

**Implementation of the National Plan for  
Approximation of Environmental Legislation**

*A project for Albania funded by the European Union*

**Draft**

**Decision on Safety Reports and Emergency Planning\***

**Draft 1**

**version 1**

**20.09. 2010**

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\* This Decision implements Directive 96/82/EC on the control of major-accident hazards involving dangerous substances, as amended by Regulation EC/1882/2003, Directive 2003/105/EC and Regulation EC/1137/2008, as regards Safety Reports and Emergency Planning



**REPUBLIC OF ALBANIA  
THE ASSEMBLY**

DRAFT 1 Version 1

20.09. 2010

**DECISION**

No \_\_\_\_\_, dated \_\_\_\_\_

**ON SAFETY REPORTS AND EMERGENCY PLANNING UNDER THE LAW  
ON THE CONTROL OF MAJOR ACCIDENT HAZARDS (<sup>1</sup>)**

Pursuant to Articles 59 paragraph 1.d and 100 of the Constitution and to Article 10 of the Law no \_\_\_\_\_, dated \_\_\_\_\_ “On The Control of Major Accidents Hazards”, the Council of Ministers,

**DECIDES:**

**I. General**

1. This Decision establishes guidelines on Safety Reports, Internal Emergency Plans and External Emergency Plans which must be taken into account, where relevant, in preparing such Reports and Plans.
2. For the purposes of this Decision, all terms used shall have the meaning given to them by Article 2 of the Law “On the Control of Major Accident Hazards.

**II. Safety Reports**

3. The operator of an Upper Tier establishment is required by Chapter 3 of the Law to prepare a Safety Report in respect of that establishment which is sufficient for the purposes set out in Part 1 of Annex 3 of the Regulation and comprising at least of the information specified in Part 2 of that Annex.

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\* This Law implements Directive 96/82/EC on the control of major-accident hazards involving dangerous substances, as amended by Regulation EC/1882/2003, Directive 2003/105/EC and Regulation EC/1137/2008 as regards Safety Reports and Emergency Planning

4. The guidelines on Safety Reports set out in the Annex to this Decision shall be taken into account, where relevant, by the operator in preparing the Safety Report for that establishment.

### **III. Internal Emergency Plans**

5. The operator of an Upper Tier establishment is required by Chapter 4 of the Regulation to prepare an Internal Emergency Plan in respect of that establishment which shall be adequate for securing the objectives specified in Part 1 of Annex 5 of the Law and shall contain the information specified in Part 2 of that Annex.
6. The guidelines on Emergency Plans set out in the Annex to this Decision shall be taken into account, where relevant, by the operator in preparing the Internal Emergency Plan for that establishment.

### **IV. External Emergency Plans**

7. The local government unit in whose area an Upper Tier establishment is situated is required, by Chapter 4 of the Law, to prepare an External Emergency Plan in respect of that establishment. The External Emergency Plan shall be adequate for securing the objectives specified in Part 1 of Annex 5 of the Regulation and shall contain the information specified in Part 3 of that Annex.
8. The guidelines on Emergency Plans set out in the Annex to this Decision shall be taken into account, where relevant, by the local government unit in preparing the External Emergency Plan for that establishment.

### **V. Final provisions**

9. This Decision comes into force 15 days after publication in the Official Gazette.

# Annex

## 1. Introduction

1. The Law “On the Control of Major Accident Hazards” is aimed at the prevention of major accidents involving dangerous substances, and to limit their consequences for humans and environment.
2. The requirements for a Safety Report, an Internal Emergency Plan and an External Emergency Plan are included in the Law as some of the principle measures to achieve this aim.
3. This Decision is intended to provide further guidance to assist with the interpretation of the requirements of Safety Reports and of Emergency Plans contained in the Law.
4. The guidance on Safety Reports will be of use to operators of Upper Tier establishments and to the Competent Authorities. The guidance on Emergency Plans will of use to all those with responsibilities for emergency planning in respect of Upper Tier establishments, both internal and external, including; operators, Competent authorities, local authorities and emergency services.

## 2. Guidelines on the preparation of Safety Reports

### 2.1 Introduction

1. The Safety Report is an important part of the controls for Upper Tier establishments. It is a concise description of safe and environmentally sound operation during the life cycle of installations for processing or storing dangerous substances. The information collected for the safety report should identify major accidents, describe any measures in place for preventing such accidents and limiting the consequences of any accidents which do occur. The Safety Report is evidence that the operator has carefully scrutinised these preventative and control measures.
2. The nature and extent of the information required in a Safety Report depends on the size and complexity of the establishment, the major accident hazards involved, and the nature of the environment around the site.
3. If there are any changes at the establishment after the Safety Report has been prepared which could have significant repercussions for the prevention and mitigation of major accidents then the Safety Report should be reviewed and any revised Safety Report submitted to the Competent Authority.
4. The Safety Report will be placed on the public register unless you advise the Competent Authority in writing at the time of submission that certain information should not be disclosed in this way. Any application for confidentiality should contain sufficient information to enable the Competent Authority to adequately consider the application. No information will be placed on the public register until all issues of confidentiality have been determined. The public register will be maintained by the Competent Authority and will be reviewed on a five-yearly basis.
5. The Competent Authority will read the Safety Report to:
  - a. Examine the information to see if it sufficient;
  - b. Assess whether the purposes for which the Report was prepared have been achieved; and
  - c. Form its conclusions on the Safety Report.
6. The Safety Report will be used by the Competent Authority to:
  - a. Prompt prohibition action where certain measures appear to be seriously deficient in preventing a major accident or limiting their consequences
  - b. Decide which installations, parts of installations or activities at the establishment should be included in their inspection programme.
7. The Competent Authority will come to conclusions on the Safety Report using their professional judgement. The conclusions will be based on:
  - a. Whether any serious deficiencies are identified. If so, the Competent Authority will take immediate action. Prohibition action will only be taken if the serious deficiencies are confirmed by a site visit; and

- b. Whether the Safety Report, and any additional information obtained during the assessment, is sufficient for its purposes.
8. The Competent Authority may request additional information from the operator if sufficient information is not provided in the Safety Report for them to make their conclusions. However, if the Safety Report falls so far short of meeting its purpose, it may be returned to the operator and a re-submission will be required.
9. The Competent Authority will send its conclusions on the Safety Report to the operator. The conclusions letter will be placed on the public register.

## **2.2 Purpose of the Safety Report**

10. The purposes of a Safety Report are set out in Annex 3 Part 1 of the Law.
11. These purposes are that the operator is required to demonstrate that:
  - a. A Major Accident Prevention Policy (MAPP) and a Safety Management System (SMS) for implementing it are in place;
  - b. Major accidents have been identified;
  - c. The necessary measures have been taken to prevent major accidents and to limit their consequences for humans and the environment
  - d. Adequate safety and reliability have been incorporated into the design, construction, operation and maintenance of any installation, storage facility, equipment and infrastructure which are linked to major accident hazards within the establishment; and
  - e. An Internal Emergency Plan has been drawn up.
12. In addition, certain information is also required to meet the purposes of the Safety Report. This information is:
  - a. Supplying information to the local government unit to enable External Emergency Plans to be drawn up; and
  - b. Providing sufficient information to the Competent Authority to enable it to provide advice about the siting of new activities or developments around establishments.
13. Section 2.3, Description of the establishment, describes the extent of the information required to enable the Competent Authorities to have a clear overview of the establishment, its location, purpose, activities and intrinsic hazards, services and technical equipment for preventing and controlling major accidents. For multi-installation sites, this information is often included as part of the core information common to the whole establishment. More detailed information, such as a description of safety-related control equipment, can be covered in the description of individual installations.
14. Section 2.4, Information about the management measures to prevent major accidents, details the information the Competent Authority would expect to see on the organisational aspects of management to prevent major accidents.

These are a fundamental part of the safety system at the establishment. In particular, it will be necessary to explain the arrangements to show how the operator has arrived at the necessary measures to prevent or control major accidents. The measures provided and described in the Safety Report should be such as to demonstrate that the management arrangements described have been put into effect. For multi-installation sites, any differences in arrangements can be identified and described in that part of the report dealing with a particular installation.

15. Sections 2.5, 2.6 and 2.7 aim to make the link between the hazards identified on the site and the measures necessary to prevent a major accident or to limit the consequences of a major accident.
16. There is a flow of related information required, covering the main activities on the site and the processes that go on there. Thus section 2.5, Information about possible accidents, should discuss the possible primary causes of major accidents and the consequence assessment. Section 2.6, Information about the measures to prevent or limit the consequences of a major accident at each installation, should discuss the measures to avoid, prevent and control major accidents. Section 2.7, Information about the emergency response measures to limit the consequences of a major accident, will discuss the measures provided to limit the consequences of a major accident.
17. The measures discussed may be engineering measures, systems and procedural or human factors such as training. In most cases they are likely to be a combination of these measures.
18. The findings and conclusions from the risk analyses should summarise the relationship between the hazards and the risks. They should demonstrate that all necessary measures have been taken to prevent and limit the consequences of major accidents, and that there is adequate safety and reliability of the installation, equipment and infrastructure during their lifetime.
19. The Safety Report should present clear links between:
  - a. The analysis of the risks, including the likelihoods of hazardous events and their consequences; and
  - b. The technical or managerial measures taken.
20. The arguments presented in the Safety Report may be qualitative and focus on relevant good practice and sound engineering principles. They may also rely on generic arguments in preventing or limiting the consequences of a major accident based on a representative set of major accident scenarios.
21. More complex situations may require the presentation of quantitative arguments couples with cost benefit analysis in order to justify that all measures necessary have been taken.
22. Whenever additional measures are identified as being reasonably practicable, they should be implemented. The justification for rejecting possible risk-reduction measures must be well argued and supported with evidence.

23. The range of hazardous scenarios considered needs to be representative and suitable for emergency planning purposes.
24. The worst case scenarios for humans and for the environment must be considered. The analysis for these must not be overly optimistic or pessimistic, as this could have resource implications for the emergency services. Therefore the consequence models and assumptions used must be appropriate for the scale and nature of the hazards.
25. The levels of harm considered and the impact criteria/vulnerability models used must be suitable for predicting the extent of areas where people may be fatally or seriously injured, or require hospitalisation. When considering the impacts on the environment, corresponding levels of harm to the environment must be considered.

## **2.3 Description of the establishment**

### ***Information to allow communication with the Competent Authority***

26. Some basic information is required to help in communication between the operator and the Competent Authority. This will include:
  - a. The name of the site operator;
  - b. If the operator is a company, the address of its registered office;
  - c. The name and address of the establishment, and if necessary, the installation covered by the Safety Report;
  - d. The name, address, telephone and fax number of the contact person within the operator's organisation for communication about the Safety Report.
27. It may also be useful to include:
  - a. An e-mail address;
  - b. The six-figure map references defining the location of the establishment;
  - c. Details of whether the operator is part of a larger group of companies.

### ***Information about the dangerous substances***

28. The Safety Report should give relevant details about:
  - a. the maximum quantities of dangerous substances actually present or likely to be present on the establishment or installation;
  - b. Names of the dangerous substances;
  - c. Their physical and chemical behaviour;
  - d. Immediate and delayed harm to humans and the environment
29. A lot of the information about dangerous chemicals may be found in the Safety Data Sheets, which should be utilised, where possible and where relevant.

30. Remember that dangerous substances may be found as:
  - a. Raw materials, intermediates, by-products, catalysts or fuel;
  - b. Wastes;
  - c. Additives and individual constituents; and
  - d. Substances produced/formed as a result of loss of control of chemical processes, or other unplanned but foreseeable events.
  
31. The Safety Report should include an inventory of all dangerous substances at or above lower-tier and upper-tier threshold quantities. Dangerous substances below these quantities should also be included, if they are capable, directly or indirectly, of being involved in a major accident. Reasons should be given for not including any other dangerous substances on the site from the Safety Report.
  
32. When calculating the maximum inventories, account should be taken of any fluctuations in business activity.
  
33. If the establishment has a large and variable number of different dangerous substances, such as in a warehouse, these may be described by grouping them into representative categories, in accordance with Annex 1 Part 3, when quantifying them. If this is done, this should be explained with justification for the groupings chosen.
  
34. When a number of different dangerous substances are present at less than their qualifying quantity, the Safety Report should show how individual quantities have been aggregated in accordance with the rules in the Regulation.
  
35. Annex 1, Introduction, paragraph 4 of the Law allows quantities of dangerous substances below 2% of their qualifying quantity to be ignored, for the purposes of calculating the total quantity, but only if it can be demonstrated that they cannot be a source of a major accident elsewhere on the site. If this Part of the Law is going to be used, it must therefore be demonstrated in the Safety Report that such substances cannot be a source of major accident on the site.
  
36. For each dangerous substance or class of dangerous substance identified, including those present as impurities, additives or constituents of preparations, the safety report should include:
  - a. Its chemical name, and where appropriate its common chemical name;
  - b. Identification of the substance or class of substance according to the IUPAC system of nomenclature;
  - c. The CAS number
  - d. The degree of purity, if relevant;
  - e. The concentration of any impurity or additive, and proportion of each constituent in a preparation;
  - f. Any other additional useful information to help identify the dangerous substance.

37. Information should be provided on the physical and chemical behaviour of dangerous substances present on the establishment. This information need only detail those properties that are relevant to the various demonstrations made later in the Safety Report.
38. Examples of the information that may be included are:
- a. Characteristic temperature and pressure;
  - b. Concentration and phases at normal conditions at the onset of abnormal conditions;
  - c. Equilibrium data, and operation curves, if relevant;
  - d. Flash point;
  - e. Ignition temperature;
  - f. Flammable limits;
  - g. Vapour pressure;
  - h. Density;
  - i. Data on reactions;
  - j. Miscibility;
  - k. Partition co-efficients;
  - l. Rates of decomposition;
  - m. Data on sensitiveness of explosives
  - n. Corrosion characteristics, where relevant.
39. The operator will need to consider and report on the behaviour of dangerous substances under all normal operating conditions, abnormal conditions and in foreseeable accident conditions. Therefore it may be necessary to report whether the chemical behaviour of the dangerous substance differs in a range of conditions, which may include, for example:
- a. Operating pressures and temperatures during start-up, regeneration, normal operating conditions, turndown or other designated modes;
  - b. Production of products, by-products, residues or intermediates as a result of normal operations or in foreseeable accident conditions;
  - c. Behaviour of reactor fluids during and following a problem with a process;
  - d. Contamination of products.
40. Factual information should be provided concerning the known physical, chemical or toxicological characteristics of dangerous substances at the establishment, which may cause immediate or delayed harm to either humans and/or the environment. The information should include dangerous substances formed as a result of normal and abnormal conditions. An indication of the hazards posed should also be given.
41. It is necessary only to present those characteristics relevant to the various demonstrations made later in the Safety Report. The information given should address both the short-term and long-term effects, and may include, for example:
- a. Health hazards, such as irritation, asphyxiation, persistence, antagonistic and synergistic effects, warning symptoms, cancer or mutagenic damage;
  - b. Lethal concentrations;

- c. Harm caused by fire or explosion;
  - d. Effects on the environment, including building damage, the eco-system and any relevant sensitive species.
42. The information presented should consider the harmful effects on humans and the environment and outline the routes to harm, for example via airborne discharge, discharge to waters, seepage into groundwater, formation of explosive cloud.
43. The acknowledged acceptable limits of exposure to the effects of the dangerous substances should also be presented, such as LD50's and environmental quality standards. It may be necessary to consider acceptable limits in terms of concentrations, time of exposure and any other relevant parameters.
44. Reference should be made, where appropriate, to scientific literature to justify the harmful effects, hazardous concentrations, and acceptable limits that have been presented. If there is little scientific knowledge of effects, the Safety Report should outline the approach taken to evaluating the significance of that lack of knowledge and the policy for dealing with it.

#### ***Information about the surrounding environment***

45. Information describing the environment surrounding the establishment should be provided. This includes the natural environment and the people in it, over, below and around the boundaries of the establishment. The extent of the area described should take account of the hazard ranges or the worst-case scenarios presented later in the Safety Report.
46. It may be useful to include a map on a suitable scale (e.g. 1:10 000) showing the establishment and its surroundings. Separate maps may also be required to identify the surrounding population and the natural environment.
47. The maps provided should clearly indicate:
- a. Any land-use pattern, for example, industry, agriculture, urban settlements, and any environmentally sensitive areas;
  - b. The location of the most important buildings and infrastructures, for example, hospitals, schools, other industrial sites, motorways and railway networks, stations and marshalling yards, airports, harbours;
  - c. Water extraction points;
  - d. Sewage systems, as these may discharge pollutants many kilometres away from the site of a major accident.
48. Access routes to the establishment should be clearly indicated, as well as the escape routes away from the establishment. Any other traffic routes significant for rescue and emergency operations should also be indicated. It may be necessary to have different scale maps if long-distance effects are to be considered.

49. There are five aspects of the surrounding environment that will need to be considered:
  - a. People;
  - b. Features contributing to a major accident;
  - c. The built environment;
  - d. The natural environment;
  - e. Any external factors that may contribute to major accidents.
  
50. There should be a description of the surrounding population. This may include, for example:
  - a. Approximate number of residents;
  - b. Estimated numbers of people who may use the area, such as tourists, workers at other workplaces etc;
  - c. Groups of people who may be particularly vulnerable either because of their sensitivity to the hazards in question, such as in hospitals or schools, or because of population density.
  
51. Sufficient information will have to be provided to allow the operator and the Competent Authority to assess the indirect impact of a major accident on the public, for example as a result of any contamination of drinking water.
  
52. It will be necessary to consider and describe any features of the surrounding environment that may influence the impact of a major accident. These may include, for example:
  - a. Topography, if this could have an effect on the dispersion of any toxic or flammable gases. This may include buildings, and any underground structures such as pedestrian subways;
  - b. Local weather records, including wind speed and direction, rainfall, and the relevance of this information to the behaviour of releases of dangerous substances;
  - c. Any relevant geology and hydrogeology;
  - d. Surrounding water courses, aquifers, drinking water abstraction points, if relevant to the dispersal of liquid contaminants or leachates;
  - e. Surrounding water and land quality;
  - f. Sewage and rainfall systems;
  - g. Tides and currents, especially if tidal or estuarine habitats are at risk;
  - h. Any features of the surroundings that may hinder emergency response or containment measures.
  
53. Any sites of cultural or historical importance should also be identified, if they could be vulnerable to the effects of a major accident.
  
54. Consideration should also be given to any infrastructure, including major transport routes or utilities, for example, electricity, gas, telephone, water sewers and treatment plants, if they could be vulnerable to the effects of a major accident.
  
55. The extent of the area described should take into account the hazard ranges of the worst-case scenarios.

56. The surrounding natural environment should be described in sufficient detail to enable the Competent Authority to assess the significance of the impact of a major accident.
57. A detailed description of sensitive parts of the environment should be given.
58. The significance of the features of the surrounding natural environment in either a national or international context should be explained, for example plants and animals particularly at risk.
59. Sufficient information about the surrounding environment should be included to enable the Competent Authority to determine whether all external influences on major accidents have been included. The surrounding environment includes the natural environment over, below and around the boundaries of the establishment.
60. The physical environment surrounding the establishment may have an impact on events which cause possible major accidents. In particular, consideration should be given to possible earthquakes and subsidence which may cause accidents.
61. Historical information on the land on which the establishment is located, and of its surroundings, may also have to be considered. Any history of mining or land reclamation which may lead to subsidence should be included in the Safety Report. Any previous land use which may be relevant and important in respect of contaminated land or water should be taken into account.
62. It may also be necessary to consider historical evidence of other external events that may cause accidents, or which may lead to a worsening of an accident. For example, seismic events, flooding, and extremes of weather conditions, such as temperature, rain, snow.
63. It will be necessary to take into account and describe any other activities in the area surrounding the establishment that may lead to, or worsen, a major accident. For example:
  - a. Other major accident hazard establishments;
  - b. Pipelines;
  - c. Current mining or other extractive activities;
  - d. Air traffic movements over and around the establishment;
  - e. Transport activities that may have an impact, such as shipping, major transport routes;
  - f. Other human activities that may lead to major accidents, such as arson, vandalism, theft and criminal damage;
  - g. High voltage overhead electric power lines;
  - h. Radio transmission masts in the area that could interfere with safety control systems, or communication systems, or initiate electro-explosive devices.

***Overview of the establishment, its activities and products***

64. It would be useful for the Safety Report to provide an overview of the establishment, its activities and products. The overview is a general outline, without extensive detail, to set the context. The overview could contain:
- a. The installations;
  - b. The major accident scenarios;
  - c. The measures for protection and intervention;
  - d. The inter-relationship between different installations;
  - e. The historical development of activities and production.
65. The internal geography of the establishment as a whole should set out – preferably by including scaled maps or plans plus descriptions. The information should include, for example:
- a. Location of installations with major hazard potential;
  - b. Location of all other installations, including those that do not contain a dangerous substance, with an outline of the activities or substances present;
  - c. Location and numbers of personnel etc. This should take account of foreseeable changes in numbers, such as shift working, maintenance activities, contractors, visitors;
  - d. Location of key abatement systems;
  - e. Location of key control systems, such as computer control systems or isolation systems;
  - f. Location of roads, railways or docks, entrances to the establishment;
  - g. Sources and key features of essential utilities, including redundancy systems;
  - h. Matters relevant to any emergency response, such as firewater supply, escape routes, and communication systems;
  - i. Systems for monitoring and detecting toxic substances in air, water or sewers;
  - j. Systems for detecting fires and monitoring potentially explosive atmospheres;
  - k. Security systems for monitoring access and detecting intruders.

## **2.4 Information about the management measures to prevent major accidents**

66. This chapter gives guidance on how to present the Major Accident Prevention Policy (MAPP) and information about the Safety Management System (SMS) for implementing this policy.
67. Some of the information provided here may not be relevant to every establishment. However, the Safety Report should demonstrate that the MAPP and the SMS are adequate in the context of the major accident hazards at the site.

***The aims of the SMS and how it takes account of all the processes mentioned in the Safety Report***

### ***Elements of the SMS***

68. The SMS is just one part of the overall management system at the establishment, which may in turn be part of a management system for a larger company or group of companies. The SMS may be integrated within other management systems on the site, such as a quality management system. For the Safety Report, this needs to be narrowed down to the information that is relevant.
69. The SMS described in the Safety Report should cover those parts of the general management arrangements which relate to the purpose and implementation of the MAPP. It should also describe those risk management control systems which are important to the control of major hazards.
70. Effective management involves:
  - a. agreeing objectives;
  - b. defining a plan to achieve those objectives;
  - c. agreeing the detailed work to implement the plan;
  - d. checking the outcomes against the plan;
  - e. planning and taking appropriate corrective action.
71. The general management arrangements may include independent third party certification such as ISO 9001 for quality management and/or ISO14001 for environmental management. If relevant, these should be mentioned in the Safety Report.

### ***Overall aim***

72. As regards management arrangements, the overall aim should be to ensure that the Safety Report:
  - a. Contains a MAPP;
  - b. Demonstrates that there is a SMS for implementing the MAPP;
  - c. Demonstrates that the MAPP and the SMS have been put into effect, taking into consideration the information contained elsewhere in the Safety Report; and
  - d. Demonstrates that all necessary measures have been taken to prevent major accidents and to limit their consequences for humans and the environment.
73. The Safety Report will also include descriptions of a series of outcomes which themselves are determined or influenced by the SMS, such as technical precautions. This information helps demonstrate that the MAPP and SMS have been put into effect.
74. It is important not simply to mention people's relevant qualifications here. Instead it is important to show that there is a system in place for providing and maintaining appropriate levels of management and employee competence.

### ***The MAPP***

75. The MAPP should include:

- a. A statement showing the company's commitment to achieving high standards of safety and environmental performance, and an indication that the necessary resources will be made available;
- b. A recognition that the nature of the activities at the establishment gives rise to major accident hazards, and therefore that the company has obligations to employees, neighbours and the environment;
- c. A clear policy statement explaining the company's overall aims and principles of action in relation to the control of major accidents; and
- d. A commitment to provide and maintain a management system which addresses the following issues in the context of the establishment;
  - i. Roles and responsibilities of those involved in the management of major accident hazards at all levels within the company organisation,
  - ii. The arrangements for systematic identification of major accident hazards resulting from normal and abnormal operation, and the assessment of their likelihood and severity,
  - iii. Arrangements and procedures for safe operation, including maintenance and temporary stoppages,
  - iv. Arrangements for planning modifications to, or design of, new installations, processes or storage facilities,
  - v. Arrangements for identifying foreseeable emergencies by systematic analysis, and for preparing, testing and reviewing emergency plans,
  - vi. Arrangements for on-going assessment of compliance with the objectives set out in the MAPP and SMS, including mechanisms for investigation and corrective action in case the objectives are not met. This should include the system for reporting major accidents and near misses, and their investigation and follow-up on the basis of lessons learnt;
  - vii. Arrangements for periodic assessment and review of the MAPP and the SMS; and
  - viii. The provision of training to meet identified training needs.

### ***Organisation***

76. The SMS should reflect the top-down commitment, environmental awareness and safety culture in and at the establishment. It should then describe how this is translated into the direct responsibilities of people involved in the management of major accident hazards at all levels.

77. There should be a description to show that roles and responsibilities for the management of major accident hazards have been properly allocated at the right level within the company.

78. Organisational charts may be usefully included.

79. The Safety Report should show that the responsibilities of everyone involved in the management of major accident hazards have been clearly defined, so that employees and other people involved will know who is responsible for

each relevant aspect. However, it would not be necessary to include copies of job descriptions.

80. The Safety Report should show how the company has allocated sufficient resources to implement the MAPP. This should include brief explanations of how resources, including human and financial resources, are determined and allocated.
81. There should be an explanation of how key risk control systems are resourced, and of the arrangements for filling key posts.
82. There should be a system for identifying absences of key personnel, and for arranging for competent cover.
83. Managers and employees need to have the necessary knowledge, skill and experience to be able to meet their responsibilities for the control of major accident hazards. The Safety Report should show that people having key roles in the control of major accident hazards are competent in relation to their responsibilities.
84. The Safety Report should show that the company has systems for involving employees in the control of major accident hazards.
85. Senior managers cannot manage major accident hazards on their own. The commitment, co-operation and active participation of employees at all levels are essential for success. There will be a need to take advantage of the knowledge and experience of employees at all levels because they may help identify problems and provide solutions.
86. However, the involvement of employees will not occur unless the company has a structured approach to securing their participation.
87. Therefore the Safety Report should, for example:
  - a. Summarise how the company has developed/is developing a culture which encourages the active participation of employees;
  - b. Explain how the employees are involved in consultative bodies, health and safety and environment committees, etc;
  - c. Describe how the company encourages and supports employee or safety representatives;
  - d. Explain the mechanisms which the company has in place for ensuring employee participation in major accident hazards.
88. The Safety Report should outline the arrangements for co-operating with, for example:
  - a. Operators of other establishments which may be affected by the major accident hazards;
  - b. The emergency services;
  - c. Local government units with responsibilities for preparing the External Emergency Plan;
  - d. The Competent Authority.

89. The Safety Report should describe how it is ensured that important safety information is obtained and taken into account – such as changes in legislation, development in technical standards and management practices, and information about incidents with major accident potential.
90. The Safety Report should explain the arrangements in place for internal distribution of information important for the control of major accident hazards.
91. The Safety Report should explain the arrangements for communicating relevant information to external organisations. In particular:
  - a. Operators of other establishments in the area;
  - b. The emergency services;
  - c. Local government units with responsibilities for preparing the External Emergency Plan;
  - d. The Competent Authority;
  - e. People in the neighbouring areas who may be affected by a major accident.
92. The arrangements for identifying major accident hazards, assessing risks, and determining the measures needed to control risks should be described.
93. The procedures should also be described for identifying gaps and weaknesses in the management arrangements, key risk control systems, and physical controls and workplace precautions which are important for the control of major accident hazards.
94. Therefore there should be systems in place to:
  - a. Identify hazards and assess risks;
  - b. Identify areas for improvements;
  - c. Select priorities and schedule improvements.
95. The management of major accident hazards must be an active and continuing process. Thus the arrangements for systematic identification of major accident hazards, risk assessment and the choice of control measures are essential. The Safety Report should, for example:
  - a. Refer to procedures for identification and evaluation of major accident hazards from the activities at the establishment, and from the substances and materials purchased, stored, produced or processed;
  - b. Explain the formal hazard identification and risk assessment techniques actually used at each stage of the process or storage life cycle. In particular:
    - i. Selection of the site, and the siting of buildings within the establishment,
    - ii. Plant and process design and modification,
    - iii. Construction, installation and commissioning,
    - iv. Start-up, operation and shut down under normal and abnormal conditions,
    - v. Routine and non-routine maintenance,

- vi. Incidents and possible emergencies,
  - vii. Decommissioning, and disposal.
- c. Refer to the techniques used to identify the hazards and assess the risks arising from external factors;
  - d. Describe how the arrangements for risk assessment take account of human factors, including the potential for human error;
  - e. Describe how the outcomes of the hazard identification and risk assessment are used to determine the physical control measures and risk control systems necessary for the prevention and limitation of major accidents;
  - f. Describe the approach taken for eliminating possible hazardous events from the risk analysis.
96. The Safety Report should explain the systems in place to identify areas for improvement, and how these improvements are planned.
97. The Safety Report should show how the company has systems for setting priorities to achieve the objectives of the MAPP, and for scheduling the necessary improvement works.

### **Key risk control systems**

98. The Law specifically requires that the SMS address three important sets of risk control systems:
- a. Operational control;
  - b. Management of change; and
  - c. Planning for emergency.
99. These cover a wide range of risks, discussed below. Not all of these may be relevant to all establishments. However, in outlining these key risk control systems it is important to say how each system works, and not just their outcomes.

#### **Operational control**

100. There should be descriptions of the risk control systems relevant to each stage of the life cycle of the plant, process or storage facility in question. This will include systems for each of the following stages:
- a. Construction and commissioning of the plant, processes, equipment and facilities;
  - b. Operation of the plant and processes, including;
    - i. Start up,
    - ii. Steady state running,
    - iii. Normal shut down,
    - iv. Detection of departures from normal operating conditions and responses to these, including emergency shut down, and temporary and special operations,
  - c. Safe operation under maintenance conditions, including;

- i. Carrying out risk assessment for decontamination and maintenance work,
- ii. Establishing safe methods of working for maintenance,
- iii. Selection and management of contractors,
- iv. Inspection, testing and maintenance of plant, equipment and facilities,
- v. Decommissioning of plant, processes, equipment and facilities.

#### Management of change

101. The Safety Report should show that procedures have been adopted and implemented for planning modifications to, or the design of, new installations, processes or storage facilities. This should include descriptions of:
- a. The system for planning and controlling changes in;
    - i. Staff and staffing levels,
    - ii. Plant,
    - iii. Processes and process variables,
    - iv. Materials,
    - v. Equipment,
    - vi. Processes,
    - vii. Software,
    - viii. Design
    - ix. External circumstances which are capable of affecting the control of major accident hazards.
  - b. The concepts used for the design of new plant or processes, explaining how;
    - i. Responsibilities for authorising and initiating design of new plant are allocated,
    - ii. Proposed designs for new plant are identified and documented,
    - iii. Safety and environmental implications of proposed new plant are identified, assessed and prioritised,
    - iv. Safety and environmental control measures, including the provision of information and training and amendment of procedures are defined, documented and implemented,
    - v. Post-implementation checks and reviews are carried out and any corrective actions taken.
  - c. How the management of change system covers permanent, temporary and urgent changes;
  - d. The management of change system, explaining how:
    - i. Decisions of what constitutes a 'significant change' are made,
    - ii. Change has been defined,
    - iii. Responsibilities for authorising and initiating change have been allocated,
    - iv. Proposed changes are identified and documented,
    - v. Safety and environmental implications of proposed changes are identified, assessed and prioritised,
    - vi. Safety and environmental control measures, including the provision of information and training and amendment of procedures are defined, documented and implemented,
    - vii. Post-implementation checks and reviews are carried out and any corrective actions taken.

#### Planning for emergencies

102. The issues described here are also relevant to emergency response measures (Chapter 7) and may be included in that part of the Safety Report.
103. The Safety Report should show how the company has arrangements on place to identify foreseeable emergencies by way of systematic analysis, and that Internal emergency plans are prepared, tested and reviewed.
104. The Safety Report should describe the procedures for:
- a. Systematically identifying the consequences of any major accidents that could occur;
  - b. Preparing, reviewing, testing and up-dating Internal Emergency Plans, at suitable intervals of no more than three years;
  - c. Taking account of likely human behaviour and response under emergency conditions, when developing emergency plans.

#### Measuring performance

105. Procedures should be elaborated, implemented and maintained to ensure that safety and environmental performance is monitored and compared to the objectives set out in the MAPP, and any other standards. This should include procedures for:
- a. Active monitoring – determining whether plans and objectives are being achieved, and whether the arrangements for controlling risks are being implemented before an incident or accident occurs;
  - b. Reactive monitoring – reporting and investigating failures which have led to incidents or near misses.

#### Review and audit

106. The review is an essential process for determining if the SMS is appropriate to attain the objectives of the MAPP. It may involve considering whether the MAPP and its objectives should themselves be modified, or whether improvements are required to management systems or physical controls.
107. The Safety Report should:
- a. Show that the company has adopted and implemented a review process which uses information from performance measurement and audit;
  - b. Describe how the results of review are documented;
  - c. Describe the arrangements by which the SMS and MAPP are updated by senior management.
108. Audits are required to ensure that the processes and procedures, as defined and carried out in practice, are consistent with the SMS and that they are effective. Audits should be conducted by persons who are sufficiently independent of the operational management to ensure that their assessment is objective.

109. The Safety Report should show that the company has adopted and implemented a procedure for the systematic independent assessment of the MAPP and the effectiveness and suitability of the SMS.

## **2.5 Information about possible major accidents**

110. This part of the Safety Report deals with:
- a. The description of the main activities at individual installations and the processes undertaken there;
  - b. The major accident hazards – how they are identified, their consequences and the risk analysis.

Description of the processes, areas on site and scenarios that could lead to a major accident

111. The purpose of every installation that could give rise to a major accident should be described. The description should include, where relevant to major accidents:
- a. The conditions under which the dangerous substances are normally held;
  - b. What happens to the dangerous substances in terms of physical and chemical changes arising from the designated purpose of the plant;
  - c. What happens to the dangerous substances in terms of physical and chemical changes arising from foreseeable deviations from the designated purpose of the plant;
  - d. The discharge, retention, reuse, recycling or disposal of residues, waste liquids and solids, and the discharge and treatment of waste gases.
112. For each installation there should be an overview which clearly identifies the location in terms of plant or activity, or both, where a major accident could happen. This should include:
- a. A plant diagram which clearly identifies key control and safety systems, reaction vessels, storage vessels, pipework systems, valves and significant connections;
  - b. Contain a plan which clearly identifies the location of activities where a major accident could happen.
113. The major accident scenarios should include those initiated by or involving any of the dangerous substances on the site, including those that do not form part of the qualifying inventory for an Upper Tier establishment requiring a Safety Report.
114. All accident scenarios involving a dangerous substance must be considered. Note that it is not necessary for the dangerous substance to cause the accident, but merely to have played some part in the chain of events leading to the accident.

115. The Safety Report should give information about the probabilities of the consequences of the major accident scenarios or should summarise the events which may play a role in triggering the scenarios. The report should include an assessment of the extent and severity of any possible major accident.
116. The risk assessment determines whether the measures taken are all that are necessary. The scope and nature of the risk assessment must be such that it is fit for its purpose in relation to the circumstances on the site.
117. There is a range of risk assessment approaches of increasing complexity, from simple qualitative analyses through semi-quantitative analyses to fully quantified risk assessment. The depth and type of the risk analyses may vary but should be proportionate to:
  - a. The scale and nature of the major accidents hazards at the establishment and the installations and activities there;
  - b. The risks posed by the site to neighbouring populations and the environment, i.e. the extent of possible damage; and
  - c. The complexity of the major accident hazard process and activities, and the difficulty in deciding and justifying the adequacy of the risk-control measures adopted.

Preparing information about major accident scenarios

118. There are three steps in preparing information about all major accident scenarios:
  - a. Identify all the possible major accidents;
  - b. Give a realistic estimate of the likelihood of each major accident hazard or an adequate summary of initiating events;
  - c. Prepare an adequate assessment of the extent and severity of the consequences for each identified major accident hazard.

**Step 1**

119. The Safety Report should identify the full range of possible major accidents and describe a representative set of examples, sufficient to enable a comprehensive assessment of the consequences.
120. A structured approach to hazard identification is required. The Safety Report should describe the systematic process used to identify all foreseeable major accidents.
121. The major accident scenarios presented in the Safety Report should include the worst case scenarios and the most serious foreseeable events for people and the environment, taking into account what may happen on-site as well as off-site.
122. There are a number of methods of identification of hazards. These include:
  - a. Hazard and operability studies;
  - b. Safety reviews;
  - c. Studies of the causes of previous accidents and incidents;
  - d. Industry standards;
  - e. Failure mode and effects analysis;

- f. Job safety analysis; and
- g. Human error identification methods.

## **Step 2**

123. The Safety Report should either:
  - a. Contain estimates of the probability, in qualitative or quantitative terms, of each major accident scenario; or
  - b. Set out the conditions under which the major accident scenarios could occur.
124. Which ever option is chosen, the Safety Report should include a summary of the initiating events and event sequences, internal or external, which may play a role in triggering each scenario.
125. The Safety Report should explain the systematic process used to identify initiating events and subsequent event sequences including, where appropriate, information obtained from previous accidents and incidents.
126. When considering events that could lead to a major accident, it will be necessary to consider whether a sequence or combination of events may lead to a major accident. If so, it will be necessary to assess the effects of failure on systems, plant and equipment designed to detect and prevent such a scenario, and describe the measures taken to prevent this sequence occurring.
127. For automatic isolation systems, it will be necessary to consider the situation where the system fails and the operator fails to respond correctly to an alarm. It will be necessary to assess whether the severity of the hazard and the reliability of the automatic systems and human response are such that the risk remains as low as reasonably practicable.
128. Human error should be considered as an accident initiating event, for example loading incorrect reactants into a batch reactor, or a wrong operating procedure leading to an abnormal discharge to a water course.
129. All safety critical events and the associated initiators should be clearly identified. Safety critical events are those that dominate the contribution to risk, so they should be identified by the risk analysis.
130. Safety critical events are key to identifying suitable control and protection measures for preventing hazardous events or limiting their consequences. However, the failure of these protection measures must also be considered in assessing whether the residual risks are as low as reasonably practicable, or whether more is required to be done.
131. If potential control measures are rejected, then the reasons for doing so must be given in the Safety Report. Any assumptions or estimates about the reliability of protective systems and the times required for operators to respond and isolate loss of containment must be realistic and adequately justified.

132. Qualitative arguments should be based on currently accepted good standards for reengineering and safe systems of work. Information should be provided in the Safety Report to support any opinions about the likely demand on the various control measures and systems, and what the consequences may be if they fail.
133. For example, if a worker has to intervene to close an isolation valve manually when the automatic isolation fails, then the release duration will be determined by the time taken to intervene successfully.
134. Any methods used to determine event sequences and to determine the probabilities of potential major accidents should be appropriate and used correctly.
135. This should include the use of:
  - a. Relevant operational and historical data;
  - b. Fault tree analysis;
  - c. Event tree analysis; or
  - d. A combination of these.
136. The methods and assumptions used should be described in the Safety Report. The methods used should be fit for purpose and used correctly. There should be a description of the process and methods adopted to generate any probabilities or event sequences, together with any assumptions and data sources used.

### **Step 3**

137. The Safety Report should provide sufficient detail to show that the way the assessment of consequences for each major accident scenario, with respect to humans and the environment, is suitable and sufficient.
138. There should be a description or a reference to any consequence assessment model and methodology used. There should be justifications for the assumptions made and the values used in the key variables of the method or model, for example wind speed, atmospheric conditions etc in gas dispersion models.
139. The range of scenarios considered must be representative and suitable for emergency planning.
140. Different levels of harm should be considered. As a minimum, there should be a consideration of how a major accident may affect humans and the environment. Any impact criteria or vulnerability models used, in predicting the extent of areas where humans or the environment may be affected needs to be defined and justified. For assessing environmental impacts, there should be consideration of the short-term and long-term recoverable and non-recoverable destruction of plant life and animal life.

## **2.6 Information about the measures to prevent or limit the consequences of a major accident at each installation.**

Describing the installation, plant and equipment

141. The Safety Report should include information about all the installations which have a potential for a major accident. For each installation, there should be a description in sufficient detail to determine the purpose, location and function of equipment within the installation that has a bearing on major accident prevention and control.
142. The purpose of the information is to provide enough detail for the Competent Authorities to understand the arguments forwarded that all necessary steps to prevent a major accident or limit its consequences have been taken.
143. It may be that some information is best provided by way of maps, plans or diagrams with descriptions which clearly set out the detailed information about the installations with major accident potential. In particular, there should be information about items of plant where these are relevant to the major accident hazards on site, such as:
  - a. Vessels;
  - b. Pipework systems;
  - c. Services, e.g. steam, air, electricity, fuel, hot water;
  - d. Drainage;
  - e. Stacks, flares and gas cleaners;
  - f. Safety-critical or environment-critical valves, control loops and detection systems;
  - g. Fire-fighting equipment and supply arrangements; and
  - h. Monitoring equipment.
144. It will be necessary to include relevant information about:
  - a. Normal operating parameters for the plant;
  - b. Designed maximum working parameters;
  - c. Relevant qualitative and quantitative information on energy and mass transport in the process during:
    - i. Normal running,
    - ii. Start-up or shut-down periods, and
    - iii. Abnormal operations.
  - d. Locations of dangerous substances, and at each location – information on the chemical and physical state and quantity of the dangerous substance.

Describe how the measures taken will prevent or limit the consequences of a major accident

145. The Safety Report should demonstrate how the measures taken will prevent foreseeable failures which could lead to the major accidents that have been identified. It should show how each measure contributes to the defence against each hazardous event. Where representative events have been chosen, the measures may relate to a wide range of events with similar outcomes.

146. The Safety Report should show how the approach taken will be applied to new and modified facilities that are being installed, and what procedures there are for applying the approach when designing new plants or modifications to existing plants.
147. The Safety Report should also demonstrate how adequate safety and reliability have been built into all the measures for preventing or limiting the consequences of a major accident during the full life cycle of each installation.
148. For existing establishments, the measures should have already been determined. In these cases the Competent Authority will be less concerned about how the measures were selected in the past, but more concerned in a description of what they are and what they aim to do. The Competent Authority will want to know that the measures selected and used have the necessary safety and reliability to prevent major accidents or limit their consequences.
149. The measures may take the form of hardware, software systems or human factors. It is important that the performance specified for the risk-reduction measures should be related to realistic scenarios.

#### Selection of measures

150. The initial design stage presents the best opportunity to remove hazards and to reduce risk. This opportunity can also be taken in the design of modifications. Therefore the operators of older establishments should be aware of technical advances in their industry to improve safety.
151. The measures taken to prevent or limit the consequences of a major accident may be categorised into four levels:
  - a. Level 1 – inherent safety
  - b. Level 2 – prevention measures
  - c. Level 3 – control measures
  - d. Level 4 – limitation measures.
152. Level 1 – inherent safety is concerned with the removal or reduction of a hazard at source. Examples of inherently safe techniques include:
  - a. Substitution of a less hazardous process;
  - b. Use of corrosion-resistant materials;
  - c. Reduction or elimination of the hazardous inventory;
  - d. Design for maximum foreseeable operating conditions; and
  - e. Fail-safe design principles and appropriate plant lay-out.
153. Level 2 – prevention measures are intended to prevent the initiation of a sequence of events which could lead to a major accident. They can:
  - a. Be management systems or features of the design of the installation;
  - b. Be applied during design, construction, operation, maintenance and modification;

- c. Be designed to prevent failure of equipment or human error and include individual activities, e.g. maintenance or inspection, aimed at preventing specific failures;
  - d. Include hardware arrangements such as double-walled pipes to provide secondary containment.
154. Level 3 – control measures are intended to prevent a hazardous event from escalating into a major accident. They include measures directed at preventing or limiting small releases which have the potential to escalate to a major accident. Control measure should be independent from the cause of the initiating hazardous event and associated systems, so as not to fail as a direct result of the event. Control measures can include, for example:
- a. Relief valves;
  - b. Safety –related control systems;
  - c. Deluge systems;
  - d. Venting to scrubbing systems or flare stacks;
  - e. Manually initiated emergency shut-down procedures;
  - f. Gas detection systems.
155. Level 4 – limitation measures are those measures taken to reduce the consequences of a major accident once it has occurred. Limitation measures can include, for example:
- a. Safety refuges;
  - b. Bunding systems to protect surface waters and groundwaters;
  - c. Fire-fighting facilities;
  - d. Emergency response procedures;
  - e. Traverses or mounds for explosives buildings.

Describing how adequate safety and reliability have been built into the installation

156. There are five main elements to be considered when demonstrating that adequate safety and reliability have been built into the installation. These are:
- a. Design – includes plant lay-out, process design and design of equipment. Note that a discussion of conceptual design is important for new or modified installations;
  - b. Construction – includes the manufacture, installation, construction of structures, testing, initial inspection and commissioning;
  - c. Operation – includes plant start-up, shut-down, normal operation, including foreseeable temporary operations, emergency shut-down and the extent to which deviation from normal operation will be tolerated;
  - d. Maintenance – includes preventative maintenance, repair, replacement, periodic examination by a competent person, and the assessment of any defects found;
  - e. Modification – includes the measures to deal with changes that may take place on the installation during its life, including all alterations, and during de-commissioning, which could affect the integrity of the remaining installation.
157. The Safety Report should show that the establishment and installations have been designed to the appropriate standard. This is particularly essential for

reports on new or modified installations. For older plants, the report should make clear what additional (if any) systems or arrangements are in place to prevent or limit the consequences of a major accident, to take account of any plant or equipment that was built to standards that are no longer in force, or that have been introduced as a result of long operational experience on the site.

158. There should be a clear description of the approach taken to the selection of measures as part of the system for designing the plant. Any design standard should highlight the key issues:
  - a. Redundancy, diversity, separation and segregation;
  - b. Impact of a single event which may have multiple effects;
  - c. Lay-out of the plant;
  - d. Reliability, availability and survivability of utilities;
  - e. Containment;
  - f. Structural integrity;
  - g. Protection against excesses beyond design conditions;
  - h. Safety related control systems;
  - i. Human factors; and
  - j. Systems for identifying locations where flammable substances could be present.
159. The Safety Report should show that the installations have been constructed to appropriate standards to prevent major accidents and to limit their consequences.
160. It should also show that the manufacture and construction of the plant has employed appropriate materials and construction methods, to minimise the occurrence of defects or damage that may affect the integrity of the plant. There should be reference to any relevant construction codes or standards that have been used.
161. The Safety Report should show that safe operating procedures have been established and are documented for all reasonably foreseeable conditions, including start-up, shut-down and abnormal operating conditions, and in particular for safety critical purposes.
162. The Safety Report should identify how reviews of operating procedures are undertaken and recorded, to take account of operational experience or changing conditions in the plant.
163. The Safety Report should show that an appropriate maintenance scheme is established for plant and systems, to prevent major accidents or to limit their consequences. The maintenance procedures should be sufficiently comprehensive to maintain the plant and equipment in a safe state.
164. It should also be shown that the maintenance activities will not compromise the safety of the installation and that maintenance staff will not be exposed to unacceptable risks.

165. The Safety Report should describe the organisation of maintenance activities. In particular this should include information on:
  - a. Fault reporting systems;
  - b. The availability and deployment of suitable staff and equipment; and
  - c. The scheduling and ranking of routine maintenance activities.
166. The Safety Report should identify those parts of the plant and systems for which maintenance is considered to be a safety critical activity.
167. The Safety Report should show that the impact of the maintenance work on the safety of the installation has been adequately considered. It should also show that procedures and equipment are in place to ensure that the plant is made safe before starting the maintenance work, and for re-instatement of the plant to the operating state after the maintenance is completed.
168. The procedures necessary to enable maintenance work to be carried out safely should be identified. This is especially important for activities that could result in dangerous situations. The information provided may relate to, for example;
  - a. Hazards posed by electrical equipment and the procedures for making safe;
  - b. Hazards associated with 'hot work', and procedures for assessing the risk or testing of flammable gases; and
  - c. Hazards associated with underground services, and procedures for keeping contractors informed about such services in areas where they are working.
169. The Safety Report should identify which activities are subject to a 'permit to work' system and describe the key features of the systems in place at the establishment.
170. The Safety Report should show that systems are in place to ensure that safety critical plant and systems are examined at appropriate intervals by a competent person.
171. The Safety Report should identify any safety critical plant or systems which are known to be susceptible to defects, which have been repaired, or where there is a history of failures. In such cases, there should be additional evidence to show adequate monitoring of the situation and to show details of any replacement programme.
172. The Safety Report should describe the systems in place for ensuring that modifications are adequately conceived, designed, installed and tested.
173. Modifications to processes and associated equipment, and structures (including warehouses), or to operations and procedures, which could affect the safety of the installation should normally be subject to a formal modification system. This should cover both hardware measures and software measures.

174. During the lifetime of an installation, there may be occasions requiring the decommissioning and removal of plant or of components, for example as part of a modification programme or as part of risk reduction through the removal of redundant plant.
175. The Safety Report should identify significant decommissioned plant and its relationship to the remaining related plant and systems. Removal of such plant should not lead to an increased risk associated with the use of the remaining plant and systems.
176. Particular care should be given to ensuring the integrity of remaining safety systems following the removal of plant, and such arrangements should be included in the description of the 'change system'. This may include ensuring that, for example:
  - a. Sections of fire protection systems are not compromised by physical isolation following the removal of redundant sections of the fire-water supply system;
  - b. Shut-down systems are not compromised by computer software logic changes;
  - c. Levels of equipment protection have not been reduced through the decommissioning of certain instrumentation or utility services etc.

## **2.7 Information about the emergency response measures to limit the consequences of major accidents**

177. This section covers the information that should be given in the Safety Report about the range of emergency measures which are in place to respond to major accident hazards. This includes resources which can be mobilised such as fire-fighting equipment, and the provision of restoration and clean-up.
178. The detailed operation of the emergency response measures will be included in the Internal Emergency Plan for the establishment. The Internal Emergency Plan should not be included in the Safety Report – however the Safety Report should give information about the key points including the minimum information required by the Law.
179. The aim here in the Safety Report should be to demonstrate that all measures necessary to limit the consequences of a major accident have been taken, and that an Internal Emergency Plan has been drawn up to take these into account. The measures should be related, and preferably cross-referenced, to the major accident scenarios described elsewhere in the Safety Report.
180. Section 2.4 deals with risk control systems. The organisation of the alert and intervention in an emergency forms part of the safety management system, and could follow the management model described there.

## **Summary of the protection and intervention measures that have been used to prepare the Internal Emergency Plan**

181. The Safety Report should summarise the measures of protection and intervention which have been used as the basis for drawing up the Internal Emergency Plan. In particular the Report should cover:
  - a. The equipment installed in the plant to limit the consequences of a major accident;
  - b. The organisation of the alert and intervention; and
  - c. The on-site and off-site resources that may be mobilised.
  
182. There will be a need to refer to fixed equipment installed at the plant that limits the consequences of a major accident and how this equipment affects how an emergency is handled, for example emergency shut-down arrangements, including the extent of manual interaction required. A description of such equipment and its design and maintenance will generally be included with the information described in section 2.6.
  
183. The Safety Report should describe the organisation of the alert and intervention in the event of a major accident. The following may be included, if relevant to the major accident scenarios at the site:
  - a. The functions of key posts and groups with duties in the emergency response, and the arrangements for any deputies;
  - b. The arrangements for controlling and limiting the escalation of accidents on site;
  - c. The arrangements for alerting individuals on site, neighbouring establishments, where relevant, and the general public to;
    - i. The hazardous situation,
    - ii. The nature of the alarms and the plant conditions required to activate them, and
    - iii. The initial actions required both on-site and off-site in response to alarms and warnings;
  - d. Provisions for establishing and maintaining communications during the emergency response;
  - e. The nature of, and arrangements for maintaining, any mutual aid agreements with neighbouring establishments, for example, provision of equipment and human resources, first aid and specialised medical services;
  - f. The arrangements and conditions for alerting and mobilising;
    - i. Individuals or groups with defined responsibilities under the emergency plans, including essential personnel on-site and off-site,
    - ii. The emergency services,
    - iii. Neighbouring establishments, if there are mutual aid agreements;
  - g. The nature and location of any installations that may require special protection or rescue intervention;
  - h. The nature and location of;
    - i. Emergency control centres,
    - ii. Medical and first aid centres,

- iii. Emergency refuges,
  - iv. Sheltering buildings,
  - v. Muster points,
  - vi. Pre-defined forward-control points, and
  - vii. Any other relevant information;
- i. The location of access routes for emergency services, rescue routes, escape routes and any restricted areas;
  - j. The evacuation arrangements and any transport requirements;
  - k. Arrangements for ensuring all personnel have evacuated the buildings;
  - l. Any search and rescue arrangements;
  - m. The nature and location of any pollution control devices and materials, and the arrangements for any subsequent environmental clean-up and restoration;
  - n. The arrangements for un-staffed sites and sites where staffing levels vary at different times;
  - o. Consideration of the effects of emergency response actions, including fire-fighting activities, to minimise the overall impact on humans and the environment. This should include both short-term and long-term effects and any alternative options for disposal or discharge of released chemicals; and
  - p. Where relevant, the provision that has been made for monitoring wind speed and direction, and any other environmental conditions.
184. The Safety Report should describe the on-site and off-site resources which are available for mobilisation in the event of a major accident. This should demonstrate that there are the necessary resources to contribute to the overall measures necessary to limit the consequences of a major accident.
185. Thus the Safety Report should include the resources available:
- a. Located on site;
  - b. Provided by the emergency services;
  - c. Located at neighbouring establishments with which mutual aid agreements have been made; and
  - d. Which can be brought in by the operator from elsewhere.
186. The Safety Report should also explain how the on-site response will be complementary to, and co-ordinated with, the role of the off-site emergency services. This information should include details, where appropriate, of:
- a. Human resources;
  - b. Hardware;
  - c. Personal protective equipment;
  - d. Fire fighting equipment and fire protection equipment;
  - e. Measures and systems to minimise the release, and to limit the consequence, of airborne dangerous substances;
  - f. Measures and systems to minimise the release, and to limit the consequence, of dangerous substances in water;
  - g. Measures and systems to minimise the release, and to limit the consequence, of dangerous substances on the ground;
  - h. Monitoring and sampling;
  - i. Provisions for restoration and clean-up;

- j. First aid and medical treatment; and
  - k. Any ancillary equipment.
187. The Safety Report should show that suitable arrangements have been made for maintenance, inspection, examination and testing of the resources and other equipment to be used during the emergency response.
188. The Safety Report should show that suitable arrangements have been made for training individuals on-site in the emergency response. This training should include those members of staff with specific roles in the event of a major accident, as well as the provision of training and information for other employees, contractors and visitors to the site.
189. The Safety Report should describe the procedures for testing and reviewing the internal emergency plan, and to revise the emergency arrangements in the light of lessons learnt.

### **Information required for the External Emergency Plan**

190. The Safety Report should form part of the information supplied to the local government unit to enable the local government unit to draw up the External Emergency Plan.
191. The minimum information that must be included in the safety report is:
- a. Details of the site, including its location, nearby roads and site access;
  - b. Site plan showing the location of key facilities such as control centres and medical centres and the location of main process plant and stores;
  - c. Details of staffing levels;
  - d. Details of the off-site areas likely to be affected by a major accident, and estimates of the levels of harm that may result;
  - e. Details of the dangerous substances held on-site, and similar information on other hazardous materials held on site;
  - f. Details of the technical advice that the company can provide to assist the emergency response;
  - g. Relevant technical details of equipment and other resources which may be normally available on the site and which may be available to assist the external emergency services during an emergency response;
  - h. The functions of key posts with duties in the emergency response, their location and how they can be identified; and
  - i. An outline of the initial actions and procedures in the Internal Emergency Plan to be taken by on-site staff once an emergency has been declared.

## **3 Guidelines on emergency plans**

### **3.1 Introduction**

1. The purpose of this part of the Annex to this Decision is to provide further guidance on good practice for emergency planning. The information will be useful to all those who have responsibilities for emergency planning, internal and external, at major accident hazards establishments; including operators, local government units, and emergency services.
2. While the emergency planning requirements of the Law only apply to Upper Tier establishments, these guidelines may also be useful to Lower Tier establishments in setting up their emergency arrangements in their Major Accident Prevention Policy (MAPP).
3. The objectives of the emergency plans are set out in Annex 4, Part 1 of the Part.
4. Two Emergency Plans have to be produced in writing for Upper Tier establishments:
  - a. The Internal Emergency Plan, which is prepared by the operator, to specify the response to the emergency of those who work on the site; and
  - b. The External Emergency Plan, which is prepared by the local government unit, as defined in the Law, to specify the co-ordinated response to an emergency on the site, which has off-site effects.
5. The two Emergency Plans should detail how they “fit” together. The Internal Emergency Plan should include the arrangements that the operator has in place to assist with the emergency response off-site; the External Emergency Plan should include details of the arrangements for providing assistance to the on-site emergency response.
6. The minimum requirements of the Internal Emergency Plan are set out in Annex 4, Part 2 of the Law.
7. The minimum requirements of the External Emergency Plan are set out in Annex 4, Part 3 of the Law.
8. Employees and others who work on-site, and the emergency services have to be consulted about the Internal Emergency Plan.
9. The emergency services and the public have to be consulted about the External Emergency Plan.
10. In all cases where a major accident could occur, which could result in serious harm to people or to the environment, proper planning will assist in minimising the consequences of that major accident. Good planning will also enable the optimisation of resources.

11. The emergency plan should address the response required during every phase of the emergency, both the immediate needs and the longer term recovery. The first few hours after the accident occurs can be the critical phase of the accident response, when key decisions, which may affect the success of any mitigation measures, must be made under great pressure and within a short period of time. Therefore a detailed understanding of the likely sequence of events and appropriate counter-measures will benefit all those who may reasonably be expected to have a role to play.
12. In addition, in the event of an inquiry after a major accident, the emergency plan may assist in demonstrating that the parties concerned had done all that was reasonably expected of them to do in preparing for such a major accident.
13. The operator and the local government unit each has a duty to ensure that the appropriate plans are prepared and are adequate for the purpose. The operator is responsible for the Internal Emergency Plan and the local government unit is responsible for the External Emergency Plan. In each case, the exchange of information between the persons who have to prepare the plans and other organisations with an interest, is central to the planning process and there is a need for extensive consultation with all these parties.
14. All those authorities/organisations with a reasonably foreseeable role in the overall emergency response must be involved, as appropriate, in the preparation of the emergency plans. Many of their interests may overlap and may, occasionally, conflict. It is essential therefore that there is good co-operation, and compromise may sometimes be necessary. Senior representatives of the principal organisations should meet as a senior emergency co-ordinating group, or similar group, to assist in development of the plan and the testing regime, and to consult with other organisations.
15. Following a major accident, it is recommended that a strategic co-ordinating group be established. Such a group would be responsible to ensure that all organisations involved in the accident response are adequately prepared and that the multi-organisation approach which is required is properly co-ordinated. It is recommended that such a group consist of the chief officers of the emergency services, the chief executives of the local government unit, and if appropriate senior local hospital representatives.
16. For **Internal Emergency Plans** the operator is required to consult on the preparation of the plan, with:
  - a. Employees and long-term sub-contractors;
  - b. The fire service;
  - c. The police;
  - d. The ambulance service;
  - e. The local health authority;
  - f. The National Defence Service;
  - g. The Coastguard, if appropriate;
  - h. The Competent Authority;
  - i. The local government unit.

17. The consultation of employees and long-term sub-contractors at the establishment on the contents of the Internal Emergency Plan may be via direct discussion, using discussion groups or working groups, or by suitably elected employee representatives.
18. The roles of the emergency services should be discussed and agreed before inclusion in the Internal Emergency Plan arrangements. This is to ensure that the arrangements will “fit” with the emergency services response plans.
19. Similarly the local government unit must be consulted on the Internal Emergency Plan. This is to ensure a high level of “fit” between the Internal Emergency Plan and the External Emergency Plan.
20. For **External Emergency Plans**, the local government units are required to consult the:
  - a. Operator;
  - b. Competent Authority;
  - c. fire service;
  - d. police;
  - e. ambulance service;
  - f. local health authority;
  - g. National Defence Service;
  - h. Coastguard, if appropriate;
  - i. The public.
21. The health authorities have responsibility for public health and they should have in place arrangements for the control of environmental hazards, including chemical releases. They should ensure that suitable arrangements are in place at the hospitals that would be expected to receive casualties from major accidents considered by the emergency plans.
22. It may also be necessary to consult with other institutions and organisations on the preparation of the External Emergency Plan. These would be institutions/organisations who may become involved in the response to a major accident, and their roles would have to be included in the External Emergency Plan.

### **3.2 *Preparation and use of the emergency plans***

23. The mechanism for producing the emergency plans needs to be structured to ensure that when activated, the plan produces an adequate response to the major accident.
24. The principal objectives of emergency plans are set out in Part 1 of Annex 4 of the Law.
25. However, the key components of the emergency planning process are:
  - a. Identification of the significant sources, types, scales and consequences of potential major accidents;

- b. Establishment of the objectives of the response, both technical and organisational;
  - c. Identification of the components (procedures, roles and resources – hardware and software) required to achieve the response;
  - d. Identification of the organisations and key post-holders involved;
  - e. Identification of the expertise, arrangements and capabilities of the organisations and individuals which are relevant to the procedures and the roles needed, and the adequacy of the resources identified for responding the identified major accident scenarios;
  - f. Determination of how all the responses will be co-ordinated, including any “sub-plans”, such as arrangements with the emergency services;
  - g. Allocation of responsibilities for the response and associated components;
  - h. Identification of situations where the routine procedures and resources are not appropriate or sufficient, and what to do instead. This should include how to recognise when the change from the routine is necessary and how to implement change; and
  - i. Identification of the means to ensure that the plans will be put into effect as intended.
26. Emergency plans should be based on the specific needs of each particular establishment, the foreseeable emergencies which may arise, and the arrangements for dealing with those emergencies. Emergency plans should address the full range of possible major accidents foreseen for the establishment concerned, but the degree of planning should be proportional to the probability of the accident occurring.
27. For Internal Emergency Plans, the major accident hazards identified in the Safety Report should form the basis of the emergency planning.
28. The Internal Emergency Plan should include details of normal and special control arrangements for dealing with the major accident scenarios that have been foreseen. The arrangements will vary according to circumstances, and should take account of the size and complexity of the establishment, the nature of the processes and the materials handles, the numbers of people employed, the availability of resources and the location of the establishment.
29. The Internal Emergency Plan should be an aspect of the overall safety management system. The plan should include suitable and co-ordinated arrangements that should ensure that all the necessary people, resources and information are available and brought into action, to deal in an appropriate manner with the whole range of the reasonably foreseeable emergencies.
30. Some components of the emergency plan are mainly about the **response**, e.g.:
- a. When and how to contact the emergency services;
  - b. Who will take charge and what will they be responsible for;
  - c. Relevant procedures for the response;
  - d. Special procedures for dealing with particular circumstances;
  - e. Availability of resources, including the requirement for any specialist equipment;

- f. Where and how to get information;
  - g. How those who respond to the emergency can be easily identified and how can they identify each other; and
  - h. Rendezvous point(s) for those who respond to the emergency, and how will they communicate.
31. Other components of the emergency plan are mainly about **making the plan work**, e.g.:
- a. Training for emergency planners;
  - b. Training for people who have roles to play in connection with the plan;
  - c. How the plan (and components of the plan) will be tested;
  - d. How the plan (and components of the plan) will be updated; and
  - e. How the plan (and components of the plan) will be reviewed and revised to take account of changes or lessons learnt.
32. Emergency plans must be documented in writing. The documentation should be a record of agreements and procedures which cover all the appropriate people and organisations, all the necessary resources, and the full range of major accident scenarios reasonably foreseen.
33. Emergency plans should be as concise as possible, but not at the expense of essential detail.
34. A large part of the preparation of the emergency plan is about the exchange of information and ideas between people and organisations. Serious consideration should be given to the most effective way of carrying this out, in the circumstances of a particular emergency plan.
35. Consideration should also be given to forming links between those delegated to handle media relations on behalf of the various response organisations. This should ensure that any statements released to the media and public are jointly agreed and approved by all parties. This should also include information provided through public help-lines.
36. Emergency plans should be kept up to date and put into effect without delay whenever required. All those with roles and responsibilities under the plan should carry them out when, where and how they have been agreed.
37. The principles outlined in the plan should be followed during training, testing and in the event of an actual major accident.
38. The emergency plan should contain all the information that those responding to an emergency may reasonably expect. The procedures it contains for individuals should be simple and straightforward, should not be contradictory, and should enable maximum flexibility of response, relative to the size of the establishment.

### **3.3 Internal Emergency Plans**

39. The Internal Emergency Plan covers the operator's complete response to a major accident involving dangerous substances on the establishment.
40. The Internal Emergency Plan should concentrate on those events identified as being most likely to occur. The level of planning should be proportionate to the probability of the accident actually occurring.
41. The Plan should have the flexibility to allow it to be extended and increased to deal with extremely unlikely consequences which may arise through combinations of accidental circumstances and weather conditions.
42. The Internal Emergency Plan should provide details how the operator prepares people at the establishment for an emergency, and how to control, contain, and mitigate the effects of any emergency. It should also detail how assistance from other organisations off-site will be contacted, and how those who work at the establishment will assist any such external organisations, including assisting with any off-site mitigation measures.
43. So as to make the best use of available resources in the event of an emergency, and to avoid confusion, the Internal Emergency Plan should identify nominated key personnel (by name or by job title). It is recommended that names and contact telephone numbers of authorised personnel are included in annexes to the Plan, as this will assist in updating changes.
44. The Law requires the Internal Emergency Plan to include the names or positions of people authorised to set the emergency procedures into action, and of the person in charge of co-ordinating the on-site mitigation response. These two principal functions are usually designated to the "**site incident controller**" and the "**site main controller**". It is possible, for smaller sites, that these two roles can be assigned to the same person.
45. The **site incident controller** is responsible for taking control at the scene of the incident. This person should have a detailed knowledge of the overall situation in the vicinity of the incident. This is especially important in the case where establishment operations are closely interlinked. The site incident controller role may be suitably held by the establishment manager, the shift manager or the shift supervisor at the time the incident occurs. It is essential that cover to fulfil this role is provided 24 hours a day. At establishments where there is a small number of staff, or which are not staffed 24 hours a day, appropriate management arrangements should be in place to carry out the necessary functions in the event of an emergency.
46. The responsibilities of the site incident controller should include:
  - a. As soon as the site incident controller has been made aware of an incident, he/she should assess it to determine if it is, or may turn into, a major accident. If so, the internal emergency plan should be activated. If necessary, the external emergency plan should also be activated.
  - b. Until such time as the site main controller is in place, the site incident controller should assume his/her responsibilities. In particular, responsibility should be taken for;

- i. Ensuring that emergency services are alerted,
    - ii. Ensuring that appropriate establishment alarms are sounded,
    - iii. Ensuring that the public has been informed,
    - iv. Directing the shutting down and evacuation of other plant areas that are likely to be affected, and
    - v. Ensuring that key personnel are summoned.
  - c. The main function of the site incident controller is to direct all operations in the event of a major accident at the scene. These main responsibilities include:
    - i. Control of rescue and fire-fighting responsibilities until the arrival of the emergency services; at which time control will normally be passed over to a senior fire officer,
    - ii. Working with the fire service in the search for casualties, and
    - iii. Evacuation of non-essential workers to the pre-designated assembly points.
  - d. The site incident controller should also take responsibility for:
    - i. Setting up a communication point with appropriate communication equipment, for contact with the “**emergency control centre(s)**”,
    - ii. Providing advice and information, as requested, to the emergency services at the scene,
    - iii. Briefing the site main controller and keeping the on-site emergency control centre fully informed of all significant developments.

47. The **site main controller** has the overall responsibility for directing operations from the on-site emergency control centre. It is recommended that this position be filled by the senior establishment manager, establishment manager or a director who has an overall knowledge of the site.

48. The responsibilities of the site main controller should include:
- a. He/she should go to the on-site emergency control centre and take over responsibility for overall control from the site incident controller.
  - b. If a major emergency exists, the site main controller should confirm that the emergency services have been summoned and, if appropriate, that the external emergency plan has been initiated.
  - c. Depending on the circumstances and the nature of the incident, the site main controller should;
    - i. Ensure that key personnel are mobilised,
    - ii. Ensure that direct operational control is available for those parts of the establishment outside those areas directly affected,
    - iii. Review and assess developments, as appropriate, to help predict the most likely development of the incident,
    - iv. Direct the shutting down of plants and evacuation of buildings, as appropriate, in consultation with the site incident controller and other key personnel,
    - v. Ensure that any casualties are receiving adequate attention and, if appropriate, arrange for additional assistance.
    - vi. Ensure, in association with the police, that relatives are kept informed of missing or injured people,

- vii. Establish appropriate contacts with weather forecast services, to ensure that prior information is received in the event of any impending changes in weather conditions,
- viii. Liaise with appropriate external agencies to provide advice on possible effects on areas outside the establishment,
- ix. Ensure that all personnel are accounted for,
- x. Control traffic movement within the establishment,
- xi. Arrange for an on-going record to be kept of the emergency and the responses undertaken to mitigate its effects, to provide evidence of the decisions made, the actions taken, and to ensure that lessons are learnt from the response to the emergency,
- xii. Provide for the welfare needs of establishment personnel (food, drinks, relief, etc) and the means to keep relatives informed,
- xiii. Establish links with news media and issue information and statements, as appropriate, and after liaison with emergency services,
- xiv. Ensure that full consideration is given to the preservation of evidence,
- xv. Control the rehabilitation of affected areas after the emergency.

49. The on-site **Emergency Control Centre (ECC)** is the principle facility that should be considered in the Internal Emergency Plan. The on-site ECC is the place from which operations to manage the response to the emergency are directed and co-ordinated. It will normally be the location occupied by the site main controller, other key personnel as appropriate, and by the senior officers of the emergency services in attendance for tactical and operational command and control.

50. The on-site ECC should have good communications links with the site incident controller and all other installations at the establishment. It should also have good communications links appropriate points off-site, which may be via the on-site emergency services. These links should include:

- a. Emergency services headquarters;
- b. Hospitals;
- c. Company headquarters;
- d. The regulatory authorities;
- e. The media (to assist in early distribution of public health and safety advice to minimise delay).

51. However, once the off-site ECC is set up, the media contact point will be via the off-site media liaison representative.

52. The on-site ECC will require facilities to record the development of the incident to assist in its management and in decision making on the appropriate method of control. Records will need to be kept for any subsequent inquiry.

53. In general, the on-site ECC should contain:

- a. Equipment for adequate external off-site communications. This will include mechanisms for communications in and out, dedicated to emergency response personnel, so as to ensure that they do not get

overwhelmed with communications from concerned relatives and neighbours, and the media. Communication arrangements need to be established for the emergency services, to link them to their central control facilities.

- b. Equipment for adequate internal communications. This may be via an internal telephone system, radio links or other means.
  - c. Site maps and plans to show clearly the current on-site location of;
    - i. All areas where hazardous materials are transported, stored, or processed,
    - ii. Any radioactive materials,
    - iii. Safety equipment,
    - iv. Firewater supplies, the routing of firewater mains and the location of any additional sources of water,
    - v. Drains and outfalls to watercourses,
    - vi. Any other fire-fighting materials,
    - vii. Access points to the establishment and the on-site road system. This should be marked to show which access points and routes may become unusable as the incident develops,
    - viii. Key transport facilities for emergency services, loading and unloading, and evacuation of employees,
    - ix. Assembly points and casualty treatment centres,
    - x. The establishment relative to the surrounding area. This should identify any vulnerable populations (e.g. hospitals, schools etc) or environment features.
  - d. Site plans which can be marked up to show the development of the incident and the deployment of emergency response resources, areas evacuated and other related information.
  - e. Facilities to ensure that a record is kept of all messages sent and received.
  - f. Access to all data on all those present on the site at the time of the incident.
  - g. Appropriate contact numbers for all personnel with a role to play in the response to the incident.
54. Careful consideration must be given to the location of the on-site ECC. This should take into consideration the likely location(s) of sources of major accidents at the site. The on-site ECC should be designed to remain operational in all but the most severe emergency.
55. For large establishments, or where a toxic release is a reasonably foreseeable accident scenario, it may be appropriate to set up two control centres to ensure that under most circumstances one would be available if the other one was disabled.
56. The Internal Emergency Plan should include the establishment command structure for managing the on-site response in accordance with the planned scheme, including management of the eventual clean-up and restoration. There will be times when the senior managers may not be available and appropriate arrangements should be included in the plan for these circumstances. It is recommended that the names and contact numbers for authorised personnel

are included in the annexes of the emergency plan – to facilitate updating changes.

57. The plan must include details of foreseeable events which may result in a major accident and the actions to be taken in case of such an event. This should include:
  - a. The types of foreseeable accidents to humans and/or to the environment;
  - b. The intended strategy for dealing with these accidents;
  - c. Details of the personnel who have roles to play in the emergency response, and their responsibilities;
  - d. Details of the availability and function of special emergency equipment including fire-fighting materials, and damage control and repair items;
  - e. Details of the availability and function of other resources.
58. The plan must explain the arrangements for limiting the risks to people on site. This should include details of the systems, equipment and facilities for early detection of a developing major accident, and the responsibilities for initiating the suitable responses by on-site personnel (to evacuate, shelter, use personal protection equipment etc).
59. The plan should include details of the arrangements for alerting the off-site emergency services and when and in what circumstances this should be done. The plan should also include details of the types of information that the off-site emergency services will require, before and during their response, in what form, to whom and by whom.
60. The plan should include the arrangements for training and instructing the on-site personnel (employees, contractors, visitors etc) and the arrangements for liaison with the off-site emergency services.
61. The arrangements for providing assistance with off-site mitigation action should include, for example, details of:
  - a. Any special equipment, expertise or facilities which the off-site emergency services can use; and
  - b. The role of the personnel at the establishment in briefing the media.

#### **Checklist for Internal Emergency Plans**

62. The following questions may be useful in assessing the adequacy of an Internal Emergency Plan:
  - a. Does the plan cover the range of incidents that can be realistically anticipated?

The incidents considered should range from small events to major accidents. Operators of upper tier establishments should be able to justify, from the information in the Safety Report, the scope of the internal emergency plan, including:

- i. The events considered and why they were included or excluded,
  - ii. The typical defects and failures leading to these events,
  - iii. The timescales involved,
  - iv. The likelihood of events, as far as can reasonably be assessed, and
  - v. The options for minimising events through mitigation actions.
- b. Have the consequences of the various incidents been adequately addressed?

Each incident should be assessed in terms of the quantity of hazardous materials that could be released as a result of an accident, the rate of release, the effects of explosions, the effects of thermal radiation from fires, and the effect of hazardous materials that could be released.

- c. Are there sufficient resources in terms of personnel and equipment on the establishment, available at all times, to carry out the emergency plan for the various incidents in association with the emergency services?

For example, is there sufficient water for cooling, and if this water is applied through hoses, are there sufficient trained people to use them?

- d. Have the timescales been assessed adequately?
      - i. In developing the emergency plan, consideration should be given to the time that will elapse between the start of the emergency and the arrival of the emergency services, and any additional time that the emergency services will require to deploy their resources. Staff working at the establishment will have to be able to cope with the developing emergency until the external emergency services arrive.
      - ii. Some toxic releases can develop very quickly. If such a release scenario is identified in the Safety Report then the subsequent remedial action should be appropriately rapid.
    - e. Is there a logical sequence of actions for the key personnel that are identified and given a role in the emergency plan?
    - f. Has there been suitable consultation with those who work at the establishment?
    - g. Are arrangements in place to cover for 24 hours a day? Has account been taken of holidays, sickness, shift handovers, and plant shutdowns?
    - h. Has there been adequate consultation with the officials of the local government unit with responsibility for preparing the External Emergency Plan, and with the emergency services, to ensure that the two plans “fit” together adequately?

- i. Has a senior emergency co-ordinating group (or similar) been established?
- ii. Are the arrangements in the Internal Emergency Plan for initiating the External Emergency Plan clear, and are they adequate?

### **3.4 External Emergency Plans**

63. The External Emergency Plan should be based around the major accident hazards (identified by the operator in the Safety Report) which could affect people and the environment outside the establishment, or which could require the attendance of emergency services from outside the establishment if an emergency arises.
64. The External Emergency Plan should concentrate on those events which have been identified as being most likely to occur.
65. The level of planning should be proportionate to the probability of the accident occurring. The plan should have the flexibility to allow it to be extended and increased to deal with extremely unlikely consequences which may arise through combinations of accidental circumstances and weather conditions or other natural events.
66. The operator is required to provide the local government unit with the necessary information about the nature, extent and likely effects of reasonably foreseeable major accidents. The information should be sufficiently detailed to enable the local government unit to prepare the External Emergency Plan. The local government unit can request any additional information it may reasonably require to prepare the plan.
67. The operator should keep a record of the information supplied to the local government unit, the source of the information and how it will be reviewed, revised and updated.
68. The emergency services have duties to deal with accidents and emergencies of all kinds. Therefore the External Emergency Plan is mainly a tool to co-ordinate the existing plans of the emergency services, as far as possible, in their preparation for dealing with the specific hazards and risks associated with accidents at the major accident hazard establishments. This includes identifying key personnel from a range of organisations, and defining their duties in the event of an accident.
69. It will then be possible to ensure that those so identified are adequately trained to carry out such roles.
70. The local government unit should liaise with the operator of the establishment, the emergency services, the Competent Authorities and the public in the preparation of the External Emergency Plan.

71. Any request received by the competent authorities or other authorities for the storage or use of hazardous substances should be automatically copied to the local government unit, to the emergency services and to other relevant authorities or agencies, to allow for early consideration of the implications for emergency plans of new establishments.
72. The particular arrangements for each upper tier establishment should be a self-contained document, but could be an annex to a general plan covering several establishments.
73. Emergency plans for establishments identified as having a potential for a domino effect should take this fact into account and the operators involved should exchange any relevant information to enable effective planning. Such domino sites need special consideration in terms of emergency planning, and the testing of the external emergency response.
74. It may be necessary for local government units to liaise with each other closely on external emergency planning when an establishment is very close to or straddles the common boundary between the local government units.
75. The External Emergency Plan should provide details of the people authorised to set the emergency procedures into action and the people authorised to take charge of and co-ordinate the off-site action. This should include the organisation of the management for the off-site response in the event of an emergency, and include the arrangements for managing the clean-up and restoration phase of the response.
76. The plan should include the arrangements for receiving early warnings of incidents, and alert and call-out procedures. This should include details of:
  - a. How a warning of a developing or actual major accident will be received by the off-site emergency services;
  - b. How the warning will be cascaded, as necessary, to other external agencies involved, or likely to be involved, in the response to an emergency.
77. The plan should include information on how the resources identified in the response arrangements will be mobilised, and how their actions will be co-ordinated. This should include:
  - a. Which organisations have a role to play in the external emergency response;
  - b. Their roles and responsibilities;
  - c. How each organisation will be alerted and will go about putting their response into action;
  - d. How the responding organisations and personnel will communicate with establishment personnel. This is important to obtain and transmit information needed for decision making, in accordance with their agreed roles and responsibilities;
  - e. If necessary, the location where the emergency services, other organisations, and the operator of the establishment will meet off-site;

- f. How emergency services and other responding organisations will gain access to the establishment, to any special equipment or to any other resources which may be required in the response.
- 78. The plan should also include details of any arrangements for providing assistance with on-site mitigation actions. This may often mean that the fire service will come onto the establishment and take over full responsibility for dealing with the response to the emergency. The plan should include details of:
  - a. The types of accidents that may occur to people and/or to the environment;
  - b. Arrangements for briefing those arriving at the establishment on the developing emergency;
  - c. The proposed emergency response strategy for dealing with the identified accident types on the establishment;
  - d. The responding personnel and their responsibilities;
  - e. Details of the availability and applicability of special equipment including fire-fighting materials, damage control and repair items;
  - f. Details of the availability and applicability of other sources which may be relevant.
- 79. The plan should include arrangements for dealing with accidents that have off-site consequences. This may include, for example:
  - a. Mitigating the off-site effects of the accident;
  - b. Sheltering or evacuating members of the public;
  - c. Controlling traffic, and maintaining essential emergency service routes; and
  - d. Preventing people entering the affected area.
- 80. The plan should include details of the arrangements for providing the public with information. This should include information on how the public in the vicinity of the establishment will be:
  - a. Alerted in the event of an accident;
  - b. Told what they should do;
  - c. Told that the danger has passed and they may return to their homes.
- 81. These details to the public may refer to the prior information that has been supplied to the public in the vicinity of the establishment.
- 82. The public may be warned by siren, telephone, loud hailer or other means. The details should be included in the plan. The prior information should inform the public in the vicinity of the establishment about the warning mechanism, for example the meanings of different sirens and alarms.
- 83. The plan may also include details of how the media will be used to transmit information for immediate dissemination. It is also important that the plan considers how to deal with the wider media response to an emergency. The aim should be that the media and the public understand the emergency fully, and does not unduly worry the public.

84. Where necessary, the plan should detail arrangements for providing information to other states in the event of an emergency with possible trans-boundary consequences. This is something that should be discussed with the Competent Authorities.
85. The response to a major accident on-site would be managed through tactical and operational levels of command and control. This should be via an on-site group consisting of those representatives of the responding organisations with the executive power to direct the resources of their organisation and who are able, if required, to call for additional resources.
86. At a strategic level, the **strategic co-ordinating group** or similar, would normally meet at an **off-site emergency control centre** at a safe distance from the accident location. The group may consist of the senior officers representing the police, fire service, ambulance service, local government unit, Competent Authorities, and other as necessary. The group may be chaired by the senior police officer in the initial stages, but this may change to the senior local government unit officer at a later stage. However, the group should attempt to work together as a team.
87. Once established at the off-site ECC, the strategic co-ordinating group should take over management of the off-site aspects of the emergency response from the on-site ECC. This will enable those on-site to concentrate on the tactical and operational matters to bring the incident under control.

### **3.5 Public health aspects of major accidents**

88. From a public health point of view, major accidents involving dangerous substances present special features which operators and local government units must take into account in developing, testing and revising their respective emergency plans.
89. These special features include:
  - a. For many chemicals there may be little or no information available regarding their effects on human health;
  - b. The dangerous chemicals involved in an accident may be altered chemically or physically by fire, air, water, reaction with each other and by human metabolism;
  - c. The health effects of dangerous chemicals may vary depending on the routes and duration of exposure, and individual exposure;
  - d. Workers, emergency response workers and health officials will themselves be at risk through contact with chemically contaminated casualties. However, the appropriate use of protective equipment will minimise such contamination;
  - e. The capacity of hospitals to handle contaminated casualties will be limited;
  - f. Hospitals may lie in the path of a chemical plume;
  - g. Dispersed populations may be affected through the contamination of water and/or the food chain;

- h. Accidents often cause fear in people, which may increase the numbers of people attending hospitals.
- 90. In developing the public health related components of the respective plans, and in achieving integrated emergency management, operators and local government units need to consult with the local health authorities and ambulance service, and to jointly agree respective roles and responsibilities.
- 91. Certain chemical substances may give rise to delayed harmful effects following the initial exposure, even after rapid decontamination. All medical emergency response services need to include in their emergency plans, instructions and procedures that all initial emergency response and subsequent care personnel should be aware of the possibility of delayed signs and symptoms.
- 92. The public health aspects of a major accident will invariably continue after the accident at the establishment has been brought under control.
- 93. Operators are required to carry out periodic safety assessments on the nature and extent of possible accident scenarios. This information should be shared with the health authorities so that they are better placed to ensure that the various emergency medical and public health resources that may be required will be available immediately, to deal with the different types of accidents and the range of possible causalities.
- 94. Operators and local government units need to work closely with the health authorities and other emergency services in considering where and when decontamination of casualties and response personnel should take place. They will also require consideration of the personnel protective equipment needed.
- 95. Local government units need to discuss with health authorities and other relevant authorities about including arrangements in the External Emergency Plan for managing the health needs of individuals who have been evacuated.
- 96. Operators and local government units should be aware of the sources of specialist advice and expertise and information available to health personnel involved in the management of major accidents. Likewise, the health authorities need to be aware of the sources of information and expertise on the effects of dangerous chemicals. The chemical industry itself may hold much of this information.
- 97. The main response actions placed on the health authorities include:
  - a. Evaluating the risk to the health of the public in the light of available toxicological data on chemicals released, the results of biological and environmental sampling, any epidemiological findings and the receipt of appropriate specialist advice and support;
  - b. Advising on the measures needed to limit or prevent further exposure to the public to the chemicals released in an accident.

### **3.6 Environmental aspects of major accidents**

98. There is a need to take account of the environment in both the Internal and External Emergency Plans.
99. The environment, for these purposes, consists of the built features, air, water, soil, flora and fauna. An accident can be considered as major if it causes permanent or long-term damage to a particular unique, rare or otherwise valued component of the built or natural environment, or if there is widespread environmental loss, contamination or damage.
100. The effect of an accident on the natural environment may be direct or indirect, immediate or delayed, temporary or persistent.
101. Therefore, the indirect effects of an accident need to be also considered. This may include consideration of water and sewage works, food and agriculture.
102. The respective emergency plans developed by operators and the local government units need to consider:
  - a. Possible accident scenarios;
  - b. Predicted environmental effects of accidents;
  - c. Implementation of specific measures to protect the environment;
  - d. Liaison with other environmental authorities and the public;
  - e. Environmental clean-up and restoration.
103. The Safety Report should contain much of the information required for planning purposes, and will have been assessed by the Competent Authorities. However, the local government unit should consult with the Competent Authorities and other environmental authorities before the External Emergency Plan is finalised.
104. The effects of an accident on the environment depend on a number of factors particular to the accident. Operators should have conducted a detailed environmental risk assessment as part of their Safety Report. This information can be used to help develop the Internal and the External Emergency Plans. The aim of the risk assessment is to show which hazards and events contribute to the risks to the environment from an accident at the establishment. This will allow for prioritisation of effort in managing these risks. The amount of detail of each assessment should be proportional to the risk posed by the establishment.
105. Risk assessments should consider:
  - a. The substances and processes present at the establishment;
  - b. The pathways of contamination from the establishment to the environment;
  - c. The location of establishments in relationship to environmental features.
106. The nature of any pollution is determined by the activities at the establishment and the dangerous substances present or released in the event of an accident.

Emergency plans should focus on those events and substances most likely to cause damage to the environment.

107. Not all emissions to the environment cause damage. Therefore it is important to know the toxicity and behaviour of any chemical that may be released into the environment. In addition, some apparently harmless substances can have a damaging effect on the environment, if released. The degree of persistence of any chemical is also likely to be of significance.
108. To assess the areas that may be affected in the event of an accident, all possible pathways by which contaminants can reach the environment should be examined. The two main pathways for environmental contamination are by air and by water; but contaminants may also percolate through the soil.
109. The effects of airborne pollution can cover a wide area and are more difficult to predict and control than pollutants released into water. The affected area will depend on weather conditions. Information on wind speed and direction obtained from the meteorological services will help define the area most likely to be affected.
110. Surface run-off into sewers, drains, and watercourses can cause downstream effects, and potentially carry the pollution a long way from the site of the accident.
111. In preparing the emergency plan to protect the environment, it will be important to characterise the features of the environment around the establishment. Determination of particularly important or sensitive areas will identify those areas for which particular protective measures may have to be implemented.
112. However, a detailed ecological audit is not required. A preliminary study could be used to characterise broad features of land use in the area – for example residential, agricultural, fisheries, woodland etc. However, some form of environmental survey may be needed and the environmental authorities can advise on this.
113. Any environmentally sensitive areas within range of the establishment must be identified. In the case of rivers and other water bodies, sensitive areas put at risk by an accident may be some distance from the establishment.
114. The emergency plans should identify specific actions and measures needed to prevent and mitigate the impact of an accident on the environment. By considering the need for specific actions and measures in advance, informed decisions can be made that will help maximise the level of protection afforded to the environment by the plans.
115. All planned decisions and actions need to be agreed and rehearsed in advance with the relevant organisations. Clearly it is important to recognise that the options considered should not conflict with measures to protect human health.

116. It is important that the environmental protection aspects of emergency plans are agreed with all parties involved in the response to the accident, or with responsibility for any area, habitat, species or building likely to be affected.
117. The fire service will need to know where sensitive water supplies are: to help avoid excessive drawing from them to put out any fire and to help avoid pollution of water through run-off contaminated water.
118. It may be necessary to liaise with environmental authorities to establish the water quality in local water bodies, water abstraction points, the presence of aquifers and the vulnerability of these features to pollution. The plans should include measures to prevent contamination dispersion – such as booms, soaking up contaminants and diverting water courses.
119. It may be necessary to liaise with water authorities/companies to avoid damage to water and sewage installations.
120. The Internal and External Emergency Plans must provide for the clean-up and restoration of the environment after an accident. The remedial measures should be proportional to the amount of harm caused by the accident, and the likely level of continuing harm to people or the environment.
121. The emergency plans may consider and identify procedures and arrangements, where appropriate, for:
  - a. Removing contaminated soil and debris;
  - b. Restricting foodstuffs (including those grown at home);
  - c. Restricting access to areas;
  - d. Restocking water bodies, woods etc;
  - e. Remedial action on surface and groundwater supplies.
122. Contaminated areas, even those on-site, can pose a continuing threat to the environment after an accident. Clean-up could require the removal or cleaning of soil, ashes may need to be contained to prevent them blowing away, and drums of chemicals may need to be labelled and safely disposed of by licensed disposal contractors. Contaminated water held in bunds may need to be removed and processed to make safe and non-toxic.
123. The extent of remedial action covered by External Emergency Plans should take account of the particular environmental hazards associated with the operations carried out on the establishment and the specific off-site environmental conditions.
124. A chemical release during an accident may lead to contamination of the food chain, either through direct deposits onto crops or pasture land, or through uptake into plants from contaminated water. It may be necessary to liaise with health and agricultural authorities to determine the measures necessary to prevent contaminated foods entering the food chain.

### **3.7 Training and testing**

125. The Safety Report requires evidence that the operator's safety management system contains suitable arrangements for the training of individuals at the establishment in emergency response. The type of training required depends on the role of the individual in the event of an emergency. This should cover members of staff with a particular role in the emergency response, as well as other members of staff, contractors and visitors to the establishment.
126. The training should be kept as up to date as appropriate, with suitable refresher courses. The aims and objectives of training should always be made clear at the beginning of the training, and the effectiveness of the training should be reviewed and evaluated.
127. Emergency plans should be tested at least once every three years.
128. The testing is carried out to ensure that the plans are accurate, complete and practicable. It should be able to show that the people following the emergency plan can cope with the range of accidents that could occur. The testing should give an indication of the conditions that may exist on and off the establishment in the event of an emergency.
129. The testing should also show that the plan would work as proposed: controlling and mitigating the effects of an accident; communicating the necessary information; and initiating the measures which would lead to the necessary restoration of the environment.
130. Testing should be based on an accident scenario as identified in the Safety Report as being reasonably foreseeable. Testing should address the response during the initial emergency phase, which is usually the first few hours after an accident occurs. This is the phase of an accident response when key decisions, which will greatly affect the success of any mitigation measures, must be made under considerable pressure and within a short period of time. Therefore this is where a detailed understanding of the likely sequence of events and appropriate counter-measures is of great benefit.
131. It is important that the simple issues are not overlooked by concentrating on the more complex aspects of the emergency response. The overall testing regime should consider, over a period of time, the full range of hazards capable of producing a major accident, and not just the most significant hazards.
132. Testing External and Internal Emergency Plans (or parts of plans) at the same time can produce considerable benefits. These benefits include ensuring that both emergency plans work effectively together, and offer potential financial savings by avoiding duplicate testing.
133. The overall testing regime for External and Internal Emergency Plans would be expected to examine the following aspects of the emergency response:
  - a. Activating the emergency plan and notifying the participants;

- b. Alerting the emergency services;
  - c. Sounding alarms;
  - d. Mobilisation of establishment personnel identified in the emergency plan as having a role to play in the event of an emergency;
  - e. Establishing an on-site ECC;
  - f. Establishing an off-site ECC;
  - g. Supplying information to the ECCs;
  - h. Communications within the ECCs;
  - i. Team working;
  - j. Decision making;
  - k. Communication and public information;
  - l. Equipment and facilities.
134. Exercises to test the emergency plans can take a number of different forms, which will fulfil different functions within the overall requirements. These include:
- a. Drills;
  - b. Seminars;
  - c. Walk-through exercises;
  - d. Table-top exercises;
  - e. Control post exercises;
  - f. Live exercises.
135. It will be important to draw up a programme of emergency plan tests, prepared jointly and agreed by all the agencies expected to participate. This produces a high level of confidence in the plan without overburdening the operator and the other organisations responding to the emergency.
136. It will be important to evaluate the lessons learnt from the testing of the emergency plans, and to determine whether modifications are required to the emergency plan and to promote good practice. This evaluation process should include dissemination of information and the lessons learnt, as appropriate, to the relevant organisation involved in the emergency response.
137. It is good practice to warn the public in the vicinity of the establishment in advance of any testing of the emergency plans. This will avoid any undue concern on the part of the public.

### **3.8 Initiation of Emergency Plans**

138. The Law requires that the person who has prepared an emergency plan takes reasonable steps to ensure that it is put into effect without delay when:
- a. A major accident occurs; or
  - b. An uncontrolled event occurs which by its nature could reasonable be expected to lead to a major accident.
139. Thus the emergency plans prepared by the operator and the local government unit must have adequate arrangements in place to initiate the emergency plans.

140. The emergency plan should identify who has the responsibility for initiating the emergency plan and when this should be done. The plan should also include when the emergency services should be alerted to ensure that no unnecessary delays occur which could have serious consequences.
141. The operator and the local government unit should agree who has the authority to activate any off-site alarm or other means of warning the public that an accident has occurred, and when this should happen. This should be agreed when developing the emergency plan, to avoid any unnecessary delays during the response to an emergency. Under most circumstances it may be appropriate to identify an employee at the establishment (by name or position) in the emergency plan as having the responsibility for activating the off-site alarm. However, in some circumstances (such as at an establishment not attended around the clock) it may be more appropriate if this function is carried out by the first emergency member of the external fire service to arrive at the establishment.

### **3.9 Review and revision of Emergency Plans**

142. At least once every three years the emergency plans should be reviewed and, where necessary, revised.
143. The review of the emergency plan should be considered as a fundamental process, examining the adequacy and the effectiveness of the components of the emergency plan and how they function together. The review process should take into account:
  - a. All material changes in the activity of the establishment;
  - b. Any changes in the emergency services relevant to the operation of the plan;
  - c. Advances in technical knowledge, such as new and more effective means of mitigation;
  - d. Changes in staffing resources, including contractors;
  - e. Knowledge gained as a result of major accidents either on the site or elsewhere; and
  - f. Lessons learned during the testing of emergency plans.
144. For this review and revision to take place effectively, there has to be open communication between the operator, the local government unit and the emergency services. All appropriate changes which may affect the emergency response should be communicated to the other parties.
145. A review of the Internal Emergency Plan and the External Emergency Plan should also take place following any significant modifications to the establishment or other significant changes. In these circumstances the plan should be reviewed without waiting for the three year review.
146. Review and revision are to be considered as a separate requirement from the updating of the emergency plan, which is an on-going process. The updating is carried out to reflect any changes in the practical details of the emergency

response arrangements, such as changes in the responding organisations' communication arrangements or in the available mitigation equipment.

147. One of the principal inputs to the process of reviewing the emergency plan comes from the results of testing the plan. Before testing, objectives should be set for all aspects of exercising an emergency plan. After the test, the review should concentrate on areas where the objectives were not met. The recommendations from reviews and tests should be recorded, and action taken to address each recommendation. The revisions to emergency plans should be actioned in a timely manner, and the progress monitored.

### ***3.10 Informing and warning the public***

148. The operator is required to provide appropriate information to people within the public information zone. The public information zone is the area where people are likely to be affected by a major accident. This is determined by the Competent Authority taking account of the likelihood and possible effects of a major accident at the establishment. The minimum information to be provided is set out in Annex 5 of the Law – but operators are free to provide more information if they wish.
149. It is important to consider communication of information to children as well as to adults. The use of educational packs for schools and colleges may be considered. In some locations there may be a need to provide translations of information into other languages. Publicising the information can take a variety of forms which should be readily accessible and durable.
150. There should be an effective method for warning the public within the public information zone of a major accident. In addition, people outside the public information zone also have information needs which should be met by the emergency plans. Unless arrangements are made to reassure people outside the public information zone there may be unnecessary alarm.

### ***3.11 Information needs of the emergency services***

151. The emergency services will require specific information for the development of their arrangements for dealing with a major hazard accident. Operators should co-operate as much as possible with the emergency services in the collection and provision of this information.

#### **Fire Service**

152. The fire service will require, at least, the following information, as appropriate:
  - a. Information in non-technical terms on the establishment lay-out of buildings, plant and process activity, including any other associated hazards, e.g. electrical transformers;
  - b. Location of the ECC(s);

- c. Identifying key personnel, including specialists on-site who can give advice;
  - d. Location of any on-site fire service, emergency medical or first aid centres;
  - e. Confirmation of the inventory levels of hazardous substances on site and their physical states;
  - f. Information outlining the availability of technical data from hazard sheets that give general data on the properties and physical nature of substances likely to be encountered. Identify where there is a significant risk from high/low temperature, high/low pressure or catalytic reaction during a manufacturing process;
  - g. Information on the details of fixed fire protection installations (roof ventilators, sprinklers etc), together with technical details of their operation, and any back-ups;
  - h. Indicate any loading and unloading installations together with technical details relevant to their operation;
  - i. Identify, in consultation with the environmental authorities, the characteristics of any water courses, interceptors and plant drainage systems which aim to mitigate the environmental pollution off-site, and identification of any equipment required to assist in this, such as drain protectors, booms etc;
  - j. Identify any oil or gas pipelines;
  - k. Details of the type and capability of any establishment monitoring equipment for evaluating any toxic, flammable or radioactive emissions;
  - l. Details of any systems to give meteorological information, including plume modelling;
  - m. Confirm any security arrangements at the establishment (such as dogs, electric fences etc) that may affect operational tactics.
153. The fire service will also require details of means of entry and exit from the establishment, such as:
- a. A strategy for safe approach to the establishment, regardless of the type of accident, with alternatives of practicable;
  - b. Identify access and safe routes within the establishment boundary;
  - c. Identify any construction features or structural hazards which may have an effect on fire fighting or rescue operations;
154. The fire service will require information on the location of services, such as:
- a. The location and availability in an emergency of the main isolation switches and valves for production lines and essential services such as gas, electricity, and water intakes;
  - b. Identify the existence of automatic fire detection and suppression systems, including the type of service and their respective control points;
  - c. Confirm the availability of emergency power supplies or lighting.
155. As regards water supplies, the fire service will require information on:
- a. Identify the availability and adequacy of water supplies for fire fighting, cooling of vessels or suppression of gas and vapour plumes;

- b. Estimated demand calculations for a serious fire situation, to include demands on supplies from fixed installations;
  - c. Consider the potential for fire water run-off being reused for fire fighting operations;
  - d. Confirm the location of manual activation or override points for fire pumps and fixed installations;
  - e. Detail any alternative water supplies, and confirm quantities of water available.
156. For the purposes of tactical fire fighting, the fire service will require information to:
- a. Identify suitable siting for initial attendance, including designated rendezvous points;
  - b. Develop a pre-planned strategy to make maximum use of fire fighting equipment etc;
  - c. Develop a pre-planned strategy to estimate maximum quantities of fire-water run-off, and containment needs if there is a risk of polluting water courses;
  - d. Consider the need and extent of breathing apparatus equipment, personal protection equipment and decontamination measures;
  - e. Identify the best locations for fire service command units etc;
  - f. Location of the nearest hospital for chemical and toxic exposure, including whether antidotes are required;
  - g. Consideration of any other factors that may affect the potential to deal with the accident;
  - h. List the salvage priorities;
  - i. Identify the availability of mechanisms which can ensure the safe emergency shut-down of plant or equipment, and the impact of these emergency isolations on other parts of the plant;
  - j. Identify the availability of off-site communications facilities.
157. The fire service will also require information:
- a. To identify the number of people likely to be on the site at any one time (day or night) and the relevant evacuation procedures;
  - b. Consider the use of assembly points or refuges, and the need for the fire service to receive confirmation of roll calls;
  - c. Review policies and processes designed to advise the public of the risks involved.

**Police**

158. The police will require site and incident specific information, such as:
- a. Name and telephone number of the site;
  - b. Number of employees on site;
  - c. Description of the incident;
  - d. Exact location of the site and access points, with alternatives;
  - e. Details of the chemicals involved;
  - f. The potential effects, in general terms;
  - g. Local wind speed and direction, if known;
  - h. An assessment of potential off-site implications, if known;
  - i. Any proactive action the public should take;

- j. Details of casualties and/or fatalities;
- k. Actions being taken to deal with the incident.

159. The police will also need to know:
- a. The location of the ECC(s);
  - b. The identity of key personnel;
  - c. Where and with whom the police should liaise at the scene;
  - d. For the initial response – any special action that needs to be taken, together with any health and safety advice for offices attending.

#### **Ambulance service**

160. The ambulance service will require information, such as:
- a. Identify the location and access points, with alternatives;
  - b. Confirm the commercial operation – what the establishment does;
  - c. Detail the hazardous inventory;
  - d. Identify the main hazard, such as fire, explosion or toxic release;
  - e. Provide details of the establishment medical personnel and facilities;
  - f. Confirm the number of staff on site (day and night);
  - g. Identify the location of the ECC(s);
  - h. Identify the key personnel;
  - i. Provide access to establishment plans showing the layout of the site;
  - j. Provide information to enable the ambulance service to carry out a risk assessment to determine the requirements for personal protective equipment due to chemicals used at the establishment;
  - k. Detail the designated safe areas for decontamination;
  - l. Identify the location of any landing zone for a helicopter air ambulance.

#### **Health authorities**

161. The local health authority will require information, including:
- a. Confirm the commercial operation – what the establishment does;
  - b. A list of chemicals used and stored on the establishment (chemical name and UN number);
  - c. For each chemical;
    - i. Chemical form,
    - ii. Known risks to health,
    - iii. Known treatments,
    - iv. Existence and access to antidotes on site;
  - d. List of contact telephone numbers;
  - e. Provide information to enable the health authority to carry out a risk assessment to determine the requirements for personal protective equipment due to chemicals used at the establishment.