Controller (SIC)

He/She shall be a senior member of the installation supervisory staff. He is overall of the actual ground response operations. He/She is to provide assistance and information to SCDF ground commander during operation.

The Key Responsibilities of SIC includes:

- (a) Establishing the on-site emergency response team
- (b) Sizing up incident situation and recommending response strategy and tactical plan
- (c) Determining incident control zones
- (d) Setting up field incident command post
- (e) Commanding and directing emergency response team
- (f) Ensuring emergency responders safety and monitor personnel fatigue and stress

- (g) Deploying emergency equipment and appliances
- (h) Directing rescue operations if necessary
- (i) **Maintaining constant communication with SMC and the emergency responders**
- (j) Working closely with SCDF emergency officer in charge at the incident command post
- (k) Ensuring proper decontamination of equipment and responders
- (l) Coordinating recovery activities

Annex 4

Detail Grouping and Tasks

S/NO	GROUPING	GENERAL TASKS	PHASE	DETAILED TASKS	REMARKS
1	Site Main Controller		I		
			II		
			III		
			IV		
	Site Incident Controller		I		
			II		
			III		
			IV		
2	Emergency Response Team		I		
			II		
			III		
			IV		

* Grouping included : Site Incident Controller (SIC), Site Main Controller (SMC), Emergency Response Team, etc.

Annex 5

SAMPLE REPORT

Emergency Notification Procedures for various emergency scenarios

1 Fire

- 1.1 The first person who discovers the fire will:
 - 1.1.1 activate the nearest fire alarm call point
 - 1.1.2 confirm location with the Gatehouse by calling Ext 123
 - 1.1.3 attempt to put out the fire if situation permits
- 1.2 An indication will be displayed at the Gatehouse fire alarm panel as to where the alarm was activated.
- 1.3 A signal will automatically be transmitted via the direct line to the alarm monitoring agency and the SCDF.
- 1.4 The Security Guard will announce the location of the emergency and the ERT will proceed immediately to the scene of emergency. The SIC will confirm the nature of the emergency and instruct the Security Guard to verify with the alarm monitoring agency.

2 Chemical Spillage

- 2.1 The first person who discovers the emergency shall:
 - 2.1.1 try to locate the source of spillage and contain the spill without taking undue risk.
 - 2.1.2 confirm location with the Security Guard by calling Ext 123.
- 2.2 The Security Guard shall contact the SIC to proceed to the scene of spillage.
- 2.3 The SIC shall determine the severity of the spillage and instruct Security Guard to take one or more of the following actions:
 - 2.3.1 announce over the PA system to summon the ERT
 - 2.3.2 notify the Pollution Control Department of NEA
 - 2.3.3 notify SCDF

3 Medical Emergency

- 3.1 The first person who discovers the emergency shall:
 - 3.1.1 Apply first aid if he or she is trained.
 - 3.1.2 call the Security Guard at Ext 123 to inform of the nature of medical condition and location of emergency
- 3.2 On receiving the call, the Security Guard shall immediately contact the SIC.
- 3.3 The SIC and first response team shall proceed to the scene. He shall instruct the Security Guard or support team personnel to take one or more of the following actions:
 - 3.3.1 announce over the PA system to summon for first aiders
 - 3.3.2 summon an ambulance by calling:
 - (i) For non-emergency case, private ambulance at tel no. 1777.
 - (ii) For emergency case, SCDF ambulance at tel no. 995
 - 3.3.3 Should the need arises, the SIC shall instruct an employee to use his private car to deliver the casualty to one of the medical centers below:

Hospital	Address	Telephone
ABC Hospital	111 XXX lane	61111111
XYZ Hospital	231 XXX Road	62222222

4 Containment of Chemical Release

- 4.1 On receiving a call on chemical release, the Security Guard shall confirm the exact location with the informer.
- 4.2 The Security Guard shall contact the SIC through the walkie-talkie to mobilize ERT members of the area(s) nearest to the location of the incident via the paging system:

"CERT members from ABC Plant, proceed to (location) immediately"
- 4.3 SIC will assess the situation and declare the appropriate Alert Level accordingly.

- 4.4 SIC will instruct the ERT members to don full protective clothing and SCBA set where necessary.
- 4.5 SIC will instruct an ERT member to perform the necessary gas test at appropriate locations.
- 4.6 SIC shall direct efforts to isolate the source of release and contain any spillage with absorbents if necessary.
- 4.7 For releases from a tanker, the SIC shall instruct the tanker driver to switch off the engine and evacuate.
- 4.8 SIC may give instruction to remove other chemical containers / drums / bags away from the scene if necessary.
- 4.9 For Solvent Recovery area, the SIC shall instruct the Process Engineer in the Control Room to do any following action(s):
 - a. stop all pumps by activating the emergency switch
 - b. stop feed and steam supply to distillation columns and hold level
 - c. stop any tanker loading / unloading
 - d. stop all contractors working in Solvent Recovery
 - e. help to contain the spillage
- 4.10 For spillage of flammable chemical, cover with foam
- 4.11 Attempt to recover and transfer into appropriate containers. Spilled chemical may be recovered by pumping into drums or an empty storage tank using an air pump.
- 4.12 The SIC shall oversee the recovery operations by observing the followings:
 - a. Do not take any undue risk
 - b. Wear suitable protective clothing (Chemical suits, gloves, boots, SCBA)
- 4.13 Neutralize the chemical where appropriate and wash area with plenty of water and channel all waste water to a holding tank for subsequent treatment in the Effluent Plant where possible. Otherwise, drum the chemical for subsequent disposal.
- 4.14 If the quantity of spillage is substantial or the chemical has threatened to enter public drainage system, immediately instruct Gatehouse to notify SCDF and Pollution Control Department of NEA.
- 4.15 If spillage is serious and cannot be controlled, evacuate from scene and await for help

5. Table of Containment Equipment

S/N	Items	Quantity	Function	Location
1				
2				

5 Monitoring of Hazmat Release Procedure

- 5.1 The CERT member shall use the appropriate portable instrument directed by SIC to monitor the level of the relevant chemical and keep the SIC updated.
- 5.2 SCBA must be donned for entry into areas where the level has exceeded the PEL (Permissible Exposure Limit) or instructed by SIC.
- 5.3 The SIC shall order evacuation if the level has exceed the PEL (Short Term).
- 5.4 The CERT member shall monitor the wind direction by observing the wind-sock mounted on the top of the Plant to determine the direction of vapour spread.
- 5.5 CERT shall monitor the presence of flammable solvent at designated locations where fixed monitors have been installed. He shall notify SIC where any alarm has been set off.

Table of Monitoring Equipment

S/N	Items	Quantity	Function	Location
1				
2				

6 Fire Fighting and Rescue Procedure

- 4.1 When the a fire alarm sounds, the Security Guard announces the location of the fire indicated on the alarm control panel in the Gatehouse.
- 4.2 SIC assesses and declares the appropriate aICERT level.
- 4.3 Assistance Shift Supervisor assigns an CERT Assembly Area (CERT AA) depending on the location of the fire.
- 4.4 The other CCERT members gather at CERT AA and prepare to receive further instructions to fight fire or rescue casualty.
- 4.5 Activation of certain fire fighting facilities have been pre-allocated to the Shift Technicians.
- 4.6 If the fire is at Solvent Recovery, the CERT will use fire extinguishers located at Effluent Treatment Plant Room.
- 4.7 If the fire is at Canteen Building, the CERT will use fire extinguishers located behind the LPG Storage Area at the covered carpark, Administration Building.
- 4.8 Breathing Apparatus (BA) sets must be used for any attempt to enter the scene for emergency operation or rescuing of casualty. The rescue must be done in pairs and the BA sets should be used only once.
- 4.9 One CERT member will be assigned as Recorder to take note of the number of employees entering the emergency scene / building.
- 4.10 One Shift Technician from Solvent Recovery will open North and South entry gates to Solvent Recovery if there is an emergency in the area.
- 4.11 Other duties of CERT including mobilizing of foam tenders, SCBA cylinders and ambulance stretchers as required.
- 4.12 All casualties are to be sent to the First Aid Post at Administration Building as soon as possible, using stretchers, if necessary.
- 4.13 On arrival of the SCDF, the SIC shall handover to Duty Officer and brief him about the actions taken.
- 4.14 SIC will provide assistance to the SCDF as necessary until the emergency is over.

Table of Fire Fighting and Rescue Equipment

S/N	Items	Quantity	Function	Location
1				
2				

7 Recovery Procedure

7.1 Clean up of Chemical Release

- 7.1.1 The SIC shall assess the damage of the affected area (in term of estimate losses of equipment, machinery, personnel, injured and material losses, etc). He shall prioritize list of necessary repair / reconstruction work, CERT assignments and estimate of completion schedules.
- 7.1.2 Once notified, the CERT shall mobilise the chemical spill control trolley located in the Spill control kit store to the scene of incident.
- 7.1.3 The SIC shall assess the situation and determine the level of PPE and course of emergency action.
- 7.1.4 After donning the appropriate PPE as recommended PPE as recommended by the MSDS, the CERT shall attempt to isolate the source of spillage and prevent liquid chemical from flowing out of the site. This can be done by activating the penstock valves (if not already activated automatically) or by dropping sand bags into the affected drain ahead of the spill. Spillages on surfaces can be contained with adsorbent socks or saw dusts.
- 7.1.5 For minor spill, the ERT shall attempt to clean up and neutralize the spill as recommended by the individual MSDS on the appropriate decontamination methods for each chemical.
- 7.1.6 For moderate to major spill, the SIC shall inform the Engineer Officer or the Safety, Health and Environment Manager to contact one of waste disposal contractors for assistance.
- 7.1.7 Drums containing contaminated waste are to be clearly labeled and properly treated via the Solvent Recovery or licensed waste disposers.

7.1.8 The SIC shall inform ensure the appropriate medical support is provided to injured personnel, notify next-of-kin, obtain the prognosis and estimate of medical cost. He should also need to satisfy reporting requirement of MOM, NEA or MOH as necessary.

7.1.9 The SIC shall inform SCDF, MOM and NEA and conduct joint investigation on the accident. The SIC shall prepare and submit necessary report.

Table of Equipment for recovery purposes

S/N	Items	Quantity	Function	Location
1				
2				

8. List of Clean-up Contractors

Contractor	Task	Contact Person (Appointment)	Office Contact No.	Handphone / Pager
XYZ Pte Ltd 3 Tuas lane	Acid Waste Collection	Mr XX Lim (Operations Manager)	6777 7777	97777777