

emergency planning  
guidance notes

- content of emergency plans
- planning for mutual aid

Prepared on behalf of the CONCAWE Major Hazards Management Group by the Special Task Force on Emergency Planning (MH/STF-1)

W.A.G. Bridgens (Chairman)

S. Casarino

G. Marlier

R. Clark

R. Veldhuijzen

M.J. Wriglesworth (Technical Coordinator)

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ABSTRACT

These are two of a series of Guidance Notes being issued by CONCAWE on the general subject of major hazards with specific reference to the implementation of the requirements of the Seveso Directive. The overall purpose of these Notes is to provide guidance to CONCAWE contributing companies on various aspects of the assessment and control of major hazards. The Notes also assist National Regulatory Authorities in their contacts with the Petroleum Industry.

The Guidance Note on "Content of Emergency Plans" assists in defining those items which should be addressed in On-site Emergency Plans as well as outlining a recommended format for the emergency manual. In addition, some guidelines for the content of Off-site Emergency Plans are described. The Guidance Note on "Planning for Mutual Aid" is to assist in preparing plans to harness the combined resources of plants within a region in the event of an emergency at any one site.

These bring the number of Guidance Notes so far published in this series to five.

Considerable efforts have been made to assure the accuracy and reliability of the information contained in this publication. However, neither CONCAWE — nor any company participating in CONCAWE — can accept liability for any loss, damage or injury whatsoever resulting from the use of this information.

*This report does not necessarily represent the views of any company participating in CONCAWE.*

FOREWORD

These are two further Guidance Notes of a series issued by CONCAWE on the general subject of major hazards with specific reference to the implementation of the requirements of the Seveso Directive. The first three Guidance Notes were published in CONCAWE Report No. 11/87.

The overall purpose of these Notes is to provide guidance to CONCAWE contributing companies on various aspects of the assessment and control of major hazards. The Notes may also assist National Regulatory Authorities in their contacts with the Petroleum Industry.

The Guidance Note on "Content of Emergency Plans" has been prepared to assist refinery and marketing installations in defining those items which should be addressed in On-site Emergency Plans as well as outlining a recommended format for the emergency manual. In addition some guidelines for the content of Off-site Emergency Plans are described to help in dialogue with local authorities in making preparations to handle major incidents which may affect the local community.

The Guidance Note on "Planning for Mutual Aid" has been prepared to assist refinery and marketing installations in preparing plans for Mutual Aid in the event of a major accident. Mutual Aid Agreements are of value to all petroleum operations since they help to extend the reserve of fire fighting and rescue equipment available to any one site. They are especially useful to the operators of terminals and marketing depots where the availability of trained manpower is inevitably much lower than at refinery installations.

	<u>Page</u>
<u>CONTENT</u>	
<u>FOREWORD</u>	
<u>CONTENT OF EMERGENCY PLANS</u>	
1. <u>INTRODUCTION</u>	1
2. <u>CONTENT OF THE ON-SITE EMERGENCY PLAN</u>	2
3. <u>OBJECTIVES AND SCOPE OF THE ON-SITE EMERGENCY PLAN</u>	2
4. <u>HANDLING THE EMERGENCY</u>	3
4.1 REPORT THE EMERGENCY	3
4.2 IMMEDIATE ATTENDANCE, SIZING-UP AND CATEGORISING THE EMERGENCY	3
4.3 IMMEDIATE EMERGENCY ACTIONS	3
4.4 DEFINITION OF STRATEGY AND INITIATION OF TACTICAL ACTIONS	4
4.5 INITIATING OFF-SITE EMERGENCY ACTIONS	4
4.6 END OF THE EMERGENCY	5
5. <u>EMERGENCY ORGANIZATION</u>	6
5.1 EMERGENCY MANPOWER AND COMMAND STRUCTURE	6
5.2 EMERGENCY CONTROL CENTRES	6
5.3 CALL-IN PROCEDURES	7
5.4 EMERGENCY ALARM AND COMMUNICATIONS SYSTEMS	7
5.5 THE MEDICAL EMERGENCY PLAN	8
5.6 LIAISON WITH OUTSIDE GROUPS	9
6. <u>EMERGENCY EQUIPMENT AND RESOURCES</u>	10
6.1 INSTALLATION RESOURCES	10
6.2 LOCAL AUTHORITY RESOURCES	10
6.3 MUTUAL AID	10

7.	<u>TYPES OF EMERGENCY</u>	11
7.1	FIRE	11
7.2	VAPOUR RELEASE	11
7.3	ON-SITE EVACUATION	12
7.4	SPECIAL EMERGENCY PLANS AND PROCEDURES	12
8.	<u>DOCUMENTING AND UPDATING THE ON-SITE EMERGENCY PLAN MANUAL</u>	14
8.1	FORMAT OF THE PLAN	14
8.2	TRAINING AND REHEARSAL OF PLANS	14
8.3	UPDATING THE PLAN	15
9.	<u>THE OFF-SITE EMERGENCY PLAN</u>	16
	<u>PLANNING FOR MUTUAL AID</u>	
1.	<u>INTRODUCTION</u>	17
2.	<u>PLANNING FOR MUTUAL AID</u>	18
3.	<u>RADIUS OF OPERATION OF MUTUAL AID PLAN</u>	20
4.	<u>INFORMATION ABOUT AVAILABLE RESOURCES</u>	21
4.1	NAME AND EXACT ADDRESS OF PARTICIPATING COMPANY	21
4.2	NAME AND TELEPHONE NUMBERS	21
4.3	EQUIPMENT AND MATERIALS	21
5.	<u>COMPATIBILITY OF EQUIPMENT</u>	23
6.	<u>REHEARSAL</u>	23

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NOTE

CONTENT OF EMERGENCY PLANS

1. INTRODUCTION

The overall objectives of emergency planning may be summarized as follows:

- to contain and control emergency incidents
- to safeguard people On- and Off-site
- to minimize damage to property and the environment

Despite all the precautions taken to maintain safe plant operation in refineries and marketing terminals, from time to time incidents will occur. Fires, spills and releases of flammable or toxic materials are the most common types of incident which can lead to serious consequences unless quickly brought under control. Such incidents can occur in road, rail or dock operations, maintenance and construction work, as well as in normal processing operations.

The Installation On-site Emergency Plan has to be a framework which prescribes an organizational structure, responsibilities, communications, procedures, and a means to integrate with the local authority emergency services, to control a range of incidents. This organizational framework must be sufficiently flexible that it allows the emergency team to apply their skill, judgement and resources to deal effectively with any possible incident that might arise. In addition the Plan needs to be concise, readable and presented in a form ready for use in real emergencies as well as for training.

The organizational response defined in the On-site Emergency Plan must be complemented by other related plans such as the detailed process emergency shutdown procedures for each process unit, and the detailed procedures for the operation of the installation's fixed and mobile fire-fighting equipment. These procedures are of course highly critical to the successful handling of an emergency, but they are normally documented separately from the On-site Emergency Plan and their content is beyond the scope of this document.

The On-site Emergency Plan must also be consistent and coordinated with the local authority Off-site Emergency Plan for the installation, which is discussed later in this paper.

2. CONTENT OF THE ON-SITE EMERGENCY PLAN

There will be variations in the On-site Emergency Plans among refineries and marketing terminals, reflecting differences in extent and type of facilities, management organization, manning of the emergency team by installation and outside personnel, etc. However, the basic structure and content of the Plan should be similar regardless of the location and exact nature of the operation. The On-site Emergency Plan Manual will normally include the items summarized in the headings which follow. In some cases a distinction is drawn between that information which relates to essential action steps, and technical backup information. The action type information should be included in the main body of the Manual while the latter can be described in a technical reference section at the end.

3. OBJECTIVES AND SCOPE OF THE ON-SITE EMERGENCY PLAN

This section should be an introduction to the Plan with a statement of the overall objectives and scope similar to that given in the Introduction to this paper.

4. HANDLING THE EMERGENCY

This section covers the action steps in the On-site Plan.

4.1 REPORT THE EMERGENCY

The means by which an emergency is first reported should be defined:

- o The procedure for reporting an emergency situation
- o Information to be given by the person reporting
- o Where and by whom the report is to be received
- o The action required of the individual receiving the report, including means of communicating with the "immediate attendance" personnel who need to respond

4.2 IMMEDIATE ATTENDANCE, SIZING-UP AND CATEGORISING THE EMERGENCY

This part should prescribe:

- o Who should attend immediately at the incident
- o Who takes the position of Incident Controller and therefore assesses the incident
- o Who selects the emergency category. Emergency categories, usually two or three, ranging from minor to major emergency should be defined in this section

4.3 IMMEDIATE EMERGENCY ACTIONS

All or some of the following immediate pre-planned actions are required, depending upon the nature and scale of the emergency:

- o Sounding the appropriate fire or gas alarm signal
- o Commissioning of fire pumps
- o Call-in of installation personnel
- o Evacuation of non-essential personnel and headcount by their supervisors



- o Headcount of operating personnel on the affected installations
- o Initiation of the Emergency Medical Plan to the extent necessary for the incident
- o Call-in of local authority emergency services
- o Establishing the Forward Control Centre and the wearing of identification by key personnel

#### 4.4 DEFINITION OF STRATEGY AND INITIATION OF TACTICAL ACTIONS

The Emergency Plan should address the means by which the following tactical plans would be communicated and implemented:

- o Process actions
- o Fire-fighting actions
- o Handling vapour clouds
- o Accounting for personnel/casualties
- o Need for additional resources, including inter-company assistance ~ mutual aid
- o Manpower and traffic control, including reporting arrangements for incoming personnel
- o Personal needs of the emergency teams, e.g. dry clothing, food and drink, relief arrangements for long duration incidents, etc.
- o Appropriate liaison with outside groups including the media
- o Contingency plans for loss of key facilities, e.g. communications equipment, control centre, etc.
- o Contingency plans to prevent escalation, e.g. flooding, structural collapse, water pollution, etc.

#### 4.5 INITIATING OFF-SITE EMERGENCY ACTIONS

In a major emergency situation which clearly has potential for harmful toxic, heat radiation or blast effects outside the installation boundary, the Off-site Emergency plan should be initiated to protect the local community. It would normally be the responsibility of the Refinery Emergency Manager to recommend this course of action to the senior local authority emergency services officer if this is

judged to be necessary - refer also to Guidance Note, "Responsibilities of Petroleum Industry and Regulatory Authorities in Off-site Emergency Planning" (see CONCAWE Report No. 11/87). An outline of the probable content of the Off-site Emergency Plan is described at the end of the current paper.

4.6

END OF THE EMERGENCY

The On-site Emergency Plan should define the criteria and responsibility for declaring the end of the emergency, and when the emergency organization can be stood down.

5. EMERGENCY ORGANIZATION

This section describes the essential requirements of the installation emergency organization, how it is built up from the initial nucleus of personnel available on shift, and how it is integrated with the local authority emergency organization.

5.1 EMERGENCY MANPOWER AND COMMAND STRUCTURE

A clear understanding of responsibilities is essential for effective functioning of the overall emergency organization, and to this end, the following should be included in the On-site Emergency Plan Manual:

- o A description of the installation emergency organization, with a "role and responsibility" statement for each of the key positions
- o A list of deputies for key personnel
- o A summary description of the local authority emergency organization
- o An overall organization command structure diagram
- o Definition of respective responsibilities at the interfaces between the installation and local authority organizations at any stage of the emergency
- o Definition of identifiable equipment worn by key personnel in the emergency organization

5.2 EMERGENCY CONTROL CENTRES

This section should describe how the emergency response control centres will be established. The following points should be included:

- o Description of the functions and manning of the emergency control centres. Most refineries have identified the need for the following control centres for a major scale incident:
  - Forward Control Centre (located close to incident)
  - Emergency Control Centre
  - Emergency Medical Control Centre

- o List of the facilities available in the Control Centre, including communications systems, flow plans, plant inventories, plot plans, maps of surrounding areas, reference documents. Specific details of plant inventories, communications equipment, etc. should not be included in this section but described in a technical reference section which may be included at the end of the Manual.

### 5.3 CALL-IN PROCEDURES

The following details of the call-in procedures should be noted in the On-site Emergency Plan Manual:

- o Call-in of local authority emergency services (fire, medical and ambulance services) and notification of the police, where necessary
- o Call-in of off-shift installation personnel (fire chief, fire-fighters, medical personnel, operators, supervisors, managers)
- o Call-in of other specialists, as required (maintenance personnel, safety specialists, technical engineers, laboratory technicians, operations planning engineers, warehouse personnel)
- o Call-in of assistance from other sites under mutual aid provision

Call-in lists need frequent review and updating to take account of personnel changes.

### 5.4 EMERGENCY ALARM AND COMMUNICATIONS SYSTEMS

Emergency alarm and communications systems should be described in a technical reference section of the On-site Emergency Plan Manual, including summaries of the following:

- o Technical descriptions of the equipment, including power supply and back-up systems
- o A user's operating guide
- o Link-up with local authority emergency services systems.

5.5 THE MEDICAL EMERGENCY PLAN

The Medical Emergency Plan for the treatment of casualties is integrated with the On-site Emergency Plan. The following organization and procedural aspects should be included in the On-site Emergency Plan Manual:

- o Organization and manpower
- o Emergency medical centres and facilities
  - medical control centre
  - casualty collection point (a safe location near the scene of the emergency, designated for the particular incident)
  - refinery and/or local authority ambulances
  - medical treatment centre
  - temporary mortuary
- o Casualty handling procedures
  - immediate first aid
  - prioritisation and treatment of casualties at the casualty collection point
  - transportation to the installation medical treatment centre or to hospital, as appropriate
  - transportation to specialist hospitals when necessary for treatment of serious injuries such as burns or effects of toxic gas exposure, including means of rapid transfer (e.g. by helicopter)
  - documentation of casualties, injuries and treatment, and transmission of this information in advance to receiving hospitals
  - notification of relatives (this would be a joint responsibility of the installation medical and employee relations functions)

5.6 LIAISON WITH OUTSIDE GROUPS

The On-site Emergency Plan must make provisions for responding to outside groups, including the following:

- o Segregation of emergency telephone communications, and means of responding to other incoming calls which only require information (e.g. recorded message)
- o Security arrangements at all installation entrances to prevent entry of unauthorised persons, while at the same time allowing proper reception, briefing and direction of emergency services and personnel
- o Direction of news media reporters to a designated reception room where a senior installation representative will be available to brief them. The latter role should be included in the responsibilities of one of the key personnel in the emergency organization.

6. EMERGENCY EQUIPMENT AND RESOURCES

This is included as a technical reference section of the On-site Emergency Plan Manual, which gives an inventory of the emergency equipment, facilities and manpower available for handling an emergency, in both the installation and the local authority emergency services. The items listed below should be included.

6.1 INSTALLATION RESOURCES

- o Availability of trained fire-fighters on shift and on call
- o A summary of mobile fire-fighting equipment and capabilities (fire trucks, foam systems, special monitors, etc.)
- o A summary of fire pumps, capacities, types of driver, and back-up systems (e.g. fire tugs)
- o Availability and location of emergency equipment, including breathing apparatus, protective clothing for fire and chemical exposures, portable detectors for flammable and toxic gases, mobile water spray equipment for vapour cloud dispersion, traffic control barriers
- o A summary of emergency medical treatment facilities and equipment, and the availability of medically qualified personnel

6.2 LOCAL AUTHORITY RESOURCES

- o A summary of first-attendance fire-fighting equipment and personnel
- o Additional fire-fighting resources available
- o Availability of ambulance services, local authority doctors and designated hospitals

6.3 MUTUAL AID

Although Mutual Aid will normally be "on request" rather than automatic, the Installation On-site Emergency Plan Manual should detail the procedure for obtaining this assistance from other sites, and the extent of equipment and manpower that is available - refer to Guidance Note, "Planning for Mutual Aid". A map showing locations of resources available may be helpful.

7. TYPES OF EMERGENCY

The principles and organization for handling emergencies are basically the same for all incidents. However, the On-site Emergency Plan Manual should describe any special procedures which should be followed according to the type of emergency.

7.1 FIRE

Procedures should include:

- o Arranging for emergency shutdown, isolation and depressurizing of equipment involved in fire
- o Selection of appropriate fire-fighting technique, extinguishing media and equipment for the particular fire situation
- o Effective application of firewater cooling to plant equipment which is exposed to fire
- o Mobilisation of manpower, equipment and foam concentrate before attempting a foam attack
- o Arranging for back-up water supplies into the fire main system (e.g. from fire tugs) if needed.

7.2 VAPOUR RELEASE

Emergency plans for flammable or toxic vapour releases should address the following points:

- o Procedures for initial investigation of a vapour cloud when the point of release is not known
- o The gas warning alarm signal
- o Instructions for immediate response by non-essential personnel i.e.:
  - stopping all hot work
  - evacuation (see Section 7.3)
- o Procedures for handling the vapour cloud, including:
  - assessment of the extent of hazardous concentrations
  - notification of downwind locations



- use of barriers for road closures
- dispersion by water jets
- breathing apparatus and protective clothing for the emergency team

### 7.3 ON-SITE EVACUATION

Evacuation of non-essential personnel is an important part of emergency plan procedures. The objective is to move personnel away from the hazardous area to an assembly point where a head count can be carried out.

Accordingly, it is recommended that the following features be incorporated in evacuation plans and procedures:

- o Direction signs to indicate evacuation routes in buildings and on elevated process structures
- o Wind-socks for indication of wind direction
- o Instruction to personnel that they should evacuate in a cross-wind direction, away from the vapour cloud if its extent is visible
- o The use of radio communications and public address systems, to the extent possible, to instruct personnel on the direction in which they should evacuate
- o Designation of assembly points where supervisors can carry out a head count of their personnel
- o Inclusion of evacuation procedures and instruction in the safety induction training for contractor personnel

Particular attention should be given to situations where significant numbers of contractor personnel are working on an operating site on new project construction or maintenance. Specific evacuation procedures should be prepared and agreed with the contractor management as part of the job planning for such work.

### 7.4 SPECIAL EMERGENCY PLANS AND PROCEDURES

The following list indicates the emergency situations for which special plans are appropriate and which may require involvement of outside organizations:

- o Incidents involving releases of toxic substances e.g. TEL or TML organic lead compounds

- o Marine terminal emergencies, including oil spills
- o Flooding and other natural disasters
- o Release of radio-active material
- o Potential contamination of rivers and underground springs

Other plans and procedures, related to the On-site Emergency Plan, which may be included or referenced are:

- o The local authority Off-site Emergency Plan
- o The local harbour authority Emergency Plan
- o Process plant emergency shutdown procedures
- o Procedures for operating major items of fixed and mobile fire-fighting equipment (fire trucks, foam systems, etc.)
- o Fire-fighting procedures and techniques for handling the possible types of fire in the installation (process units, high structures, fixed and floating roof tanks, LPG storage, marine terminals, electrical substations, etc.)
- o Local and national safety regulations

8. DOCUMENTING AND UPDATING THE ON-SITE EMERGENCY PLAN MANUAL

8.1 FORMAT OF THE PLAN

It is clear that a considerable amount of information needs to be included in the On-site Emergency Plan Manual. At the same time, the Plan should be concise, readable and, where appropriate, suitable for use in real emergencies as well as for training. It should also have sufficient flexibility to cover the wide range of possible incidents. To meet these conflicting requirements, it is suggested that the following features be incorporated:

- o A notation to distinguish between mandatory and discretionary action steps
- o A summary of the action steps in the Plan i.e. excluding descriptive material
- o A series of pocket-size summaries of the duties and responsibilities of each position in the emergency organization. Each summary would be issued to all individuals who might be required to fill that position, and would serve as a "memory-jogger" under the stress of an emergency

8.2 TRAINING AND REHEARSAL OF PLANS

No emergency plan can be complete unless it makes provision for training and rehearsals to test and ensure the state of preparedness of arrangements and personnel involved. Both On-site and Off-site Emergency Plans need to be tested when first devised and thereafter rehearsed at suitable intervals to:

- o Give experience and build confidence in team members
- o Familiarize On-site personnel with their roles, their equipment and the detail of the plans
- o Allow the professional emergency services to test their parts of the plan, the coordination of all different organizations and to familiarize them with special hazards

### 8.3 UPDATING THE PLAN

The Emergency Plan should be reviewed and updated at appropriate intervals, taking into account the following factors:

- o Lessons learned during emergency exercises and real incidents
- o Major changes in operating facilities or emergency equipment
- o Changes in the installation organization
- o Changes in the Off-site Plan

It is recommended that a formal updating be carried out at a frequency of at least once every two years. Distribution of copies should be controlled to ensure that all Emergency Plan holders have the latest updated version. In addition any changes made to the On-site Plan which may interact with the Off-site Plan must be notified to the local authorities.

9. THE OFF-SITE EMERGENCY PLAN

The Off-site Emergency Plan for the installation will be prepared by the local authority, and will likely be a special case within their general plans for handling disaster-scale incidents such as floods, aircraft and rail crashes, major industrial fires or explosions, terrorist attacks, etc. The Plan would normally be excluded from the On-site Emergency Plan Manual.

The general structure of the Off-site Plan should cover aspects such as:

- o Organization and command structure for control and coordination of police, fire, medical and other public emergency services
- o Key personnel and responsibilities
- o Communications systems
- o Traffic and spectator control
- o Procedures and means of communication for instructing the local community to evacuate or take shelter. This subject is discussed in more detail in a previous CONCAWE Guidance Note, "Information to the Public" (see CONCAWE Report No. 11/87)
- o Provision of temporary accommodation for people who have had to leave their homes
- o Contacts with the news media and with relatives of casualties (non-employees)
- o Role of refinery or marketing terminal
  - Specialist advice/equipment to assist local authority emergency services
  - Measurement of toxic/flammable gas concentrations
  - Fire hazard information

The Off-site Plan for a major incident should be consistent with and linked to the Installation Emergency On-site Plan. In particular the overall organization and command structure described in the Off-site Emergency Plan must be consistent with that outlined in the emergency organization section of the Installation On-site Emergency Plan.

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NOTE

PLANNING FOR MUTUAL AID

1. INTRODUCTION

Most countries normally require operating sites to provide a defined level of fire-fighting and other emergency arrangements as a matter of law or under the conditions of an operating licence. Regulations, site licences or mandatory codes of practice can include requirements for equipment and materials, trained manpower and emergency plan rehearsals. These precautions are generally designed to cater for "credible" emergencies and emphasis is placed on achieving rapid control of the emergency at an early stage.

Occasionally, an emergency may escalate beyond the capability of the site and the local emergency services to contain it, as has happened for example with major tank fires. Under these circumstances, experience has demonstrated the value of an effective Mutual Aid Plan. Such plans can be set up between refineries, marketing terminals and depots within a region to enable them to call upon each other to supply equipment, material and manpower to help control a major emergency at any one site. The Mutual Aid Plan therefore makes available an extended reserve of emergency capability for use in such situations. Additional reserves of fire-fighting foam concentrate, for example, will be essential to the control of a long-duration fire in a large tank. Mutual Aid is of particular value to marketing operations where manning levels are normally lower than in refineries.

One important benefit of an effective Mutual Aid Plan is that it improves the overall cost-efficiency of using mobile equipment. Where installations can rely on rapid assistance from outside the site, provision of fire appliances, pumps, extinguishing agent etc. needed for more serious events can take account of availabilities from assisting sites. It is also frequently advantageous to be able to demonstrate to the regulating authorities that an additional resource of emergency equipment is available to a site, should any accident threaten to escalate to major proportions.

2. PLANNING FOR MUTUAL AID

Although Mutual Aid arrangements can be set up informally, refineries will find it preferable to make a formal agreement between the various participants in order to provide a framework and a focus for the Mutual Aid Plan. By signing such an Agreement, each company then commits itself to providing a specific level of support to the other participants in the Plan as and when required.

The Agreement can be set down in the form of a written Protocol, which covers the responsibilities of the participating companies, together with information about the equipment and materials which will be provided under the terms of the Plan.

The matters covered by the Protocol may include the following:

- Agreement

The basis of the Protocol is a mutual agreement that each participating company will provide when called upon, certain equipment and emergency materials according to a pre-determined schedule. Under some circumstances the Protocol may also make arrangements for the supply of trained personnel but the physical safety of such personnel must be covered in the Protocol by a detailed statement on responsibilities and limitations of their actions.

- Control of Resources during Emergency

The resources supplied to the affected site will be placed at the disposal of the Emergency Manager and must be used by him according to the terms of the Agreement. Any restrictions or limitations must be observed. External personnel who form part of the Mutual Aid resource should preferably be used in support of site staff, rather than as first-line attack on the emergency.

- Responsibilities for Injury and Damage

It is important, within the terms of the Protocol, to consider the legal responsibilities of all parties involved should an injury occur to any employee of a company providing assistance to the affected site and acting under the direction of the Emergency Manager. Generally, the Emergency Manager will be held responsible for the safety and security of all persons acting under his direction, but because of the variation in national legal requirements, it is not possible to give definitive guidance here. Assisting companies should ensure that they report promptly to a responsible officer on arrival at site so that the Emergency Manager can be made aware of their presence.

It should be noted that traffic accidents and other accidents which occur during transit to the affected site cannot normally be regarded as the responsibility of that site.

Where there is damage to, or loss of the equipment supplied to the affected site, the Protocol may provide for financial compensation to be paid to the owner of the equipment. The costs of consumables such as extinguishing agent may also be covered in this way.

Installations participating in a Mutual Aid Agreement should consult with their insurers and legal advisers over these aspects of the plan.

-- Threat to Neighbouring Installations

Should a major emergency escalate to a point at which nearby installations already providing Mutual Aid assistance are threatened, the personnel and equipment should be permitted to return to their own sites.

Similarly, the occurrence of a serious but unrelated incident at an assisting site should be a cause for allowing the assisting personnel and equipment to return.

The Protocol should contain clear agreements to this effect.



3.

RADIUS OF OPERATION OF MUTUAL AID PLAN

In considering the time taken for assistance to reach an affected site, it will normally be advisable to limit the radius of operation of a Mutual Aid Plan to within a travelling time of between 1 and 2 hours to reach the site. This should provide an adequate resource for all but the most serious emergencies. Local circumstances will govern needs, however, notably where the duration of the emergency might be significantly longer.

This limit of operation should not prevent the inclusion in the Plan of information about national manufacturers and major suppliers of fire-fighting foam compound. Experience during a number of major fires has shown that large quantities of foam compound may be needed over a period of days. In such cases additional supplies may be required to supplement reserves available to the Mutual Aid participants, even if the suppliers are at a considerable distance from the site. In extreme cases, air-lifting may be required to bring foam compound from distant locations.

Consideration should be given in the Plan to the transfrontier arrangements which may be needed where installations are located near to national boundaries and the need for rapid transit is identified.

4. INFORMATION ABOUT AVAILABLE RESOURCES

Each company participating in the Mutual Aid Plan should consider carefully what level of support it can provide to the participants whilst still maintaining a required minimum level of cover at its own installation. Although the probability of two unconnected major incidents occurring simultaneously within the radius of operation of the plan is low, a minimum level of cover must be retained at each site to provide basic emergency services.

The Mutual Aid Agreement should include attachments from each participating company giving details of the equipment and services it is able to provide for Mutual Aid purposes.

The Protocol should include a statement detailing the arrangements for regular updating of the Mutual Aid Plan and for immediate notification to all participants of any changes in addresses, telephone numbers etc.

Examples of the type of information to be included are given below. Further information can be provided as appropriate.

4.1 NAME AND EXACT ADDRESS OF PARTICIPATING COMPANY

A map showing the location of the installation and its main access routes is also helpful.

4.2 NAME AND TELEPHONE NUMBERS

All relevant contacts at each site listed by job title. Normal and out-of-hours telephone numbers should be included.

4.3 EQUIPMENT AND MATERIALS

- o Mobile Equipment, including fire tenders, pumps, ambulances, rescue vehicles, foam carriers, foam application equipment, etc. with technical specifications as appropriate.
- o Foam Stocks, including type and quantity.
- o Hoses and Fittings, including details of size, coupling types, pressure rating, etc.

- o Personnel, including status, level of training and size of fire-fighting team.
- o Personal Protective Equipment, including:
  - Breathing apparatus, type, cylinder details, etc.
  - Gas-proof suits, acid resistant suits, heat and fire-resistant suits etc.
- o Miscellaneous Emergency Equipment, including:
  - Air Compressors            - breathing air and pneumatic power
  - Electricity                 - power and emergency lighting  
  Generators                 sets
  - Boats                        - rescue boats, fire-fighting  
                                  vessels, tugs, diving boats
  - Rescue Equipment         - stretchers, harnesses
- o Medical Equipment, including:
  - Mobile first-aid centres
  - Resuscitation equipment
  - Medical and nursing staff, etc.
- o Detection and Monitoring Equipment, including gas detection devices, toxic gas monitors, flammable vapour monitors, ionising radiation monitors, etc.

5. COMPATIBILITY OF EQUIPMENT

It is particularly important that fire-fighting equipment - hoses, nozzles, branch-pipes, foam proportioning equipment, etc. which are specified as part of a Mutual Aid Agreement should be compatible between the various sites where they may be used. Fire-fighting foams must also be appropriate for the type of burning substance. The participants in a Mutual Aid Plan should therefore consider the need for meetings and possible formal agreements for the standardisation of equipment and material type, and to determine training procedures for emergency teams.

6. REHEARSAL

Participants should consider the need for routine rehearsals and tests of the Mutual Aid Agreement. At the lowest level, such rehearsals should consist of routine contact by telephone between each participant to ensure that communications are adequate. Further rehearsals could include familiarisation visits to participating sites, joint table-top exercises and rehearsals as part of a full-scale emergency call-out exercise.

Further information on this point will become available in the CONCAWE note on "Emergency Plans - Training, Exercises and Rehearsals".