

EMERGENCY PLANNING

EXTRACTION FROM:

SAFETY MANAGEMENT SYSTEM FOR MAJOR HAZARD FACILITIES - BOOKLET 3: Part 7.17

7.17 Emergency planning, including on-site and off-site

The Regulations have specific requirements associated with emergency planning, which include a detailed list of components in emergency procedures. The following section is an overview of these requirements supported by considerations that should be referred to when developing an emergency plan.

Development of the emergency plan

The employer must prepare an emergency plan addressing the on-site and off-site consequences of major accidents that could arise at the facility.

The Regulations require procedures associated with the emergency plan are prepared in consultation with emergency services. Active participation of the emergency services is important so that agreement is reached on the roles of each party in responding to emergencies. The various parties need to determine that the proposed arrangements are workable, that the communication lines and command structures are integrated and that equipment and supplies are compatible where necessary. It should be noted that the Regulations do not require employees to be consulted during development of emergency plan procedures. However, consultation is required if the plan is reviewed.

Issues the employer should consider in developing the emergency plan

Emergency response objectives should be determined prior to analysing the emergency response arrangements. The employer should consider developing those objectives in conjunction with the emergency services, municipal councils and, where appropriate, with the employers of adjacent facilities. The necessary emergency response arrangements must, in combination with other control measures, minimise the effects of a major accident on people, property and the built or natural environment.

The emergency response arrangements should include the procedures, roles and resources that are required to achieve the identified objectives. They should identify all individuals with a role to play and the experience and capabilities relevant to the required response. The required emergency response capabilities are performance standards for the control measures within the emergency plan.

When defining the “arrangements”, it is also necessary to determine how responses will be coordinated and to allocate responsibilities. It may be necessary to identify situations where the routine procedures and resources are not sufficient and develop contingency plans for these.

Employers should plan to respond to a range of emergencies including:

- a) major accidents and smaller incidents;
- b) environmental spills;
- c) power or utilities failure;
- d) extreme weather; and
- e) personal injury.

While the requirements under the Regulations relate only to emergency plans for major accidents, employers should consider the merit of developing a single integrated emergency plan for all types of emergency.

Examples of arrangements within emergency plan

- a) Command structure between employer and emergency services in event of on-site incident.
- b) Command structure between employer, emergency services and councils in event of major accident with potential to spread off-site or with actual off-site effects.
- c) Communications channels for all parties involved or requiring information.
- d) Backup contingency plans for all of the above.
- e) Pre-incident plans for specific actions and arrangements for specific scenarios.
- f) Training and rostering schedules for emergency coordinators and general employees.

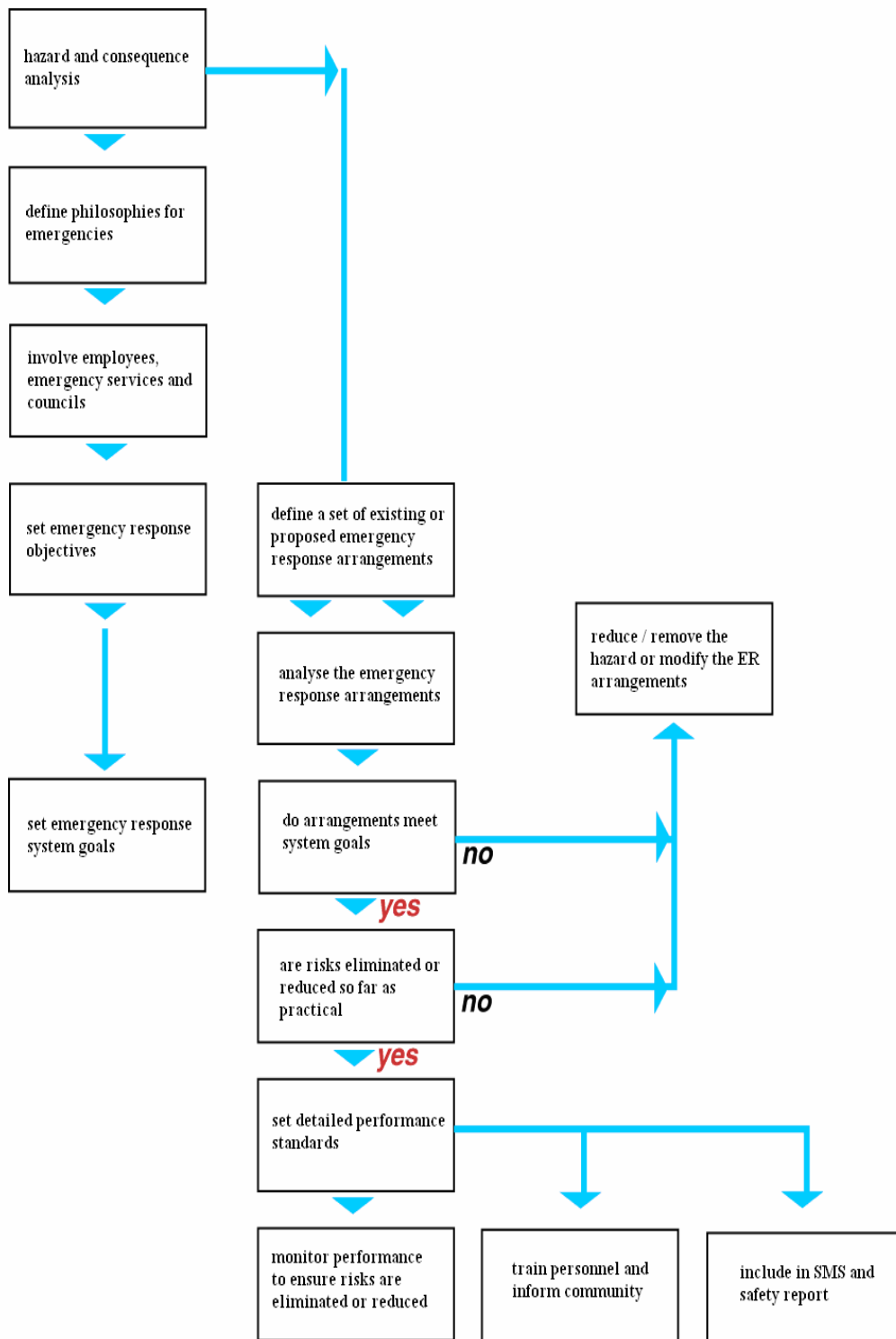
The analysis of emergency response arrangements should consider all incidents that may occur at the facility, as well as all the hazards that could cause or contribute to a major accident.

An emergency plan based on a representative cross-section of incident types should be developed so that it is not necessary to incorporate every single major accident identified for the facility. The analysis should use the results of risk assessments and should feed back into the assessments as necessary.

When the emergency plan, its performance standards and contingency arrangements have all been defined, employees and contractors will need to be trained in its content and the local community informed of the relevant components. The emergency plan must be properly incorporated within the overall facility SMS and safety report, as a control measure subject to the same regime as all other control measures. The development of the emergency plan is therefore required to include processes for testing, reviewing, training and informing.

In addition, detailed emergency fire fighting and operational response plans and procedures developed via approaches such as pre-incident planning should be incorporated into the overall emergency plans for the facility.

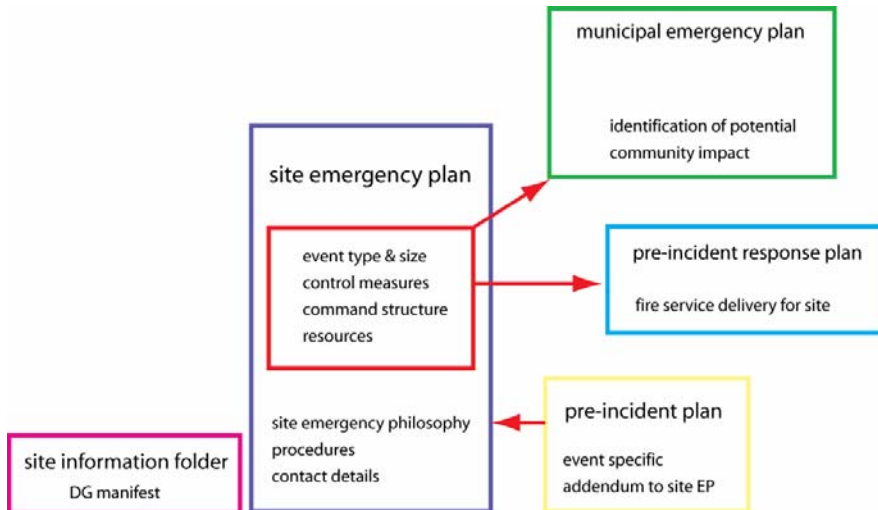
Figure 2: Flowchart for development of emergency plans



In developing the emergency plan it is important to recognise the inter-relationships between different types of emergency management documents. These include the site information folder, pre-incident plan, pre-incident response plan, municipal emergency plan and site emergency plan. For information purposes, these are summarised in the table below and the relationships shown in Figure 3.

Site information folder	<ul style="list-style-type: none"> • Site-specific information required by the first attending fire brigade personnel. • Includes the site dangerous goods manifest. • Not a specific element of the site emergency plan.
Pre-incident plan	<ul style="list-style-type: none"> • Specific action plans that are additional to the site emergency plan. • Included as part of the procedures to be undertaken at a specific site. • Generally an addendum to the site emergency plan.
Pre-incident response plan	<ul style="list-style-type: none"> • Specific to the emergency services • Planning process for emergency services response to an identified hazard. • Includes escalation responses. • Relies on the site identifying hazards, event types and impact areas, control measures available, site command structure, resource needs and control strategies.
Municipal emergency plan	<ul style="list-style-type: none"> • Identify how the municipality will respond to emergencies. • Relies on the site to identify hazards, event types and impact areas where there is an off-site consequence.

Figure 3: Emergency planning relationships



Contents of emergency plan

The specific contents of the emergency plan are specified in Regulation 9.53 of the Regulations and are discussed in Appendix A of this document.

Planning for on-site emergencies

The emergency plan should include provision for incidents that may be controlled within the facility boundary, using on-site resources alone, or on-site resources plus external assistance. In most circumstances, the emergency plan should provide for a sufficient on-site response to control incidents to ensure they do not cause off-site effects. The plan should cater for different conditions such as out of hours manning, limited water availability or adverse weather conditions.

The plan should also address potential uncontrolled events or smaller-scale accidents which could lead to a major accident.

Planning for off-site emergencies

Although the expectation is that major accidents or uncontrolled events would be combated by a plan that aims, wherever possible, to limit the effects to on-site, the employer should also plan for situations where a major accident results in consequences which could impact off-site locations. This is required for all facilities unless the employer can justify that the facility has no potential to cause harm to health and safety or damage to property beyond the boundary.

What range of scenarios need to be considered in emergency planning?

The employer should ensure that the selection of scenarios is clearly documented and the selection process is justified within the risk assessment conducted for the MHF.

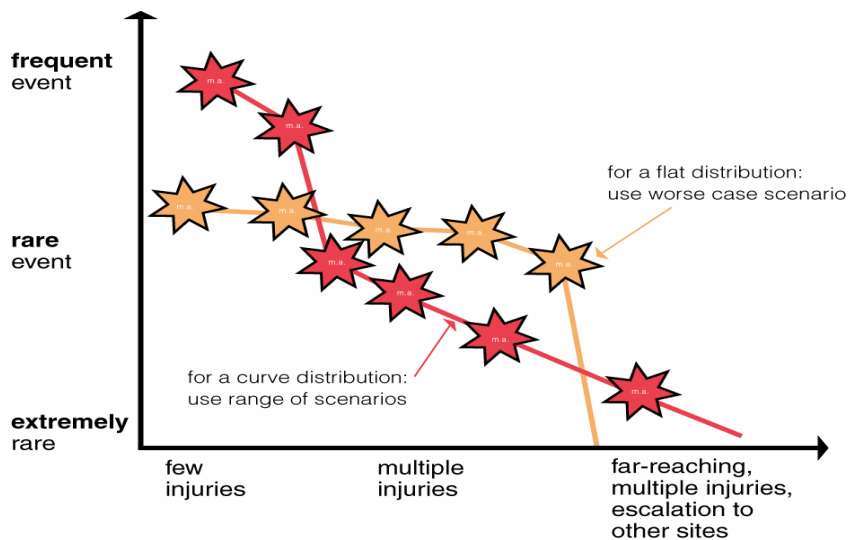
The emergency planning process should consider the full spectrum of incidents and uncontrolled events that could lead to major accidents. One approach is therefore to base the emergency plan on the "worst case scenario". However, it may be more appropriate to select other major accident scenarios as the primary basis for the emergency plan, if it can be demonstrated that these scenarios are more appropriate for planning purposes.

The selection of scenarios for the emergency plan may require consideration of factors such as the level of risk for which other types of emergency plans are made, the nature of the overall risk profile in the area, the cost of planning for extreme events, and the need for meaningful consultation with the community.

It may be more appropriate to primarily base the emergency plan on a less severe but more likely major accident. A plan of this type should include supplementary contingency plans to deal with more severe events that may occur. That is, the emergency plan should reflect the full range of scenarios, but could place different levels of emphasis and detail on different scenarios according to their relative risk or significance to emergency planning).

The risk assessment may indicate the appropriate scenarios for inclusion based on the distribution of incident severity and likelihood. For example if the distribution is relatively flat (i.e. scenarios with different consequences all have roughly similar likelihood), this may indicate that the appropriate range of scenarios for the emergency plan should include the worst-case scenario (see Figure 4 below). It is desirable that the final decision on the appropriate range of scenarios selected by the employer reflects discussions with employees at the facility, emergency services and the local municipal planning authority.

Figure 4: Effect of severity-likelihood distribution on selection of emergency scenarios



Employers should understand that the selection of scenarios on which an emergency plan is based will influence how the affected community is defined. It may be appropriate to engage the affected community in a discussion process before finalising the selection of scenarios.

A significant scale of events should be featured in the emergency plan to reflect potential off-site effects and to ensure the emergency plan is robust and credible.

The employer should consider the incident history, both at the facility and within similar facilities, in arriving at a justified selection of relevant scenarios for planning purposes. It would be inappropriate to base emergency plans on an event of a lower magnitude than is indicated by the industry historical accident record.

Performance indicators for emergency plans

The emergency plan, and the personnel and resources that it calls upon, are control measures, and like other control measures need performance standards. The performance standards allow the effectiveness of the plan to be measured and influence decisions on what improvements need to be made to the plan over time. Some possible performance standards are described below:

Some examples of performance standards for the emergency plan

- The number, training and competency/capability of the on-site emergency response team.
- The time from raising an alarm to successful evacuation of on-site personnel to a secure muster point.
- The maximum time for mobilisation of the on-site emergency response team, to defined levels.
- The maximum time for attendance of the emergency services, to defined levels (e.g. first response).
- The time taken to alert the local community in the event of a major accident, and to take necessary steps to evacuate from, and control access to, any seriously impacted areas.
- The type, quantity, capacity and reliability of equipment and supplies that may be used.

Testing the emergency plan

The Regulations require the emergency plan to be tested regularly. Since the plan must be reviewed at least every 5 years, there is sufficient time to conduct multiple tests of the plan. Employers may want to consider testing the effectiveness of their plan by including a major exercise involving the emergency services, adjacent facilities, the local council and nearby residents.

Employers should ensure that there is at least an annual review of the emergency plan to confirm the:

- a) ability to implement on-site and off-site emergency responses effectively and according to goals;
- b) alarm and communications systems;
- c) call-out of internal and external emergency personnel; and
- d) critical emergency equipment.

The above systems should function correctly under simulated emergency conditions and not simply during routine “off-line” tests.

Review and update

As the emergency plan is a control measure and also a part of the SMS for the facility, the Regulations require it to be reviewed and updated in certain circumstances, including:

- a) if the SRCC makes a request in writing for it to be reviewed;
- b) after a major accident or near miss at the facility;
- c) when a test indicates a deficiency; and
- d) when the safety report is reviewed (no less than every 5 years).

The purpose of a review is to ensure that the emergency plan is updated if there is any reason to believe that it is no longer fully effective. It is a specific requirement of the Regulations that the emergency services, employees and health and safety representatives are consulted if a review is required for any of the reasons listed above.

Summary of key features of an emergency plan:

- a) appropriate to the hazards and risks of the facility;
- b) effective in addressing the on-site and off-site consequences of a major accident occurring;
- c) logical, succinct and readily understood by employees and other potentially affected parties;
- d) regularly reviewed, tested and updated;
- e) consistent with the expectations, resources, communications channels, policies and procedures of the emergency services for potentially affected areas and of any adjacent major hazard facilities;
- f) integrated with the facility's SMS; and
- g) consistent with the local State or Territory's emergency management plan.

Appendix A – Part one

Regulation 9.53 - Emergency procedures requirements for major hazard facilities

In addition to the following information, it is required that procedures are prepared in consultation with employees, contractors (as far as is reasonably practicable), HSRs and emergency services. It is also required that all relevant personnel are trained in the implementation of these procedures.

On-site emergency procedures

1. For an event that could cause a major accident to occur at the major hazard facility, a description of:
 - a) the measures the employer has taken in relation to controlling or limiting the consequences of the event; and
 - b) the actions that may need to be taken to control or limit those consequences; and
 - c) the resources at the major hazard facility for controlling or limiting those consequences; and
 - d) the resources available via emergency services or other facilities via reciprocal arrangements (if required).
2. A statement about the arrangements for providing emergency services with the following information:
 - a) early warning of a major accident at the major hazard facility, including the type of information to be given during the first warning; and
 - b) more detailed information about the major accident as that information becomes available to the employer.
3. A statement about the arrangements for providing assistance during a major accident to emergency services and reciprocal response arrangements with other facilities in the event of an emergency at either facility, including any other major hazard facilities, that may need assistance (mutual aid).
4. A statement about the procedures for the safe evacuation of, and accounting for, all people at the major hazard facility.
5. Contact details for emergency services and other support services that may be required in the event of an accident.
6. Identification of control points for utilities, including gas, water and electricity.

Off-site emergency procedures

1. The name, location and street address of, and the nature of the operations at, the major hazard facility.
2. The name, title and telephone number of the person at the major hazard facility who can be contacted by emergency services in relation to information about the facility and, if a major accident occurs at the facility, who can clarify information about the accident.

3. A map of the major hazard facility and the area surrounding it that shows the following:
 - a) other residents near the major hazard facility;
 - b) the built and natural environment around the major hazard facility;
 - c) other major hazard facilities in the area;
 - d) any neighbour of the major hazard facility likely to be affected by a major accident at the facility; and
 - e) potentially hazardous inventories in the area.
4. The position and location of, and the method of contacting, the person at the major hazard facility:
 - a) responsible for talking to emergency services during an emergency; or
 - b) with appropriate expertise and skills in the event of a major accident at the facility.
5. The contact details of an alternative person at the major hazard facility who may be contacted if the primary contact person is not available when a major accident occurs.
6. A statement about the minimum and maximum number of employees expected to be at the major hazard facility at any time.
7. A statement about the major hazard facility's emergency resources, for example, personnel, emergency equipment, gas detectors and wind velocity detectors.
8. A statement about the on-site and off-site warning systems at and near the major hazard facility.
9. A statement about the communications systems at the major hazard facility.
10. A statement about the arrangements for giving emergency services the following information:
 - a) early warning of a major accident at the major hazard facility, including the type of information to be given during the first warning; and
 - b) more detailed information about the major accident as that information becomes available to the employer.
11. A statement about the arrangements for giving assistance to emergency services in relation to reducing the effect of a major accident on areas outside the major hazard facility.
12. An inventory of all hazardous materials stored or produced at the major hazardous facility.
13. A statement about transport facilities likely to be affected by a major accident at the major hazard facility, for example, road, rail, air or shipping transport facilities.

14. A statement about the assumptions made in relation to the emergency plan, for example, emergency measures planned for:
 - a) identifying possible major accidents; and
 - b) areas likely to be affected by a major accident; and
 - c) protection of the community (including other facilities near the major hazard facility); and
 - d) the built and natural environment near the major hazard facility; and
 - e) possible time lines of events during a major accident.
15. A statement about the procedures for protecting utilities, including gas, water and electricity.
16. A statement about the procedures for containing the spillage of hazardous materials, especially in areas where these are stored.
17. A statement about the decontamination procedures that are necessary and must be followed after a major accident at the major hazard facility.

Appendix A – Part 2

Example emergency plan objectives and performance standards

Objectives

1. All evacuation and response pathways will have defined primary and secondary routes for movement of personnel and equipment.
2. Protection levels for assembly areas will be set based on consequences of major accidents.
3. Maximum personnel exposure levels during evacuation will be set according to consequences assessed for major accidents.
4. Initiation of the site or plant emergency alarms will be planned out for all identified major accidents and uncontrolled events able to lead to major accidents, and personnel trained in the use of these.
5. On-site emergency response teams will have first priority to protect themselves from exposure to specific consequence levels defined from the risk assessment; their second priority will be to search for and rescue missing persons. The final priority will be property protection.
6. No emergency response team will be exposed above certain levels of consequence while responding to accidents. For certain scenarios no action will be taken to protect directly affected property and certain other property will be protected by specified means. For other specific scenarios no property protection will be attempted, the sole objective will be evacuation to a safe assembly area.
7. Employees will be involved in setting, training and testing performance standards for their own roles in emergency response in order to ensure arrangements are workable.

Standards

1. All non-emergency response employees will be evacuated to a safe assembly area within X minutes of alarm being issued.
2. All potential major accidents identified in the safety report will be represented in the emergency plan. A specific test of the emergency plan for each major accident will be carried out, and the effectiveness of response determined, within the major hazard facility licence period.
3. Notification of the emergency services and set-up of the emergency response centre will be carried out within Z minutes of a potential major accident being identified.
4. There will be a total of X trained emergency wardens and Y trained emergency response personnel on-site or on call at all times.
5. Fire protection reserves will be held at Z% of maximum predicted demand levels.