

Guidelines for major hazard facilities



J – Safety report

Disclaimer

Any representation, statement, opinion or advice, expressed or implied in this guideline is made in good faith but on the basis that the State of Queensland, its agent and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to above.

Table of contents

1	INTRODUCTION	3
1.1	PURPOSE OF SAFETY REPORT	3
1.2	THE ROLE OF THE REGULATORY AUTHORITY	5
1.3	TIME FRAMES	5
1.4	SAFETY REPORT FORMAT	5
2	SETTING THE CONTEXT OF THE FACILITY	9
2.1	DETAILS OF THE OCCUPIER	9
2.2	THE FACILITY DESCRIPTION	9
2.3	FACILITY TECHNOLOGY	10
3	DESCRIBING THE MAJOR ACCIDENT SCENARIOS	10
3.1	SRA PROCESS	11
3.2	SRA OUTPUTS	12
3.3	SUMMARY OF MAJOR ACCIDENTS	13
3.4	REVIEWING THE SRA	14
4	DESCRIBING THE SAFETY MANAGEMENT SYSTEM	14
4.1	GENERAL CONTENT OF THE SMS IN THE SAFETY REPORT	14
4.2	KEY SMS ELEMENTS FOR INCLUSION	15
4.2.1	<i>Governance</i>	15
4.2.2	<i>Knowledge management</i>	16
4.2.3	<i>Work methods</i>	16
4.2.4	<i>Education, training and competency</i>	17
4.2.5	<i>Equipment integrity</i>	18
4.2.6	<i>Management of change</i>	19
4.2.7	<i>Review and monitor</i>	19
4.2.8	<i>Critical SMS components</i>	20
4.3	DESCRIPTION OF THE EMERGENCY PLANS AND PROCEDURES	20
4.3.1	<i>Emergency plans</i>	21
4.3.2	<i>Emergency response resources</i>	21
4.3.3	<i>Consultation and information</i>	22
4.3.4	<i>Effectiveness of emergency plans</i>	22
5	COMMUNITY CONSULTATION	22
5.1	CONSULTATION AREA	23
5.2	WHO TO CONSULT	23

J - Safety Report

5.3	CONTENT OF THE INFORMATION.....	23
6	DEMONSTRATION OF AN ACCEPTABLE LEVEL OF RISK (ALARP)	24
6.1	INFORMATION THAT COULD BE PRESENTED.....	24
7	FURTHER READING	26
8	APPENDIX 1 SECTIONS OF THE ACT RELEVANT TO GUIDELINE	28
9	APPENDIX 2 SECTIONS OF THE REGULATION RELEVANT TO GUIDELINE.....	30

1 Introduction

The purpose of this document is to provide guidance to the occupier of a Major Hazard Facility (MHF) for the preparation of a Safety Report as required under s47 of the *Dangerous Goods Safety Management Act 2001* (the Act).

Specific guidance on how the occupier can meet the other obligations may be found in the series of guidelines produced by the regulator - ***Guidelines for major hazard facilities***.

1.1 Purpose of safety report

The purpose of the safety report is to demonstrate to the regulator that the facility achieves an acceptable level of risk to people, property and the environment.

The safety report will draw from the Systematic Risk Assessment (SRA), the Safety Management System (SMS) and the Emergency Plans and Procedures (EP&P) to argue the case that the hazards are fully understood and that the safeguards are well selected, appropriately placed, adequate, maintained and governed to assure ongoing acceptable levels of risk. The safety report must provide sufficient detail for the regulator to decide whether the case is made.

The safety report is also a commitment by the occupier to the methods by which acceptable safety will be delivered and the standards to which it will continue to operate. The safety report will become a significant input to audits conducted by the regulator.

The safety report is analogous to a company financial report in which the most important issues are raised, performance is declared, concerns are exposed, future directions are stated and assurances are given on the adequacy of the safeguards.

The safety report is required to demonstrate the occupier has:

- a complete and detailed understanding of the major accident hazards associated with the facility and the corresponding risks to people, property and the environment through the SRA
- considered all possible risk reduction measures to prevent or mitigate the major accident hazards and implemented all reasonable measures to assure that the facility is operating at acceptable levels of risk
- established appropriate objectives and associated measurable performance standards for the identified risk reduction measures
- established management systems that monitor and control the fitness of equipment and operational practices to reliably sustain the expected safety performance developed adequate emergency plans to contain, minimise and control a hazardous material emergency at the facility
- provided adequate education and training for persons operating the facility to enable them to perform competently to the required standards
- involved and consulted with employees to identify and deal with risks associated with the facility
- adequately consulted with the community concerning the risks associated with the facility and safety measures to be taken in case of an emergency
- reviewed the SRA for the facility at appropriate intervals and developed projects to further reduce the risk where practical, and
- implemented effective governance processes which sets relevant safety objectives, monitors and challenges the facility safety performance and enables achievement of the facility safety objectives.

The safety report needs to demonstrate to the regulatory authority that the facility is “as safe as it should be”. Further details will be provided in the following sections of this guideline.

1.2 The role of the regulatory authority

The responsibility to manage safety at the facility lies with the occupier and not the regulator. However the regulator needs to be satisfied that a facility is constructed operated and maintained in a manner that will ensure the risk posed by the facility to itself and neighbouring occupancies is at an acceptable level.

The acceptable risk criterion requires an occupier to reduce the risk to as low as reasonably practical (ALARP) the regulator will encourage the occupier to continuously challenge and review the assumptions that underpin the occupier's risk minimisation strategy and to develop initiatives to further reduce that risk.

The regulator conducts periodic audits and site inspections to confirm the occupier is meeting the objectives and standards declared in the safety report. While it is the occupier's responsibility, the regulator will challenge the occupier if some aspects of operations at the facility appear to fall short of best safety practice. A key aspect of auditing by the regulatory authority will be to monitor the effectiveness with which the commitments in the safety report are being implemented.

1.3 Time frames

A safety report must be submitted to the regulatory authority within the time frame specified in Section 47(2) (b) of the Act, three months from the date the site is classified. In accordance with Section 47 the safety report must be reviewed, updated and submitted to the regulatory authority Section 47(3) before any modification to the site which may significantly alter the risk or Section 47(4) at least every five years.

In addition, the safety report shall be reviewed if there has been a change which significantly alters the risk perception of the site or at the direction of the relevant public authority.

1.4 Safety report format

There is no specific format for the presentation of the safety report; however it is important to present information within the report in a logical and structured manner. The report should contain sufficient information to convince the regulatory authority that the systems and procedures in place are achieving an acceptable level of risk.

The following elements should be addressed:

- context – facility's purpose, ownership and management expertise, the technology options considered, performance measures, governance and any relevant historical experience

- the key findings from the SRA for the facility and major accident scenarios including:
 - major accident scenarios - a description of incident scenarios considered in the SRA
 - worse case consequences – an assessment of the consequences for the facility major accident scenarios assuming basic operational functionality without the existing or intended risk reduction measures
 - likelihood and consequence analysis with existing safeguards – an assessment of the likelihood and consequences of all hazards identified in the Hazard Identification Study assuming that all existing safeguards are in place
 - the critical safeguards – a discussion on the most important existing and intended safeguards for each major accident scenario that demonstrates the scope, reliability, survivability and effectiveness of each measure
 - implementation plan for all reasonable risk reduction measures – provide the plan for implementation of the intended safeguards
 - facility risk including safeguards – an assessment of the likelihood and consequences for the facility major accident scenarios with all risk reduction measures in place at their expected performance standard, and
 - ALARP demonstration – present an argument for the facility risk being as low as reasonably practical .
- the SMS - a description of management systems including training and education used to treat and monitor the risk and safeguards for the facility, and
- emergency plans and community consultation – a description of the plans to minimise the consequences of accidents on the surrounding facilities and communities..

These elements are shown below in Figure 1.

J - Safety Report

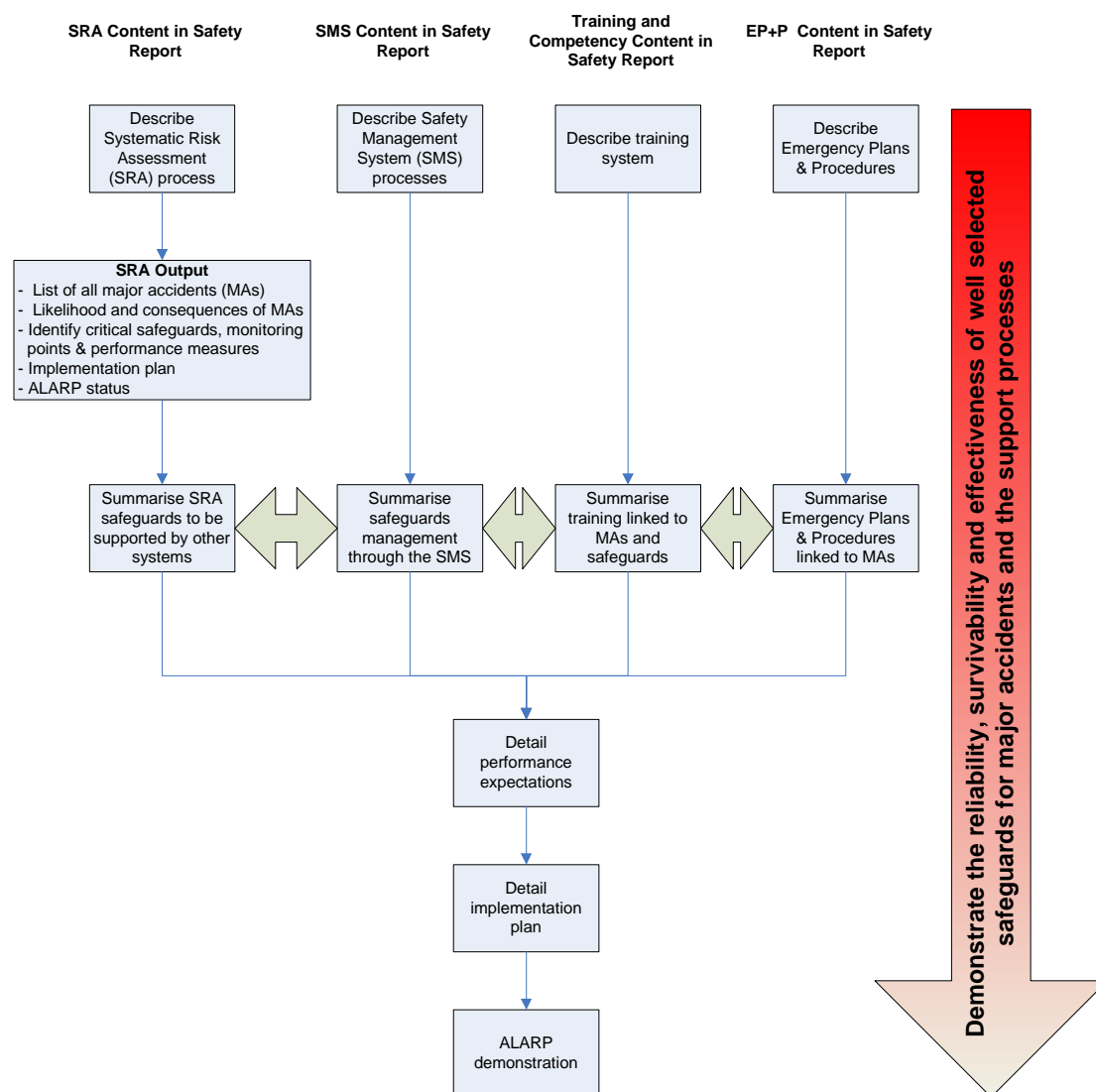


Figure 1 Information to present in a safety report

The safety report should be considered a summary of all of the processes used to manage the facility safety for major accidents. Key to the safety report will be delivering a clear message to the regulator that the facility has a range of measures and processes that not only support compliance to the standards of the safety management system, but additionally there is a strong process of review providing leads to improving safety performance.

The question arises of how much is enough material to satisfy the regulator? This depends on the scale and complexity of the operation, the nature of the risks, and any potential hazard outcome. In presenting the safety report, the occupier should ask themselves the question, “does this document clearly detail how the facility manages

J - Safety Report

safety for major accidents and could any reasonably technical person understand the management process from this document?”

The occupier should present all relevant information and arguments in the safety report that will demonstrate that it has met its obligations under the Act. All documentary evidence that supports the conclusions reached in the safety report should be referenced and the regulatory authority given access to the relevant documentation where necessary.

The safety report should be signed by a senior executive as the “occupier” at the facility to demonstrate ownership of the report and its endorsement by management. Two copies of the safety report as well as the report in electronic form on CD ROM should be submitted to the regulatory authority.

2 Setting the context of the facility

The occupier should provide information and explanation of the facility's purpose, its location, the rationale for the technology choices and details of the corporate ownership/accountability structure. There is no specific format or level of content for the safety report, but the occupier should provide as a minimum and where applicable, the following information.

2.1 Details of the occupier

This section should elaborate and explain the basic information supplied on the notification form.

- facility owner, Australian Company Number (ACN) and registered address
- organisation structure showing accountability of the designated occupier and relationship with functionaries responsible for operation of the MHF, both above and below the occupier
- contact details for the designated occupier
- occupier's credentials for operating the facility
- outsourced functions (e.g. services, maintenance, design, logistics...)
- required and actual qualifications and experience for key functional responsibility holders, and
- responsibility for design decision making.

2.2 The facility description

This section should describe the facility, its location and the nature of notified maximum quantities of hazardous substances that may be stored or handled. For example:

- purpose of the facility
- nature of hazardous materials handled (flammable, combustible, toxic, corrosive), (liquid, solid, gas)
- nature of storage and handling (warehouse, bulk, packaged, tankage, decanting, receiving, loading, transferring, processing, reacting, ...)
- typical hazardous material stockholdings and an explanation of the basis for notified maximum quantity and periodic variations
- the methods by which hazardous materials arrive at the facility as well as their condition and packaging (if appropriate)
- the methods by which hazardous materials depart at the facility as well as their condition and packaging (if appropriate)
- extent and security of facility boundary
- security provisions within the facility boundary
- proximity to:

- protected places
- public places (roads etc)
- watercourses
- agricultural land, and
- neighbouring occupancies.

2.3 Facility technology

A description of the technology used at the facility and the associated hazard containment assumptions should be provided. The description should explain the maturity, credentials and suitability of the selected technology and should give details of the accident experience at facilities that use the technology. It should cover for example:

- hazardous material processing, intermediates, synthesis, bi-products
- elevated temperature, pressure, concentration or reactivity of any hazardous materials on site under normal and abnormal conditions
- technology design credentials (local, parent company, licensee) including known technology constraints, operating limits and major accident history
- comparison of selected technology to alternatives that may be perceived as best practice or good industry practice. Differences to perceived best practices should be addressed
- equipment certification (statutory, international, industry sector, proprietary);
- standards adopted (company standards, foreign standards, Australian standards), and
- emergency mitigation technology e.g. spill management, fire protection, explosion protection etc.

3 Describing the major accident scenarios

The safety report should discuss in detail the major accident scenarios and controls identified as outputs from the SRA. The occupier should be able to demonstrate that a full range of possible accidents has been considered in sufficient depth. The safety report needs only to cite some scenario examples which can be used to represent the SRA methodology.

The purpose of the SRA is to identify hazards, assess the risks and prioritise measures to eliminate, prevent and mitigate the risks to people, property and the environment. Through the SRA the occupier must demonstrate that the overall facility risk is fully understood, and is being managed at an acceptable level. *Guidelines for Major Hazard Facilities, C – Systematic Risk Assessment*, should provide the basis for the completion of the SRA.

In addition to identifying the major accident scenarios, the SRA forms the basis for identifying:

- all possible risk reduction measures and the selection of reasonable measures along with the justified rejection of other measures
- critical safeguards including SMS components and equipment items
- requirements for emergency plans and procedures, and
- the community consultation area.

The safety report should draw out and highlight the key elements from the SRA so that the logic can be understood and decisions verified. The safety report should not contain the entire SRA. The relevant sections that should be covered in the safety report are:

- the SRA Process;
- SRA summary including :
 - list of all major accidents
 - likelihood and consequences of all MAs
 - identify critical safeguards, monitoring points and performance measures
 - implementation plan, and
 - ALARP status.

3.1 SRA process

The occupier should detail the process utilised to conduct the systematic risk assessment. Enough detail should be provided so that the reader is able to understand the extent and philosophy of the SRA review (who, what, when, where, how and how much) in order to develop and assess the major accident scenarios for the facility.

Information provided in this section could include the:

- examples of the process utilised
- personnel who undertook the SRA and their competency
- justification for the selection of the techniques and methodologies
- logic behind assumptions
- source, suitability and reliability of data used
- risk criteria used and justification for its selection
- degree of employee involvement in the process
- suitability of methods for determining the current plant integrity
- methods for assuring completeness of the hazard identification review
- criteria applied to determine major risk contributors
- methods for assuring complete identification of major accident pathways, and
- methods for identifying all possible risk reduction measures and the selection or rejection of measures.

3.2 SRA outputs

The safety report must summarise all major accident scenarios identified in the SRA. For each of the major accident scenarios the following aspects should be discussed including the:

- initiators that give rise to the major accident scenarios, e.g. breach of containment due to corrosion, impact, etc.
- nature and scale of the major accident scenarios
- degree of uncertainty in determining the major accident scenarios and their associated risk
- critical risk reduction measures in place or proposed
- justification for the selection or rejection of risk reduction measures and an explanation of the philosophy employed
- implementation plan for any proposed critical risk reduction measures
- mechanism for communicating the findings from the SRA to the relevant employees
- linkages to the SMS, emergency plans and procedures and community consultation. For e.g. if a safeguard is identified in the SRA then the monitoring of the safeguard has been captured in the SMS with appropriate performance standards applied, and
- occupier must show that the conclusion that the overall facility risk being at an acceptable level is justified.. The logic should be transparent and easily understood. A demonstration that adoption of further risk reduction measures is not viable, i.e. the risk is ALARP.

3.3 Summary of major accidents

To provide clarity and ease of review, the occupier must include a summary in the safety report of the outputs described in the previous section. For each major accident scenario an individual summary of essential information should be included in the safety report: An example of the summary format is provided in the SRA guideline and duplicated below.

Example summary format			
Hazard identifier:		Source study:	
Plant location:			
Hazard description:			
Hazard scenario:			
Risk assessment	Worst case	With existing safeguards	With proposed safeguards
Consequences:			
Severity:			
Likelihood:	N/A		
Risk reduction measures		Performance criteria	
In place: 1. 2. ...		1. 2. ...	
Proposed risk reduction measures		Timing	
1. 2. ...		1. 2. ...	
Rejected risk reduction measures		Justification	
1. 2. ...		1. 2. ...	
Supporting SMS components:			
Emergency mitigation measures:			

3.4 Reviewing the SRA

In the safety report the occupier must explain how and when the SRA will be reviewed and maintained to be a continuing representation of the facility.

4 Describing the safety management system

The SMS is the framework for the management of safety at the facility in order to protect people, property or environment and should integrate with management systems for other business functions such as maintenance and recordkeeping. The safety report should present the philosophy of the system and demonstrate the suitability and capability of the management systems to deliver the continued operation of the critical safeguards, outcomes and performance standards set by the occupier.

The SMS may call on established management processes to address generic risk (an example would be processes to ensure the workforce is adequately trained) but it will also require processes to address particular risks that have been identified by the SRA. An example of a particular risk management process would be the provision of flammable gas alarms at an LPG facility with attendant response protocols, testing schedules and training.

Due to the size, scope or complexity of the SMS, it is inappropriate for the safety report to contain the entire SMS for the facility. However, sufficient information should be provided to demonstrate that an appropriate SMS is in place. The occupier should describe their SMS in terms of the general systems in place for the management of safety and its core components, as well as more detailed discussion of the components for the management of the major accident scenarios as identified in the SRA.

Consult the *Guidelines for Major Hazard Facilities, F – Safety Management Systems* for further information on the requirements of an SMS.

4.1 General content of the SMS in the safety report

The occupier needs to demonstrate in the safety report that the structure and content of the SMS is sufficiently comprehensive to deliver the outcomes and performance standards for critical safeguards as set by the occupier and to satisfy the regulatory authority that the requirements of the Act are being met.

In general the occupier should describe and demonstrate in the safety report that the facility has established:

- the governance principles, the management structure, the reporting mechanisms, safety performance objectives and indicators and that there are sufficient resources to support ongoing SMS functions
- the SMS for the facility is comprehensive, e.g. the full range of activities which impact on safety at the facility are covered
- employees at the facility are exposed to and have adequate understanding of critical components of the SMS the pathway to the major accidents and safeguards to stop events proceeding to the major accident, and
- overall safety objectives and performance criteria of the system are declared and there are processes which will redress degradation of systems against those criteria.

4.2 Key SMS elements for inclusion

Although there is no specific format for a safety report, in order to address the requirements of the Act, the occupier will need to cover core SMS elements in the report. The occupier does not have to supply the information under these headings but rather, ensure the information can be found in the safety report.

4.2.1 Governance

The “occupier” of a MHF is defined in Section 14 of the Act as the “employer, or other person, who has overall management of the major hazard facility”. The act places clear obligations on the occupier, and governance in this context includes the processes by which the occupier discharges those obligations. The description of governance should answer the regulator’s question of the occupier – How do you know the facility is operating safely?

These governance processes will vary greatly and depend on the organisations complexity and structure. Indeed, the occupier may not be based on-site, in which case answering this question will present more challenges than if the occupier were simply the site manager or equivalent. Regardless of the organisation’s structure, the safety report should describe how the occupier is provided with sufficient and appropriate information to be able to determine whether the obligations under Section 23 of the Act are being met. Challenges to the information flow should be realised and the process by which the occupier addresses those issues identified. .

A comprehensive description of the information collected and the way it is processed and presented should be described. This may, for example, include information presented to a management group at a stated frequency and the acceptance criteria for that information. This should include “health of the system” measures that inform the occupier whether the safety management system is fit for purpose, and delivering the

desired outcomes. The occupier should analyse the systematic risk assessment to devise appropriate monitoring points, performance criteria and measurement techniques to provide timely warnings of inadequacies in the facility safeguards. Activity type measures such as number and type of incidents, audit actions completed and so on, are obviously a necessary part of this process, but equally, if not more importantly, more proactive measures should be identified and utilised that go beyond compliance and test the effectiveness to deliver the required safety outcome.

In a complex operation these could include information on:

- what/how many, system failures or weaknesses are identified as a result of incident investigations and audits
- the adequacy of breadth and depth of audits,
- how many excursions out of operating envelopes are occurring, and
- the measures will be facility and organisation specific and the process of determining the measures and their fitness for purpose should be described.

For a smaller or simpler operation, the measures are potentially more focussed around procedural deviations and weaknesses, but again will be facility specific, and the process for determining them and their fitness should also be described. The resulting measurement suite should comprehensively yet concisely address the most important aspects of preventing and mitigating the potential major accidents.

The governance process should also provide challenge to existing performance to answer the previously stated question – How do you know the facility is as safe as it should be? The facility should also be mindful of potential reduction in performance in key areas so that deterioration can be detected and rectified promptly.

4.2.2 Knowledge management

The acquisition and retention of the corporate knowledge required for safe operation of the facility assets should be described in the safety report. Key technology documentation comprising operating manuals, drawings, flowcharts, manufacturer's maintenance schedules, instrument settings etc should be identified in the safety report along with the way they are used and maintained at the facility. The safety report should demonstrate that the design operating conditions and tolerable variances from design are readily accessible to, and used by, persons in charge of equipment. This is often referred to as the "safe operating envelope" for the technology. The safety report should identify the authorities, performance warranties and design certificates that have been used to establish the operating constraints for the equipment.

4.2.3 Work methods

The work methods at the facility prescribe how the facility workforce is required to operate the facility assets to realise the commercial goals of the enterprise. As such

the work methods will generally be designed to reflect how the optimum or preferred equipment operating conditions are to be effected. The safety report needs to demonstrate the possibilities of operator mistakes, violations, negligence or any other reasonable variation to normal operation have been duly considered in the design of the work methods. The safety report should make the argument that the work methods are comprehensive, resilient and provide suitable guidance for competent operators to recognise and deal with errors, abnormal situations and emergencies.

4.2.4 Education, training and competency

The safety report should include sufficient detail to demonstrate how all relevant personnel are assured to be adequately competent in all necessary areas to prevent and mitigate the major accident scenarios identified in the SRA. The occupier should describe the general system in place for the management of education, training and adequate competency. There should also be discussion on how competency standards are established to comprehensively cover the needs identified in the SRA.

The requirement for education, training and competency extends to all people at the facility, including front line operators, maintenance crew, contractors, visitors supervisors, technical and management staff. *Guidelines for Major Hazard Facilities, E – Education and Training* should be consulted for further information on the establishment of appropriate competency standards and the development of education and training programs.

The occupier should demonstrate in the safety report that induction, information, supervision, education and training provided to people at the facility is such that roles and duties are carried out safely. Discussion of the following issues should be included in this section of the safety report:

- an induction process is in place which includes education and training provisions for contractors and visitors
- the standards of competency, including:
 - the philosophy underlying the standards of competency that have been established
 - evidence that standards of competency have been documented for all roles;
 - evidence that competency standards for key major accident scenarios identified in the SRA are effective
 - evidence that education and training programs have been developed to maintain standards of competency
- evaluation of competency including how it is assessed and maintained
- the performance criteria established for the education, training and competency system, against which its effectiveness can be assessed. This should include a discussion on the reasoning behind the selection of these particular performance criteria
- the review process in order to maintain the effectiveness of education, training and competency
- the methodology of recording of education, training and competency

J - Safety Report

- the process whereby non competent personnel are prevented from conducting competency dependent tasks, and
- the management system used to track competency needs (as identified in the SRA) and record training, competency standards, individual competency assessment and relevant training content. (note it is required under Section 44(2) of the the Act.

In each case, where training intersects with major accident scenarios, more detail should be supplied in the report in order to demonstrate that the level of operator competence obtained matches the level of risk undertaken during the operation.

Provide information on the training programs in place to maintain the standards of competency for each of these roles and duties. How competence is evaluated should be explained, and the process in place to maintain the effectiveness of these education and training programs.

The safety report should clearly set out the methods for detecting deterioration in competency for all relevant roles at the facility. For example, supervisors have a critical role in observing and enforcing work method standards and hence detecting deteriorating standards of competency. Work methods that rely on close supervision for successful execution should be identified and discussed in the context of the special competencies required of the supervisor.

4.2.5 Equipment integrity

The safety report should give details of the philosophy and assumptions that underpin the maintenance program. Equipment integrity is an important part of the SMS that is often overlooked if the facility operator relies on a technology provider to prescribe a recommended maintenance program. The safety report should refer to appropriate sections of the technology documentation to show the derivation of the maintenance program. An argument should be presented to demonstrate that the risk of containment failure through equipment deterioration is understood and managed appropriately.

The safety report should discuss the occupier's monitoring and maintenance philosophy for each critical equipment item and the measures the occupier has established to ensure that equipment remains functional at the required standard. In particular the safety report should discuss the suitability of the inspection and maintenance program used to secure the performance of protective systems and barriers. Evidence that the occupier has sufficient financial resources in place to support protective systems and that competent maintenance staff is used should also be included.

A summary of the current equipment condition should be provided along with any areas of particular concern or planned activity to upgrade or return to specification the

equipment. In these cases, the specific approach should be detailed enough to provide assurance that adequate safety margins will be maintained.

4.2.6 Management of change

The safety report should describe the processes whereby the occupier recognises, assesses and accepts the risk of a change to the status quo at a facility. When change is considered at a facility, the potential hazards that may be introduced must be understood. The change should be subject to a process by which the occupier can demonstrate the hazards and risks have been appropriately assessed. Additionally it is understood that approval of a change by the authorised delegate of the occupier is an acceptance at the appropriate management level of the risk implications of that change.

The safety report should describe the design review processes used to assure the adequacy of modifications and ensure that safety standards are at least maintained if not improved. The occupier should demonstrate how the management of change process reviews all possible risk reduction measures and ensures that all reasonable measures are incorporated. This section should also demonstrate how modifications are ready for commissioning and verified as delivering the safety objectives. Additionally, it should be demonstrated that through this process the SRA, corporate knowledge, competency and governance systems are updated to reflect those changes.

4.2.7 Review and monitor

The design of a suitable performance monitoring and review system is key to the effectiveness of the SMS and is the mechanism which supports system governance.

The safety report should disclose the:

- objectives of monitoring systems and demonstrate that monitoring is sufficiently wide spread to cover all pathways identified in the SRA that could lead to a major accident. The performance monitoring system should not only provide information about the degree of compliance with SMS processes but should also inform management of the effectiveness of those processes.
- objectives of the incident reporting system and should demonstrate that the reporting threshold does capture incidents and incident precursors pertinent to preventing and mitigating major accidents.
- summary of the reviews conducted examining the outputs and effectiveness of monitoring systems. The review process should provide critical assessments of both the individual elements of the monitoring process and the overall functionality of the SMS ensuring that key safeguards protecting against major accidents are effective and continue to be so.
- performance indicators that are reported to the occupier together with an explanation of their relevance. The implementation of innovative leading process safety performance indicators will enable the occupier to focus on areas that warrant further attention.

4.2.8 Critical SMS components

The following issues need to be included in this section of the safety report, with appropriate reference back to the 'hazard identifier(s)' and description of the hazard(s).

The occupier should provide a description and brief discussion of the SMS components that support the critical risk reduction measures (include all those identified in section 3.3 - Summary of Major Accident Scenarios). Some of the SMS components, such as work instructions or specific process operating procedures, may be the critical risk reduction measures. Other SMS components may indirectly manage the risk by ensuring that hardware items are maintained appropriately.

There should be clear links to the major accidents being controlled. Discussion should be provided, with particular emphasis on how the risks are being managed including the resources in place and details of the responsibility and accountability for the effective implementation of these risk reduction measures.

Performance criteria

The occupier should list specific performance criteria which have been established for each critical SMS component, against which its effectiveness is measured, provide discussion on the reasoning behind the selection of these performance criteria, and details of current levels of performance.

Maintaining performance

The processes in place to validate the appropriateness of the critical risk reduction measures/SMS components in controlling the risk should be discussed. Discuss how compliance with these critical SMS components are verified to ensure effectiveness is maintained.

4.3 Description of the emergency plans and procedures

The purpose of emergency plans is to enable the occupier to provide a timely response and to minimise the consequences to people, property and the environment if a major accident occurs at the facility.

Emergency plans and procedures must be developed and implemented by the occupier. For further information the occupier should consult *Guidelines for Major Hazard Facilities, D – Emergency Plans & Procedures*.

The occupier should cover the following issues within this section of the safety report:

- description of emergency plans to demonstrate that all relevant major accident scenarios identified in the SRA have been covered adequately

- emergency response resources
- internal and external stakeholder consultation and information, and
- effectiveness of emergency plans.

4.3.1 Emergency plans

The safety report must include a discussion of the plans and procedures that have been developed for the facility. The information provided should include:

- how specific emergency plans and procedures were developed based on the major accidents scenarios identified in the SRA
- summarise the intended emergency response strategies and objectives to mitigate the accident scenarios
- a discussion of the systems in place to contain and control an emergency and to mitigate its impacts on people, property and the environment, e.g. evacuation procedures, fire fighting systems, deluge systems, containment and drainage systems
- a generalised description of the organisational structure in place to deal with a hazardous materials emergency
- the systems in place to notify all people both inside and outside the facility who may be at risk due to a hazardous materials emergency, and
- arrangements for establishing and maintaining communications during the emergency response within the facility and with the emergency services, neighbouring establishments and the community.

4.3.2 Emergency response resources

The safety report should include discussion and evidence that the facility has consulted the appropriate standards and codes and there is adequate emergency response equipment. This section may include:

- the codes and standards used to determine:
 - provision of fire water
 - hydrants, deluge systems
- training and competency profiles for emergency response personnel
- measures to prevent damage to the environment such as:
 - bunds
 - drainage systems
 - booms, skimmers, and
 - neutralising agents
- maintenance of emergency response equipment and supplies such as:
 - fire fighting equipment
 - Personal Protective Equipment (PPE) and
 - foam, neutralising agents
- compatibility where necessary with equipment used by the emergency services.

4.3.3 Consultation and information

In order to develop emergency plans the facility must involve employees, emergency services and the community who may be affected. The safety report must provide details of the consultation processed used in preparing the facility emergency procedures including:

- how employees have been consulted in the development of plans and procedures
- involvement of the emergency services, local council, etc.
- neighbouring facilities and the community, and
- mutual aid groups to pool resources.

In this section the safety report should also describe how information regarding the facility's emergency plan is communicated to the workforce or community who may be affected, for example:

- notification of the emergency
- emergency instructions, evacuation arrangements etc., and
- the safety measures which should be taken.

4.3.4 Effectiveness of emergency plans

Within the safety report there should be discussion regarding the effectiveness of the emergency plans and procedures developed for the site. Details should be provided of:

- the arrangements for training staff in emergency response for example:
 - the emergency scenarios and evacuation procedures focussed on
 - use of emergency equipment, and
 - refresher courses.
- exercises and drills carried out to test the emergency arrangements at all levels, including the facility's interface with the emergency services and the local community
- performance criteria developed to monitor effectiveness, and the results achieved against the set criteria
- any actual events during which the emergency plans were actioned and any lessons learnt, and
- how the safety management system supports reviews of the emergency plans and updates.

5 Community consultation

Community consultation involves the provision of information by the MHF and feedback from the community. The area for consultation and the community within it must first be identified. Consultative channels must then be established to allow the exchange of information. In the safety report the occupier must explain how this was done and describe the content of the information provided to the community.

Guideline for Major Hazard Facilities, G - Community Consultation provides further guidance on the subject.

5.1 Consultation area

In the safety report the following should be documented the:

- consultation area highlighted on a suitably scaled map
- methodology used and assumptions made in identifying the consultation area
- harm/property damage criteria (for example HIPAP 4) applied, and
- reasons for including (or excluding) areas of the community for consultation.

5.2 Who to consult

The safety report should include a discussion of how all the relevant people were identified and consulted.

5.3 Content of the information

The occupier must document the following with transparent linkages to the SRA, SMS and emergency plans where appropriate:

- justification for the selection of major accident scenarios and risk reduction measures about which the community is informed
- the community safety measures, their effectiveness and why they were selected
- the mechanism in place to immediately inform the community of a major accident and the process used to familiarise the community with the mechanism
- how the community will be kept informed during a major accident and notified when it is over
- the mechanisms in place to enable feed-back of community concerns to the occupier and examples of how any specific community concerns have been addressed
- any special provisions made for sensitive areas
- details of other relevant information or information requested by the community
- how information is disseminated
- details of the on-going consultative process, and
- when the information will be reviewed and updated.

6 Demonstration of an acceptable level of risk (ALARP)

In this section of the safety report the occupier should draw together all of the elements previously described in both the SRA and the safety report in order to summarise the overall facility approach and, through the various mechanisms, demonstrate that the facility is at an acceptable level of risk.

In demonstrating that the level of risk at the facility is acceptable, the occupier must show that all reasonable risk reduction measures are in place or that there is a process whereby, in an acceptable time frame, those measures will be put in place. A reasoned argument must be presented as to why certain safeguards identified in the SRA will not be implemented. The discussion should include a range of monitoring and auditing processes that specifically look for the weaknesses, changes and challenges to safeguards in order to substantiate that existing systems will continue to perform at an expected standard.

The safety report should display to the regulator that the occupier has obtained a clear picture of how a major accidents could develop and has put in place a well chosen set of all reasonable safeguards that are linked to insightful performance measures and standards. These safeguards will be monitored and maintained effectively as well as being reflected and supported through the SMS, consultation and training and education programs. The argument can then be made that the facility is at ALARP.

6.1 Information that could be presented

The occupier should include information that demonstrates:

- the overall risk of the facility is at ALARP
- how the facility will deal with scenarios which are not at ALARP present information that portrays:
 - the level of risk posed by the facility in the short, pre ALARP period is appropriate and addresses the likelihood and consequences of accidents occurring. Consideration should be given to temporary controls in this period
 - an implementation plan is devised and the appropriate personnel are included
 - how the implementation of risk reduction measures is prioritised including any assumptions, and
 - the time period for implementation and achieving ALARP is minimised and justified.
- the extent of safeguards are commensurate with the nature and scale of the hazards
- there are clear links between the risk reduction measures identified through the SRA and associated SMS, community consultation and emergency plans

J - Safety Report

- that risks identified in the SRA are comprehensively managed by elements of the SMS.
- evidence that risk reduction measures have been adequately reviewed prior to implementation, and
- the final date by which an acceptable level of risk will be achieved.

7 Further reading

This section is not intended to be an exhaustive list of references but simply a list of additional information regarding safety reports for major hazard facilities. Note that some of these references have been written specifically for different regulatory regimes, but have some similarities to the Act .

National Occupational Health and Safety Commission
National Code of Practice for the Control of Major Hazard Facilities
[NOHSC:2016(1996)]
Australian Government Publishing Service Canberra
ISBN 0 644 45926 3
Available at:
www.nohsc.gov.au/OHSInformation/NOHSCPublications/fulltext/toc/01497-01.htm

National Occupational Health and Safety Commission
National Standard for the Control of Major Hazard Facilities
[NOHSC:1014(1996)]
Australian Government Publishing Service Canberra
ISBN 0 644 45926 3
Available at:
www.nohsc.gov.au/OHSInformation/NOHSCPublications/fulltext/toc/01397-01.htm

Preparing Safety Reports : Control of Major Accident Hazards Regulations 1999
UK HSE HSG190 UK Health & Safety Executive
Her Majesty's Stationary Office
ISBN 0 7176 1687 8

Guidelines for the Preparation and Submission of Facility Safety Cases - 2nd Edition
Department of Industry, Science and Resources
Petroleum and Electricity Division, GPO Box 9839. Canberra ACT 2601
ISBN 0 642 72091 6
Available at:
www.isr.gov.au/resources/petr_safety/Facility.pdf

Dangerous Goods and Major Hazards Facilities Regulation Guidance Note
MHD GN-16 - The Requirements for "Demonstration" under the Occupational Health and Safety (Major Hazard Facility) Regulations
Victorian WorkCover Authority - Major Hazards Division
Available at:
[www.workcover.vic.gov.au/vwa/home.nsf/pages/so_majhaz_guidance/\\$File/GN16.pdf](http://www.workcover.vic.gov.au/vwa/home.nsf/pages/so_majhaz_guidance/$File/GN16.pdf)

Guidance on the Preparation of a Safety Report (Seveso II)
Joint Research Center European Commission
ISBN 92 828 1451 3

J - Safety Report

Available at:
mahbsrv.jrc.it/GuidanceDocs-SafetyReport.html

8 Appendix 1 Sections of the Act relevant to Guideline

Dangerous Goods Safety Management Act 2001

PART 4—MAJOR HAZARD FACILITIES

Division 3—Other obligations of occupiers of major hazard facilities

occupier must give safety report to chief executive

- (1) The occupier of a major hazard facility must give a written report (a “**safety report**”) to the chief executive that includes sufficient detail for the chief executive to decide whether—
- (a) risk at the major hazard facility is at an acceptable level; and
 - (b) the occupier has satisfied the occupiers obligations under this Act for the following —
 - (i) the induction, information, supervision, education and training under section 23;
 - (ii) the systematic risk assessment under section 41;
 - (iii) the emergency plans and procedures under section 42;
 - (iv) the safety management system under section 45;
 - (v) the consultation and giving of information under section 46;
 - (vi) other obligations prescribed under a regulation.
- (2) The occupier must give the safety report to the chief executive—
- (a) for a facility classified as a major hazard facility within 12 months after the commencement of this section—within 16 months after classification; or
 - (b) for a facility classified as a major hazard facility more than 12 months after the commencement of this section—within 3 months after classification.
- (3) The occupier must review the safety report and give an update of it to the chief executive before any modification of the major hazard facility that significantly alters the risk associated with the facility is carried out.
- (4) However, the occupier must review the safety report and give an update of it to the chief executive at least once every 5 years.
- (5) The occupier must consult with the employees at the facility when preparing or updating the safety report.
- (6) The occupier must keep a written record of consultation happening under subsection (5).

PART 6—AUTHORISED OFFICERS AND DIRECTIVES

Division 3—Directives by authorised officers

Subdivision 2—Matters for which directives may be given

95 Directive to review safety report

If an authorised officer reasonably believes the safety report for a major hazard facility is inadequate, the authorised officer may give a directive to review the safety report.

9 Appendix 2 Sections of the Regulation relevant to Guideline

Dangerous Goods Safety Management Regulation 2001

None specifically relevant.