

	<p>RUBOO ARDH AL-IRAQ FOR GENERAL CONTRACTING & TRADE ltd</p>		<p><u>Doc. No:</u> <u>Rev. No:</u> 00</p>
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RUBOO ARDH ALIRAQ for General Contracting

SAFETY MANAGEMENT SYSTEM FOR MAJOR HAZARD FACILITIES

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1 Who is this booklet for?

This booklet has been produced for employers in control of a facility that has been classified by RUBOO ARDH ALIRAQ as a major hazard facility under Part 9 of the *Occupational Health and Safety (Safety Standards) Regulations 1994*.

2 What does the booklet aim to do?

This booklet provides guidance on key principles and issues to be taken into account when planning, implementing and maintaining an effective safety management system (SMS) at a major hazard facility (MHF) that is subject to Commonwealth legislation.

The following documents should also be referred to for assistance in establishing a best practice SMS:

- AS/NZS 4801:2001 Occupational Health and Safety Management Systems
- AS/NZS ISO 9001:2000 Quality Management Systems
- AS/NZS ISO 14001: 2004 Environmental Management Systems.

An effective safety management system is central to preventing major accidents at an MHF and reducing the effect of a major accident if one does occur. The Regulations place a specific duty on the employer in control of an MHF to have an effective safety management system in place, therefore the quality of the safety management system at an MHF plays an important part in the licence or certificate of compliance decision-making processes.

It is expected that existing Commonwealth MHFs will already have an SMS in place. This booklet has been written for those implementing an SMS from scratch. However, employers in control of a facility with an existing SMS should consider the information contained within this booklet to ensure that it meets the requirements of the Regulations.

This booklet is a guide to the intent of the Regulations. Employers in control of an MHF should however refer to the Regulations for specific requirements. Although an SMS is expected to deal with all aspects of safety, this booklet focuses on those aspects of the SMS associated with major hazard safety.

3 Role of the safety management system

A safety management system (SMS) provides a ‘rational basis for the decision-making and resource allocation processes influencing safe operations’ at an MHF.

3.1 What is a safety management system?

An SMS is a comprehensive and integrated system that ensures that all work at the facility is conducted safely. This includes preventing near misses and minor accidents, as well as major accidents.

The SMS provides the structure, planning, tools, practices and procedures that support the effective implementation of major accident prevention policy. Therefore the use of an effective SMS is central to the duties and obligations, required by legislation, of an employer who operates an MHF.

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3.2 The SMS and related key duties and obligations under the Regulations

The Regulations require the employer of an MHF to prepare and implement a comprehensive and integrated system for managing safety and preventing major accidents at the facility. The Regulations also require the employer to prepare a safety report to demonstrate the adequacy of measures taken to prevent major accidents at the facility, including the SMS. Further information about the safety report and its role under the Regulations can be found in the RUBOO ARDH ALIRAQ guidance *Safety Report and Safety Report Outline for Commonwealth Major Hazard Facilities* (Booklet 5).

3.3 Focusing the SMS on the “big picture”

When developing the SMS the employer should keep focused on the overall intent, that is:

- a) implementing sound safety systems and practices at the facility to prevent major accidents;
- b) ensuring that the effectiveness of those practices can be objectively proved; and
- c) managing all SMS development and implementation processes to ensure the detail of regulatory compliance does not overwhelm the intent.

3.4 An overview of the important characteristics of an effective safety management system

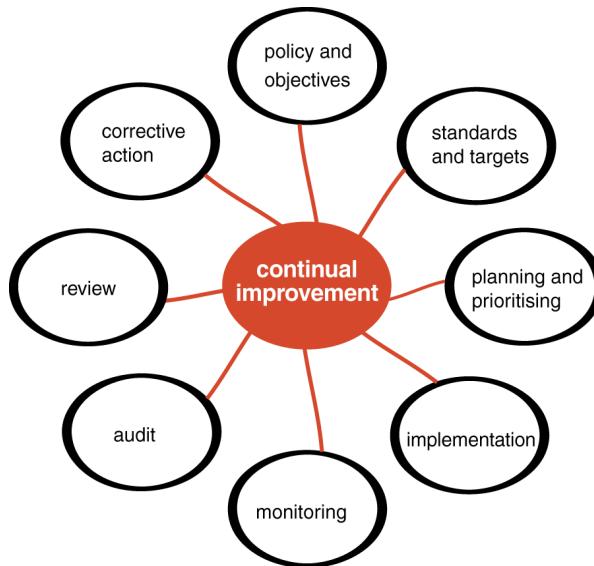
Typically, an SMS will incorporate 2 main features:

- a) a set of specific safety management system elements, which address the nature of the facility, its hazards, potential major accidents and associated risks and the controls which prevent or mitigate them; and

a set of generic management system elements that provide a systematic process for planning, implementing, monitoring, taking corrective action and reviewing performance of control measures. These generic management system elements are similar to those used in other management systems for the control of quality or the overall business. The elements need to be constantly subjected to continuous enhancement and improvement.

Figure 1: Managerial components of an SMS

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Special attention needs to be given to regulatory obligations to ensure the SMS is ‘comprehensive and integrated’. In general terms, the SMS is comprehensive if every safety issue that can contribute to a major accident is dealt with through the SMS. If a particular characteristic of the facility is a source of risk, each element of the SMS that will control the risk has to be in place. For example, if human factors are a substantial source of risk, does the SMS deal with why those human factors occur? Are there control measures in place specifically dealing with these risks? Some examples of control measures addressing human factors are:

- a) well written operating procedures that are systematically reviewed and improved; and
- b) clear emergency procedures which have been practised via drills and other exercises.

In addition, for the SMS to be comprehensive, it should ensure that control measures are effectively implemented and actively managed. This will include:

- a) identification of the control measures;
- b) definition of the performance requirements for each control measure;
- c) implementation of the control measures;
- d) associated training;
- e) verification that the control measures are functional (i.e. the control measure works and acts as it is intended);
- f) monitoring the control measure’s performance, including comparison against its performance requirements;
- g) maintenance of the control measures;
- h) rectification of any failures or shortcomings that may arise; and
- i) audit, review and improvement of the control measures (i.e. monitoring is reviewed and systematic failures are identified and fixed).

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Regular monitoring and reviewing of control measures will ensure that the employer has an accurate understanding of their effectiveness in eliminating or controlling major accidents.

It is more important for the SMS to accurately portray the actual standards achieved in practice, rather than promoting any particular standard of performance that might not be achieved in practice and may therefore result in a false sense of security. If the SMS does not give an accurate measurement of the effectiveness of the control regime, then adequacy of safe operation cannot be demonstrated.

An integrated SMS will have logical and systematic relationships between the elements of the SMS and between other related systems, for example corporate systems at the facility will link effectively with on-site systems. The requirement for the SMS to be integrated recognises the fact that failures in complex systems often stem from a complex combination of circumstances. An integrated SMS will help to ensure that control measures work together effectively as a whole, in particular that they provide defence in depth and do not conflict with each other. Additionally, communications and actions should be linked and consistent throughout the SMS.

4 The RUBOO ARDH ALIRAQ approach to safety management systems for the prevention of major accidents

RUBOO ARDH ALIRAQ recognises that a wide variety of SMS can be effective in controlling risk and this is why the Regulations do not specify the exact type of SMS that must be used at a major hazard facility. However, use of proven models for an SMS simplifies the exercise of setting up the SMS. This booklet describes one possible model configuration of core components for an SMS that can be used by the employer as a benchmark.

It is important to note that an employer is free to choose a different range of core elements but it is encouraged that any alternative configuration of the SMS used at an MHF should have easily recognised similarities to the one described in this booklet. If the employer chooses to use an alternative configuration for the facility's SMS, the core components in this booklet can be used as a benchmark for the chosen configuration.

The 5 core components of the “benchmark” SMS recommended by RUBOO ARDH ALIRAQ are:

Component 1: Safety Policy

The Safety Policy describes the intentions, broad performance targets and commitment to the prevention of all accidents at the facility. This policy also establishes the framework for all elements that contribute to a high-quality safety culture at the facility.

The policy should include a reference to the employer’s goals with respect to continuous improvement in minimising the risks of a major accident affecting the local community and the surrounding environment.

Component 2: Planning

Planning must outline specific strategies for managing risks associated with hazards identified in the facility including those with impacts on the workplace, local community and the

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environment. The plan must be documented and should include risk management strategies, objectives and timetables for reaching specific goals.

Component 3: Implementation

A systematic process in the safety management system should minimise any risks that contribute to the potential for major accidents at the facility. Areas that should be addressed include:

- a) thorough hazard identification and risk assessment processes;
- b) comprehensive and readily understood documentation of:
 - i operating procedures;
 - ii process safety information; and
 - iii safe work practices;
- c) a systematic approach to managing contractors;
- d) processes for pre-start-up safety reviews;
- e) an equipment integrity program;
- f) a procurement program;
- g) management of change procedures;
- h) effective selection, induction, training and education of employees, including facility-specific competency standards for employees;
- i) on-site emergency plans and procedures;
- j) off-site emergency plans and procedures;
- k) a security and access control program;
- l) an incident management system; and
- m) comprehensive and integrated management elements to support and enhance all aspects of the SMS (e.g. auditing).

Component 4: Measurement and evaluation

Thorough measurement and evaluation of the performance of all elements of the SMS is fundamental to maintaining a robust SMS. Particular emphasis is needed on the measurement and evaluation of control measures and their performance.

Component 5: Management Review

Employers are required to ensure that the systems in place within a facility continue to meet the needs of that organisation. This can only be successful if the management system is reviewed on an ongoing basis. Areas, which have been identified as deficient, are required to be actioned and employers should ensure all recommendations are documented for corrective action.

Employers are encouraged to self-audit as early as possible.¹ This is the essential ‘reality check’ exercise that assists the employer to identify where the gaps are in the SMS. It is important to

¹ Self-audit is also often described as a first party audit. This term is used later in this booklet when discussing ongoing audits of the SMS to measure and evaluate the performance of the SMS.

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avoid making assumptions about the adequacy of an existing SMS. A well conducted self-audit contributes to making objective decisions about the quality of an SMS.²

It is also critical that the SMS is specifically configured for the particular MHF. Employers should ensure that any organisation-wide SMS adopted matches the hazards and risks and resources available at the MHF. Experience has shown that it is uncommon for a “standard” SMS developed at corporate level for multiple sites to suit all the safety characteristics of a specific facility.

5 Major accident prevention policy

A major accident prevention policy (MAPP) is an effective way to describe and communicate the employer’s commitment to the prevention of major accidents. Although there is no specific requirement for a MAPP in the Regulations, employers should include a policy to demonstrate their commitment to the continuous improvement of all elements of the SMS.

The MAPP should be developed in consultation with employees and contain broad strategies to ensure that such a commitment is met, including:

- a) ensuring sustained evaluation and review of control measures and the managerial elements of the SMS that support those control measures;
- b) development and maintenance of a sustainable high quality safety culture at the facility. It is generally recognised that a culture of safety and the sound ‘collective practices’ that it engenders can have a large influence on ensuring the safe operation of an MHF. There is an expectation that sound collective practices will be integral to each element of the SMS;
- c) providing financial and other resources to support continual improvement of the SMS;
- d) consulting and cooperating with involved employees and contractors;
- e) complying with the legislation as a minimum standard and implementing in full, the requirements of the Act and Regulations;
- f) making all levels of management within the facility accountable for the effectiveness of each element of the SMS; and
- g) providing effective induction and ongoing training to staff, including managers.

Employers may already have a formal statement of safety policy, possibly integrated with statements of policy covering health and environmental protection matters. If this is the case, the employer may wish to review existing policy documents and revise them to include the requirements of the MAPP as specified in this guidance booklet. It may also be appropriate to prepare the MAPP as an addendum to existing policy documents.

6 Planning strategies for a robust SMS

This section describes a number of critical issues that should be addressed when planning the development or construction of the SMS. It is important that employers use a realistic approach

² See in Part 6 under heading “Early critical review of SMS” for overview of self-auditing requirements.

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in evaluating the maturity of an existing SMS. Experience from other jurisdictions has shown that development and effective implementation of a “mature” SMS can take 5 to 10 years. Effective long-term planning strategies for the SMS are therefore critical.

6.1 Early critical review of SMS

The first strategy is to ensure that the SMS is comprehensive and integrated in the context of preventing major accidents. The employer should not assume that an existing SMS is configured in a way that will result in an easy passage through the safety report and assessment processes. Significant modifications may be needed to an existing SMS to satisfy the requirements of the Regulations.

It is vital to critically review the facility’s SMS at an early stage. A subsequent review may be necessary when there is greater understanding of the major hazards, but an early review will enable timely action to be taken on any significant SMS issues.

6.2 Self-audit as an early intervention tool

A good quality self-audit will provide the employer with a valuable objective picture of the state of the existing SMS. This is essential for identifying strategies for filling gaps within the SMS in preparation for developing the safety report and the subsequent assessment of the report.

The self-audit needs to correspond with the rigors of the safety report assessment process. Employers should keep in mind that the assessment process must provide strong assurances to RUBOO ARDH ALIRAQ that the MHF is capable of being operated safely. It is advisable to use a team of personnel to conduct the audit. All audits require the use of judgment – about how much evidence to gather, in what form and how to interpret the balance of that evidence recognising that it will never be 100% consistent.

A team of audit staff allows:

- a) healthy challenge of individual judgments, thus guarding against undue bias – positive or negative;
- b) a broader range of technical and business competence than usually available from an individual; and
- c) mentoring of less experienced auditors so more experience will be available for future audits.³

The self-audit has to be comprehensive, but it is useful to pay particular attention to common problems identified with SMSs which have not been exposed to the close scrutiny required by a licensing regime. These problems include:

- a) absence of clear linkages between identified hazards, potential major accidents, the associated risk assessments and control measures;
- b) inadequate performance indicators for control measures;
- c) poor maintenance of control measures;

³ Extracts from ‘Integrated Management Systems – Potential Safety Benefits Achievable from Integrated Management of Safety, Health, Environment and Quality’, Environment Directorate, OECD, Paris, 2005

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- d) incomplete provision of information and training; and
- e) inadequate control over the work of contractors.

It is important to gain a thorough perspective on these issues from the outset to trigger remedial action well before inadequacies arise. It is unlikely that a desktop audit will be sufficient. Audit teams should combine findings from desktop audits with an on-the-ground verification as much as possible.

Safety management systems developed by national organisations may be very complex, and correspondingly resource-intensive. However, the resources available to the local MHF may be limited, and in such cases it may prove to be impracticable to implement the full corporate system.

6.3 Understanding how SMS elements link to prevent major accidents

When planning the strategies for improving or rectifying the SMS it is vital to understand how each element links together to control risks. Solid and obvious linkages are a major feature of a robust SMS. A robust SMS that meets the requirements of the Regulations is one combining all the generic management system elements and supporting all the control measures in proportion to their influence on safe operation. There are three particular types of inadequate safety management systems. They have been described as the “virtual” system, the “misguided” system, and the “random” system:

The “virtual” SMS is one containing the right management elements and addressing the correct control measures, but does not reflect how these control measures are managed in practice.

The “misguided” SMS is one containing the right management elements but which manages the wrong control measures, i.e. those not critical to preventing major accidents.

The “random” SMS is one which addresses the appropriate control measures, and reflects reality, but does not have the appropriate management system elements to ensure proper monitoring and improvement of performance.

6.4 The SMS and its part in controlling off-site consequences of a major accident

An effective SMS for an MHF will address the key issues that impact on the potential for off-site consequences and will be focused on preventing both on-site and off-site consequences.

Experience has shown that the most prominent and widespread problems with SMSs relate to off-site consequences. In particular, emergency plans can be too generic and incorrect assumptions can be made about an emergency services response to an accident. The employer should be conscious of this when planning improvements and incorporate consultation with relevant external services.

The employer should ensure there is thorough collaboration with emergency services during all stages of the development of strategies for controlling off-site consequences. Employers should also involve local environmental protection agencies in early planning of off-site emergency responses. The local emergency service may be a valuable inclusion on the self-audit team when examining the emergency plan and evacuation procedure elements of the SMS.

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7 Implementation of the SMS and its key elements

7.1 Allocating resources to the SMS development and improvement process

Decisions on allocating resources are going to be dependent on a number of factors unique to each facility. This section deals with resource allocation issues that have occurred in a range of MHFs.

Failing to allocate sufficient resources to the development and improvement of the SMS can end up producing greater long-term cost. Developing an effective SMS requiring minimal revision is the most desirable outcome.

Decisions on resource allocation should start with what is available at the facility. It is important to have access to sufficient engineering resources with the right expertise. Because there will be a large range of tasks that are inter-related, it is important to not only make sure the right people have been allocated to the work but also to ensure that they will be available when required.

The hazard identification and risk assessment processes will benefit from having a relatively large number of facility staff involved and sufficient resources allocated to them. Organisations may choose to utilise their full time staff to conduct hazard identification workshops or may consider appointing external facilitators for the hazard identification and risk assessment processes. Employers should remember that having personnel with the appropriate experience involved from the outset is important to the hazard identification process as well as an effective use of resources.

Employers should use available experience to make decisions about immediate resources that may be required to develop and implement the SMS and to plan the resource allocation to maintain it

7.2 Responsibility and accountability

Employers should ensure that everyone working at the facility understands their own responsibilities and that systems are in place to ensure individuals are accountable for these responsibilities. Practically this means that everyone has a responsibility, whether it is to report failed control measures, emergency situations, hazards, near misses and incidents. All personnel are responsible for safety (not just management) and they should understand their role.

Experiences from other jurisdictions indicate that a major gain from undertaking a licensing process is the knowledge gained about the entire safety regime at the facility. Knowledge is developed through an understanding of who is responsible and accountable for certain parts of the SMS. The employer will be required to demonstrate this in the safety report.

The broad measures of effective allocation of responsibility and accountability are:

- senior management understand their obligations and responsibilities for all processes required under the Regulations, including managing the work required within the SMS;
- responsibilities of everyone at the facility are defined, documented and communicated, including contractors; and

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- c) there are clear performance measures for all staff.

Note - Measuring levels of knowledge and the effectiveness of the processes used to transfer that knowledge will be particularly important if high skill levels of individual workers are a significant contributor to safety at the facility.

7.3 Training and competency

There is an expectation that all the conventional features of a sound training system will be in place at MHFs. Information on the conventional features can be found in the RUBOO ARDH ALIRAQ publications:

- a) OHS risk management: Competency based OHS training.
- b) Induction in the Workplace. The Management of Occupational Health and Safety in the Commonwealth jurisdiction.
- c) HSR Training Courses Accredited under the OHS Act 1991.

In addition to the conventional training features, there is an obligation for the training and education systems to deal with specific issues.

The employer must provide employees and contractors working at the MHF information, instruction and training on all accidents that could occur, hazards that could cause or contribute to accidents, implementation of adopted control measures and each worker's role in maintaining/ensuring operation of those measures.

Additionally, the content and operation of the safety management system should be communicated to all affected persons, and instruction provided on all emergency procedures at the facility. It is expected that all personnel should know what the SMS is, what it does and what it contains (i.e. it contains the information that describes how they do their work and how they do it safely).

The employer is required to record, monitor, review and revise the information, instruction and training to ensure it remains relevant and effective.

In meeting these requirements the employer should consider the following:

- a) What are the most appropriate methods of providing information, instruction and training?
- b) Who should be involved in the development and presentation of the information?
- c) When should induction training occur for employees, contractors and visitors - when first on site, at what intervals thereafter? How much flexibility should be allowed in timing of provision of information? Should there be a scheduled provision of information, or reactive provision based on apparent need for knowledge?
- d) How is the effectiveness of the informing, instructing and training processes going to be measured?
- e) How is compliance with the planned levels of informing, instructing and training going to be measured?
- f) What are the triggers for review and revision of the information, instruction and training?

In addition to general information, instruction and training, the employer is obliged to provide detailed instruction to visitors in the emergency procedures. The nature of training should match

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the targeted audience's requirements to participate in an effective execution of the emergency procedures.

For example, it is not necessary to provide training for visitors in all features of the emergency procedures, however they will need to be made aware of the nature of potential major accidents, emergency alarms and signage and actions they have to take during an emergency.

If an employee or contractor has reported a hazard or risk, they should be provided with information about subsequent actions that followed the report.

7.4 Consultation, communication and reporting, including community information

Consultation obligations in the Regulations

The Regulations require employers to consult with employees, health and safety representatives (HSRs) and contractors (where practicable) regarding the processes associated with hazard identification (Reg 9.43), risk assessment (Reg 9.44) and risk control (Reg 9.45).

Employers must also consult with Emergency Services and those persons listed above when developing or reviewing emergency plans for the facility (Reg 9.53 and 9.54)

It is important to note the distinction made between 'consultation' and 'communication and reporting'. Consultation at an MHF should be a process of collaborative decision-making. Genuine engagement of employees in setting up and maintaining an SMS tends to produce high quality results.

Questions employers should ask themselves to decide if effective consultation is occurring are:

- a) How the views of employees' and contractors' are gathered in relation to their respective roles, and how are these views used to improve operating procedures and ongoing safety?
- b) How do employees contribute to defining their role at the facility and how does that affect safe operation?
- c) What systems are in place to assist employees make effective contributions to defining their roles?
- d) How are HSRs being utilised as conduits for employee health and safety concerns?
- e) Are HSRs receiving the support and training necessary for them to play an effective role in the process?

Providing community information

Regulation 9.50 requires the employer to provide information to the surrounding community who may be affected by a major accident. This information does not have to deal with every potential major accident at the facility; only those with the potential for causing off-site consequences. The general scope of the information provided to the community includes:

- a) the name and location of the major hazard facility;
- b) the name, title and telephone number of a person at the major hazard facility who can be contacted for information about a major accident;
- c) general information about the nature of the hazards related to the facility, including potential effects on people, property and the built and natural environment;

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- d) the system to be used for warning people likely to be affected by a major accident at the major hazard facility and for keeping those people informed about an accident at the facility;
- e) the actions people should take if a major accident occurs; and
- f) relevant information about the off-site emergency procedures.

This type of information should be provided in a readily accessible format, such as a flyer. A web site should not be relied upon as the sole method of distributing the information, as people without internet access will not be able to view the information.

Employers may also consider collaborating with local government to distribute information to the surrounding community. There is no specific obligation under the Regulations to involve local government, but it may prove to be an effective strategy.

Information about the nature of hazards at the facility is not required to include information that would jeopardise security. RUBOO ARDH ALIRAQ expect they will be consulted if the employer feels it necessary to exclude information of a security-sensitive nature.

If the security-sensitive information has significant implications on the actions to be taken by the community, that information should be generalised in way that removes the security implications.

Communication at the MHF

Purposeful, effective communication is fundamental to preventing major accidents and is a feature of a robust SMS. The employer should ensure that any development or changes to the SMS recognise the importance of effective communication.

Here are some examples of “purposeful and effective communication” that can be used by the employer to evaluate the quality of the communication incorporated in the existing SMS:

- a) employees and contractors have a good understanding of operating procedures and how to deal with and adapt to abnormal operating conditions;
- b) operators of processes know who is responsible for making safety critical decisions;
- c) written operating procedures and safety information are readily available and understood by everyone who needs to use them;
- d) risk management policies are designed to encourage contributions by all staff.
- e) systems are in place that support and encourage a good flow of information between workers and managers.
- f) the facility’s SMS documentation is accessible to all employees.
- g) external emergency services have all information they require to respond effectively to an incident and are kept abreast of changes that can effect that information.
- h) documentation generated by the licensing or certificate of compliance process in the Regulations is accessible to all employees. By making the documentation accessible the information is always available for verification by staff.

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Statutory reporting requirements – an overview⁴

This section provides an overview of statutory reporting obligations for major accidents and dangerous occurrences.

The specific statutory requirements for major accidents and dangerous occurrences are contained in Part 9 of the *Occupational Health and Safety (Safety Standards) Regulations 1994*. The employer in control of a classified MHF must be familiar with the reporting requirements within the Regulations.⁵

There is additional information later in this guidance material regarding systems for major accident and dangerous occurrence reporting. The heading “Reporting and investigating incidents – internal systems” and following information discusses recording systems for near misses at the MHF.

There is no obligation in the Regulations to report near misses to ROBOOA ARTH ALIRAQ, but the Regulations do require near misses to be recorded at the facility and be available for inspection by a RUBOO ARDH ALIRAQ investigator.

Employer’s duty to report a major accident to ROBOOA ARTH ALIRAQ

The obligation to report a major accident to RUBOO ARDH ALIRAQ arises if there is a sudden occurrence at an MHF causing:

- a) serious danger or harm to any person, including a death; or
- b) serious danger or harm to property or the environment surrounding the facility.

Examples of a “serious danger” include events involving:

- a) a major emission of a Schedule 9 material;
- b) a loss of containment of a Schedule 9 material; or
- c) any fire or explosion at the facility.

The reporting times for a major accident are:

- a) within 2 hours of the employer becoming aware of a death of a person
- b) within 24 hours after the employer becomes aware of harm being caused to property or the environment.

Note - It is important that these reporting requirements apply whether the danger or harm occurs immediately or at a later date.

Employer’s duty to report a dangerous occurrence to ROBOOA ARTH ALIRAQ

A dangerous occurrence is an event that could have resulted in:

⁴ The section does not deal with the duties specified by the Regulations in relation to the safety report. See Booklet 4 – Safety Report and Safety Report outline for a Commonwealth MHF for guidance on safety reports.

⁵ See the Comcare publication “Guide to incident notification” for the approved reporting form and further information on how to notify and report incidents. A method of electronic notification is also available via Comcare’s website @ <https://celaeno.comcare.gov.au/forms/notify.html>.

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- a) a death or serious injury to any person; or
- b) the incapacity of an employee for 30 or more successive working days.

Note – The reporting of a dangerous occurrence is a general reporting obligation for all workplaces, and may include an event that is a defined major accident at an MHF. If an event is both a major accident and a dangerous occurrence the employer is only required to submit the report of the major accident. If RUBOO ARDH ALIRAQ receives a report of a dangerous occurrence that RUBOO ARDH ALIRAQ believes is a major accident, RUBOO ARDH ALIRAQ will advise the employer that the incident requires investigation as a major accident.

Employees and Contractors' obligations to report hazards

Regulation 9.57 provides for employees or contractors at a facility to advise the employer if the person considers (commensurate with that person's training and experience) that there is a hazard at the facility that may cause a major accident or any other accident.

In the event that a person considers a hazard exists that may cause a major accident, the person:

- a) must report this to the employer; and
- b) may choose to also report the matter to ROBOOA ARTH ALIRAQ.

Employers should support this regulatory requirement by:

- a) ensuring all employees and contractors are aware of the duty and feel empowered to report hazards without adverse consequences to themselves;
- b) providing a system for reports to be submitted which includes details of the response to the report and any associated follow-up action.
- c) incorporating the reports into a register for the facility and allowing unrestricted access to the register.

7.5 Documentation and data control

This area is an extremely important element of the SMS. Good quality documentation and data control is a crucial source of proof of the employer's capacity to operate the MHF safely. One benefit is that corporate knowledge at the facility is captured.

When planning and maintaining documentation and data control systems it is expected that the employer will take into account:

- a) how the systems may contribute to an integrated SMS by ensuring links between all aspects of the SMS are clearly described;
- b) whether the systems will be able to trace identified or reported hazards through subsequent risk assessment and risk control decisions;
- c) the importance of regular updating of records (e.g. regular maintenance or testing of plant being recorded in maintenance records);
- d) the value of having a centralised and cross-referenced collection of documents and a database that can be used to demonstrate the comprehensiveness of the SMS and its integration.

7.6 Safety culture and an effective SMS

The employer's planning and ongoing maintenance of the SMS should consider the safety culture of the MHF. It has become clear from past incidents, such as that on the Piper Alpha

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oil platform, that basic faults in organisational structure, systems and procedures may predispose an organisation to a major accident.

Reasons for understanding the safety culture at the MHF

There are a number of reasons why an employer may choose to assess safety culture as part of the planning and ongoing maintenance of the SMS:

- a) A dysfunctional safety culture brings a greater risk of a major accident at the MHF.
- b) Understanding the safety culture of the facility allows the employer to get a broader perspective on the interaction between human factors and the SMS.
- c) It provides a measure of how successfully the organisation is implementing its SMS.
- d) It identifies key deficiencies or faults in the SMS
- e) It provides a picture of the way in which the organisation is managing safety.
- f) It highlights areas of success and improvement.
- g) It can be used as a benchmark, either to measure the effect of improvement strategies or as a comparison measure against other facilities or industries.
- h) It can be a valuable component of a safety report for all the reasons listed above.

Assessing safety culture

The **scope of a safety culture assessment** will depend on the issues that the facility is facing. To gain an overall picture of safety culture to identify potential problem areas, all aspects of safety culture should be considered in an assessment. Alternatively, the assessment may only deal with a particular aspect of safety culture (such as the effectiveness of leadership in relation to safety performance).

If the employer wishes to benchmark the facility's safety culture against other organisations, an assessment tool that is widely used by those organisations should be used. However, if the employer wishes to address specific aspects of the safety culture, a custom-made assessment tool may have to be developed. Most safety culture tools consist of a questionnaire only. Valuable safety culture information can also be gained from conducting interviews with a cross-section of staff, particularly if conducted by an independent person and in a structured manner. A structured interview process can be considered to be as systematic as a questionnaire approach.

It is expected that a safety culture assessment would be conducted in the same way as a risk assessment. The processes used should be documented, assumptions challenged and tested with solutions and changes arising from the assessment identified and recorded.

Implementing safety culture solutions

Solutions for rectifying inadequacies in the safety culture should be implemented in the same way as any other risk control measure. (See section 8 of this booklet on implementing control measures.) However, particular regard should be given to how the solution links and is integrated with other identified elements of the safety culture. This will need to be examined closely if a decision has been made to only assess specific elements of the safety culture.

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7.7 Hazard identification, risk assessment and control measures

Hazard identification (HAZID) and risk assessment involves a critical sequence of information gathering and the decision-making process. These processes assist in discovering what could possibly cause a major accident, how likely it is that a major accident would occur and what options there are for preventing and mitigating a major accident. These processes should also assist in improving operations and productivity and in reducing the occurrence of all incidents and near misses.

There are many different techniques for carrying out hazard identification and risk assessment at an MHF and those techniques vary in complexity. The complexity of the technique used should match the complexity of the MHF.

Collaboration between management and staff is fundamental to achieving efficient hazard identification and risk assessment processes.

The Regulations require the employer, in consultation with employees, HSRs and contractors to identify:

- a) all reasonably foreseeable hazards at the MHF that may cause a major accident; and
- b) the kinds of major accidents that may occur at the MHF, the likelihood of a major accident occurring and the likely consequences of a major accident.

7.8 Operating procedures

Operating procedures describe:

- a) tasks to be performed;
- b) data to be recorded;
- c) operating conditions to be maintained;
- d) samples to be collected; and
- e) safety and health precautions to be taken.

Operating procedures are required to be technically accurate, understandable to employees and revised periodically to ensure that they accurately reflect current operations. Process safety information needs to be used as a resource to ensure that operating procedures and practices are consistent with the known hazards of the process and that operating parameters are accurate.

Documented instructions should be provided for employees or contractors who are required to perform or supervise the procedures. The operating instructions for each procedure should include applicable safety precautions and contain appropriate information on safety issues. The operating procedures addressing operating parameters will contain operating instructions on:

- a) pressure limits, temperature ranges, flow rates;
- b) what alarms and instruments are important if an upset condition occurs;
- c) what to do when an upset condition occurs;
- d) start-up and shutting down processes; and
- e) include explanations of the associated potential hazards so that employees will be better informed about the extent of the safety issues associated with the procedures.

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Operating procedures should be reviewed when a process is altered as a result of the management of change procedures. The consequences of operating procedure changes should be fully evaluated and any changes communicated to relevant personnel. For example, mechanical changes to a process are evaluated to determine if operating procedures and practices also require changing. All management of change actions must be coordinated and integrated with current operating procedures and relevant persons must be consulted about the changes before they are implemented.

Computerised process control systems add complexity to operating instructions. These operating instructions should describe the logic of the software as well as the relationship between the equipment and the control system to enable the operators of those systems to have an understanding of the relationship.

During the development and implementation of operating procedures, any standards used for the processes should be documented for inclusion in verification material in the facility's safety report. Operating procedures are required to be reviewed by engineering staff and operating personnel at regular intervals to ensure the procedures:

- a) are accurate;
- b) provide practical and understandable instructions on how to perform duties safely; and
- c) are subject to ongoing assessment for their appropriateness.

7.9 Process safety information

Complete, comprehensive and accurate written information concerning process chemicals, process technology and process equipment is essential for effective process safety management. The information to be compiled about chemicals, including processes, should enable an accurate assessment of fire and explosion characteristics, reactivity hazards, safety and health hazards to workers, along with the corrosion and erosion effects on process equipment and monitoring tools.

Process technology information forms a part of the process safety information package and should include:

- a) diagrams of processes;
- b) maximum inventory levels for process chemicals;
- c) conditions which should be considered upset conditions; and

a qualitative estimate of the consequences that could occur if an operation continues beyond established process limits.

Employers are encouraged to use diagrams or pictures that will help employees and contractors understand processes. These could include:

- a) block flow diagrams to illustrate major process equipment, interconnecting process flow lines, flow rates, stream composition, temperatures and pressures;
- b) materials of construction information, pump capacities, pressure heads, compressor horsepower and vessel design pressures; and

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c) major components of control loops along with key utilities on process flow diagrams.

Alternatively, piping and instrumentation diagrams (P&IDs) may be more appropriate to show some of the above details and to also display information for the designers and engineering staff. The P&IDs can be used to describe the relationships between equipment and instrumentation as well as other relevant information that will enhance clarity.

The design and performance standards used for process equipment should be included in the process safety information. A Process Hazard Analysis (PHA), sometimes called a process hazard evaluation, is one of the most important elements of the process safety management program. Generally it is conducted by a team made up of people with the necessary knowledge and should not be done by one person. A PHA:

- a) is directed toward analysing potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals and major spills of hazardous chemicals;
- b) focuses on equipment, instrumentation, utilities, human actions, and external factors that might impact on the process; and
- c) assists in determining the hazards and potential failure points or failure modes in a process.

The selection of a PHA method will be influenced by many factors including the existing knowledge about the process. It may be a process that has been operating for a long period of time with little or no innovation and extensive experience has been generated through its use; or it might be a new process or one that has been changed frequently by the inclusion of innovative features. Additionally, the size and complexity of the process will influence the decision on the appropriate PHA method to be used.

All PHA methods are subject to certain limitations. For example, the checklist method works well when the process is very stable and no changes are made, but it is not as effective when the process has undergone extensive change. The PHA is dependent on good judgment and any assumptions made during the study should be documented and understood by all relevant persons.

A person appointed to conduct a PHA is required to:

- a) understand the methodology that is to be used; and
- b) be familiar with the processes being analysed.

Anyone conducting a PHA should have an intimate knowledge of the standards, codes, specifications and regulations applicable to the process being studied. The application of a PHA to a process may involve the use of different methods for various parts of the process with the recommendations and conclusions integrated into one final evaluation.

When the employer has a number of processes which require a PHA, the employer must set up a priority system of which PHAs to conduct first. A preliminary or gross hazard analysis may be useful in prioritising this.

Consideration should be given to those processes with the potential to adversely affect the largest number of employees. This prioritising should consider such things as the:

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- a) potential severity of a chemical release;
- b) number of potentially affected employees;
- c) operating history of the process such as the frequency of chemical releases; and
- d) the age of the process.

These factors would suggest a ranking order either using a weighting factor system or a systematic ranking method.

7.10 Safe work practices, including normal and abnormal circumstances

The regulations require employers to have safe work practices in place for any work activity that could have an effect on major accident prevention. A thorough HAZID of all work activities will be a vital step in identifying the work that can impact on major accident prevention.

The hazard reporting system at a facility should be used to monitor if a particular work practice, previously identified as not being significant for major accident prevention, is later identified as an area of concern. It should also identify if practices identified as significant for accident prevention are not working as required and create improvement actions.

Safe work practices should include specific checks of the job location in preparation for the work, including isolation of materials and energy sources prior to commencement. Procedures at the completion of a task should include the complete re-establishment of conditions prior to handover. Examples of these practices include job safety analysis (JSA) and task analysis.

The safe work practice system must accommodate circumstances where abnormal conditions can potentially arise and should be supplemented by:

- a) a process for reporting when abnormal conditions do occur during work; and
- b) a documented remedial response to these reports.

Safe work practices should be documented and revised if the documentation does not match the actual conditions designed for in the work practices. Processes should regularly monitor if employees or contractors understand and apply the information contained within safe work practice documents and whether these are implemented and maintained.

The employer should consult those who use the documentation to improve the accuracy and simplicity of it. Examples of specific safe work practice topics include:

- a) permit to work system, including associated procedures for maintenance and construction, for example:
 - i hot work;
 - ii confined spaces;
 - iii excavation work;
 - iv use of heavy equipment;
 - v tagging of equipment (e.g. portable electrical equipment);
 - vi lock out and tag out; and
 - vii isolation and recommissioning of plant and equipment, including utilities.
- b) communication of work programs/maintenance status;

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- c) hand-over between shifts;
- d) relieving arrangements;
- e) supervision of safe work practices;
- f) procedures for hazardous plant and processes such as rigging, scaffolding, cranes and load shifting equipment;
- g) working at heights;
- h) classification and definition of hazardous areas;
- i) internal site traffic control and movement of vehicles; and
- j) control of access to hazardous areas and processes.

7.11 Managing contractors

If a contractor is being directed to carry out work by an employer of a facility, generally all the control measures applicable to employees apply equally to contractors.⁶ The nature of contracting work to external staff also requires SMS elements that specifically focus on controlling that work.

Employers should ensure the SMS deals with the use of contractors by incorporating:

- a) a selection system that includes aspects such as:
 - i evaluation of the contractor's safety performance to ensure consistency with levels of safety expected by the employer; and
 - ii review of the contractor's ability to employ qualified staff.
- b) a site induction for contractors and their employees;
- c) a process for providing the contractor information on:
 - i general safety responsibilities;
 - ii job-specific hazards and risks;
 - iii emergency procedures; and
 - iv obligations to comply with the facility's work permit, hazard reporting, near miss, dangerous occurrence and major accident report system.
- d) safety recording-keeping requirements;
- e) ongoing evaluation of safety performance of each contractor; and
- f) a day-to-day management system for contractors and their work at the facility, including the process for nominating employees at the facility responsible for managing the work of the contractor.

⁶ Section 14 of the Occupational Health and Safety (Commonwealth Employment) Act generally excludes the application of the Act if a contractor is in control of a workplace where construction and maintenance work is being carried out. This exclusion does not apply to erection and installation of plant (see section 20 of the Act). Note that if the contractor is working under instructions from the employer at the facility, the exclusion in section 14 does not apply.

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If the employer uses contractors to carry out safety critical tasks, there should be a task-specific screening process to ensure the contractors used have all the necessary experience and skills to do the work without compromising their safety and the safety of the facility.

7.12 Equipment integrity

A mechanical integrity program should be in place to ensure the continued integrity of process equipment. Elements of a mechanical integrity program should include:

- a) the identification and categorisation of equipment and instrumentation;
- b) inspections and tests;
- c) testing and inspection frequencies;
- d) development of maintenance procedures;
- e) training of maintenance personnel;
- f) the establishment of criteria for acceptable test results;
- g) documentation of test and inspection results; and
- h) documentation of manufacturer recommendations on average time to failure for equipment and instrumentation.

The employer should ensure the equipment integrity program is supported with:

- a) the use of published codes and standards to help establish an effective testing and inspection of equipment program;
- b) training for maintenance personnel on topics such as preventative maintenance program procedures, safe practices, and the application of special equipment that may be required;
- c) a verification process for:
 - i "as built" drawings;
 - ii certifications of coded vessels and other equipment;
 - iii materials of construction; and
 - iv equipment installation work at the work site to ensure correct materials, procedures and qualified staff are being used.

7.13 Management of change and its affect on the SMS

Employers should ensure that a clear definition of "change" is developed for the MHF. This may include modifications to equipment, procedures, raw materials and processing conditions. These modifications must be managed by an identification and review process prior to implementation of the changes. Employers should also consider changes in process technology and changes to equipment and instrumentation. Proper documentation and review of these changes is required to ensure that all safety considerations are being incorporated into the operating procedures and processes.

The management of change procedure must include temporary and permanent changes. A time limit for temporary changes must be established so that equipment and procedures are returned to their original or designed conditions at the end of the temporary change. Employers should

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develop a form to facilitate the management of change process. A typical change form may include:

- a) a description and the purpose of the proposed changes;
- b) the technical basis for the change;
- c) safety considerations;
- d) documentation of changes required to operating procedures;
- e) inspection and testing required; and
- f) intended duration of any temporary change.

All change forms need approval and authorisation for the change. Where the impact of the change is minor and well understood, a checklist reviewed by an authorised person may be sufficient. However, for a more complex or significant change, a HAZID and risk assessment with approvals by operations, maintenance and safety departments may be more appropriate.

Changes in documents such as P&IDs, operating procedures, mechanical integrity programs, electrical classifications etc, should be incorporated in updates to all related documentation. Copies of process changes should be accessible to all relevant personnel.

Some examples of changes that may need management:

- a) introduction of new dangerous goods or other hazardous materials;
- b) increase in the quantity of dangerous goods or hazardous materials held on-site;
- c) addition of new processes, buildings, plant and equipment;
- d) changes in the design and construction of existing processes, buildings, plant and equipment;
- e) introduction of temporary processes, buildings, plant or equipment;
- f) increase or decrease in throughput of the facility;
- g) temporary or permanent shutdown of the facility, or a section of it;
- h) re-start of the facility, or a section of it, after an extended period of shut-down;
- i) changes to the roles and responsibilities of safety-critical personnel;
- j) reconfiguration or reprogramming of control and monitoring systems;
- k) redefinition of the facility's critical operating parameters;
- l) changes to land-use around the facility; and
- M) changes to other facilities nearby or connected by pipeline or other means.

m)

7.14 Employee selection, induction, competency, training and education

Appropriate consideration should be given to employee selection for the safety-critical parts of the facility. Employers should draw on the knowledge gained from the SMS development to ensure that employees have the base skills required and capacity to carry out the work.

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Choosing the right staff with the right skills is only the first step in ensuring staff have the capacity to carry out their work competently. Ongoing training and education is essential and is the reason for specific education and training obligations in the Regulations.

An induction program must be implemented for all new staff at the facility. The induction program must be consistent with the content and performance parameters for training required for all staff which should include:

- a) information on hazards and risks at the facility;
- b) critical safety procedures or rules;
- c) emergency procedures;
- d) employee and contractor safety responsibilities and information on the systems used in the facility to ensure effective communication of safety-critical information; and
- e) an ongoing assessment policy to test its effectiveness.

Employers should ensure that competency standards are developed for all staff working in safety-critical areas. These standards should be developed to reflect the demands the work processes and any anticipated changes at the facility.

Competency standards should be developed in consultation with staff experienced in the processes. The objectives are to ensure that standards are based on actual knowledge requirements of processes rather than theoretical perceptions of competency. The process for developing competency standards should be in consultation with the Health and Safety Representative for the relevant area of the facility where the competency standards apply.

Employers should not adopt generic competency standards. Standards must match the competency requirements for the specific facility or work area. This means that even if generic competency standards are available, it is expected that there will be some components of the standards that include issues unique to a particular process. It is common for MHFs to be dependent on high skill levels from employees to deliver safe operation of the facility, at least in some operational areas of the facility, if not the entire facility.

The absence of effective training and education is a key factor in the occurrence of major accidents at MHFs. Proof of the effectiveness of conducted training and education, including proof that the training and education is keeping pace with changes at the facility and knowledge in hazards, will be important to assurances of safety. No safety critical changes to employee-dependent processes or procedures should be implemented at the MHF before training and education is completed.

Some features of an effective training and education program are:

- a) explicit and functioning processes for the provision of training and education;
- b) mechanisms for the development and implementation of safety roles for employees, including consultation with HSRs;
- c) evidence of comprehensive inclusion of employee knowledge, experience and views as part of hazard identification, risk assessment, adoption of control measures and implementation of the SMS;

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- d) an effective means of knowledge transfer to employees arising from the employer's safety responsibilities under the Regulations;
- e) a sufficient and consistent distribution of knowledge of hazards and their control across the employee population; and
- f) testing of employee perceptions and levels of knowledge, in relation to adequacy of involvement, their comprehension of the information and the general effectiveness of knowledge transfer.

7.15 Procurement

A purchasing program should be developed and effectively implemented to accommodate the safety requirements for the MHF. The key features of the purchasing program should include:

- a) a systematic process for purchasing equipment, plant and materials that includes consideration of safety issues; and
- b) management of change procedures should be applied if new equipment, plant or materials are proposed and the new items are not a "replacement in kind". The management of change elements should be incorporated in written procedures for the purchasing program.

The written purchasing procedures for supplies and services should also include:

- a) precise identification of products or services to be delivered;
- b) product acceptance criteria (i.e. written description of the essential features of a product);
- c) check process for determining if purchased materials and services comply with the product acceptance criteria prior to use of the materials and services;
- d) procedure for dealing with products that do not comply with the product acceptance criteria;
- e) specific references to supporting documentation such as specifications and standards as part of purchasing contracts;
- f) specific references to internal approvals required for purchases;
- g) qualifications or skill levels needed for contracted personnel;
- h) written procedures for receiving, storage, handling and transfer of purchased materials;
- i) recording process for quantities and safety characteristics of all hazardous materials purchased;
- j) clear and effective linkages between the information gathered under the procurement program and the related elements of the SMS (e.g. employees who use newly purchased material have ready access to safety critical information gathered under the procurement program).

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7.16 Controlling off-site consequences of major accidents for people and property

An employer's responsibility under the Regulations is to control any risk associated with hazards at the MHF by implementing measures to limit the consequences if a major accident occurs. This obligation extends to any person or thing potentially affected by a major accident, including the effect on water, power or gas supplies and transport routes near the facility. It is expected that the development and maintenance of control measures, will consider the mitigation of consequences for the community surrounding the MHF.

The most obvious control measure specifically oriented towards off-site consequences is the off-site emergency response plan. This is most effective if community consultation is involved.

Controlling consequences of a major accident on the off-site natural environment

Employers should ensure that the SMS includes features supporting the control measures dealing with environmental consequences. Control measure decisions should be made using the best available information on the characteristics of the off-site environment and its vulnerability to the sort of products or waste (including fire fighting waste water) that may be released or generated during a major accident.

If a major accident could have an effect on areas associated with the Federal Department of the Environment, Water, Heritage and the Arts (DEWHA) list of "matters of national significance", the employer should consider consulting with the Department.

The DEWHA is also a potential source of information about many topics that could prove useful during decisions on reducing or mitigating the environmental effect of an accident. The information available from the DEWHA website includes habitat maps, lists of threatened species and information about the ecology of vulnerable species. It has a very useful search tool, called the "[Protected Matters Search Tool](#)", to identify places in Australia that come within a zone of significance and to provide a report on that zone.

Where loss of containment of environmentally damaging materials is possible, employers should consider the potential for on-site losses to leach through soil and reach water tables or waterways. There should be effective communication between employers and environment protection agencies to enable up to date information for potential environmental consequences of a major accident to be factored into the SMS.

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

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

Development of the emergency plan

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

The Regulations require procedures associated with the emergency plan are prepared in consultation with emergency services. Active participation of the emergency services is

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

Issues the employer should consider in developing the emergency plan

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

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

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

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

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

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

Examples of arrangements within emergency plan

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

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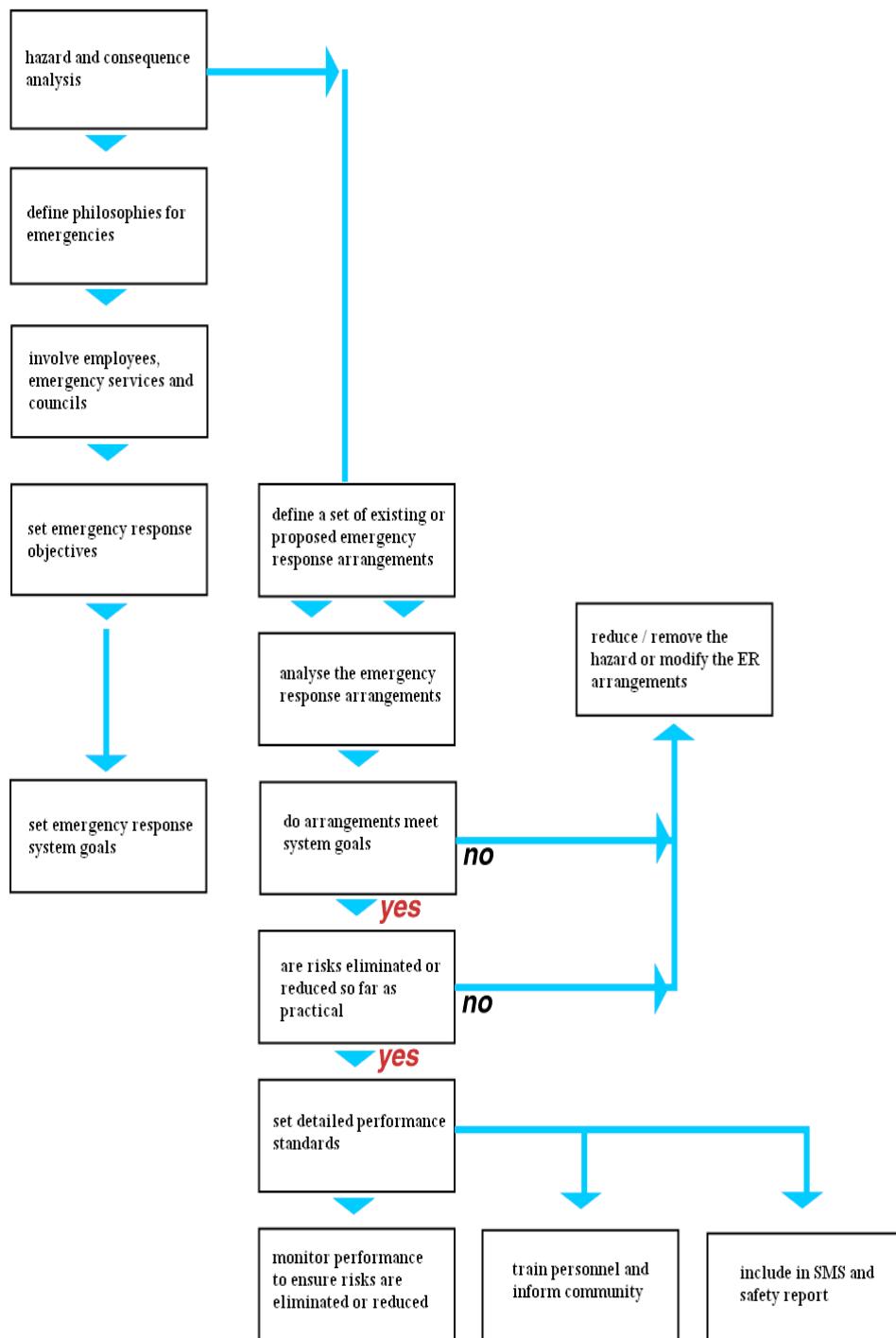
The analysis of emergency response arrangements should consider all incidents that may occur at the facility, as well as all the hazards that could cause or contribute to a major accident.

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

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

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

Figure 2: Flowchart for development of emergency plans



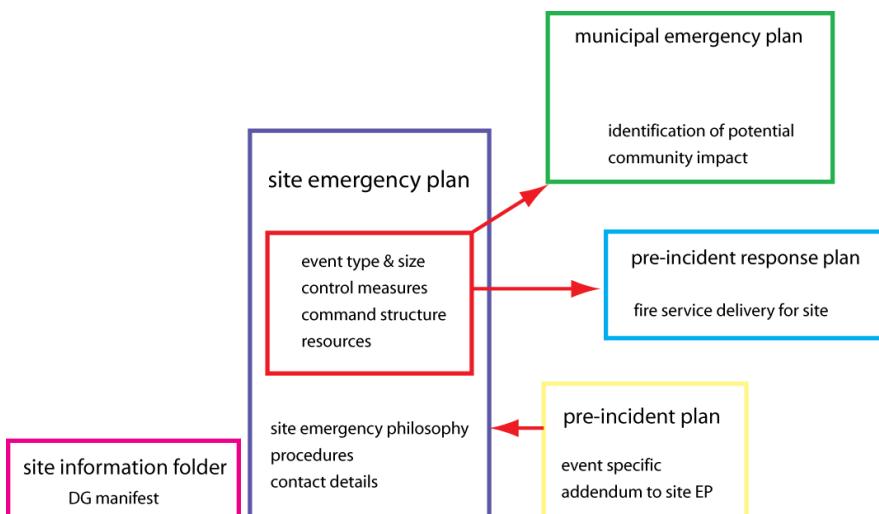
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In developing the emergency plan it is important to recognise the inter-relationships between different types of emergency management documents. These include the site information folder, pre-incident plan, pre-incident response plan, municipal emergency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

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

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Figure 3: Emergency planning relationships



Contents of emergency plan

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

Planning for on-site emergencies

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

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

Planning for off-site emergencies

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

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

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

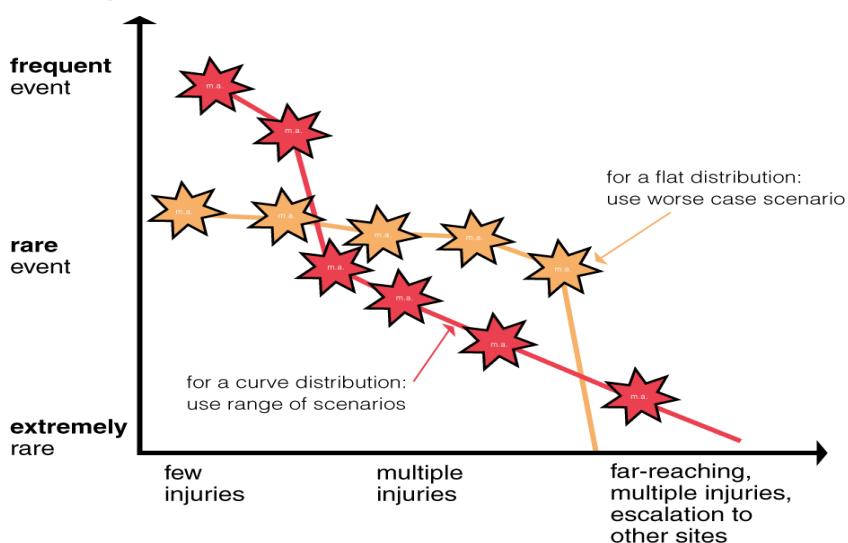
The emergency planning process should consider the full spectrum of incidents and uncontrolled events that could lead to major accidents. One approach is therefore to base the emergency plan on the "worst case scenario". However, it may be more appropriate to select other major accident scenarios as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

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

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

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

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



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

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A significant scale of events should be featured in the emergency plan to reflect potential off-site effects and to ensure the emergency plan is robust and credible. The employer should consider the incident history, both at the facility and within similar facilities, in arriving at a justified selection of relevant scenarios for planning purposes. It would be inappropriate to base emergency plans on an event of a lower magnitude than is indicated by the industry historical accident record.

Performance indicators for emergency plans

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

Some examples of performance standards for the emergency plan

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

Testing the emergency plan

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

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

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

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

Review and update

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

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

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

Summary of key features of an emergency plan:

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

7.18 Security and access control

Regulation 9.55 requires employers to establish a system for securing the major hazard facility. For security purposes, employers should conduct a threat assessment in order to understand how they will control and security risks at a major hazard facility. Employers should, as a minimum standard, follow the guidelines provided for in Australian Standard HB 167:2006.

Employers should ensure that systems are in place to control security and prevent any unauthorised access to the MHF. Particular attention should be directed at the physical security of the facility, chemical storage areas and chemical processes. All facilities should have appropriate security in place to minimise crime and to protect people, property and the environment. This is especially the case for facilities that:

- a) handle extremely hazardous substances;
- b) operate high hazard processes; or
- c) store and handle materials that can be used in criminal activities.

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Threats may come in different forms and from different sources and may involve outward threats such as trespassing, unauthorised entry, theft, burglary, vandalism, bomb threats or terrorism. Internal threats at the facility may arise from inadequate designs, management systems, staffing or training. Other internal threats may include theft, substance abuse and sabotage.

Developing the security plan

Criteria for an effective security plan

- a) Focus on prevention by reducing the vulnerability of the facility to security breaches;
- b) Comprehensive and integrated with the facility's SMS;
- c) Systematic identification of security scenarios and linkage to critical vulnerabilities and protective counter-measures.

Key elements of a security plan

An effective security and access control system at an MHF should address the following:

- a) security system requirements should be clearly defined for all roles in the organisation;
- b) the security and access control requirements of the MHF must be included in both site training and induction programs;
- c) human resources and procurement systems and procedures should incorporate security issues such as:
 - i) pre-employment screening;
 - ii) media communications and information control;
 - iii) contractor and contracting security;
 - iv) vendor selection; and
 - v) loss reporting (internal and external), investigation and records.
- d) effective involvement by employees in the development and maintenance of security processes;
- e) security system inspections and audits;
- f) computer security measures for systems vulnerable to hacking and other unauthorised access;
- g) specific allocation of responsibilities for security;
- h) assessment of operations and vulnerabilities;
- i) implementation of control and counter measures including policies, operating procedures, equipment and resources to reduce security risks;
- j) procedures for reporting and responding to security threats;
- k) procedures for the evaluation, testing, review and revision of security plans; and
- l) scope of security and access control.

Controlling legitimate access

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The employer operating the MHF must consider developing systems and facilities to provide and control appropriate safe access to the site such as:

- a) physical entry controls;
- b) safe routes signposted within the MHF;
- c) speed limits;
- d) safe parking;
- e) induction (including the identification of impact hazards for drivers of vehicles prior to them entering the site for the first time);
- f) identification systems;
- g) turnstile entry for pedestrians, including a through-put recording system;
- h) accompanied access for non-inducted persons; and
- i) security monitoring.

Prevention of non-legitimate physical access to the MHF site

The MHF should have security systems that prevent both intentional and unintentional non-legitimate access to the site. As a minimum, the following should be considered:

- a) perimeter fencing;
- b) minimising and guarding access points;
- c) gates or booms at roadway access points;
- d) gates or turnstiles for pedestrian access points;
- e) signposting access restrictions;
- f) security lighting; and
- g) incident reporting system.

Major hazard facilities, where there are materials or products with high intrinsic value or that have significance to criminals (including terrorists), should also consider more sophisticated systems such as the following:

- a) video monitoring of boundaries, access points and safety critical plant that may be vulnerable to attack;
- b) proximity sensing and monitoring;
- c) full time security staff; and
- d) special communication arrangements with emergency services and law enforcement agencies.

Terrorist threats

The Department of Foreign Affairs and Trade's (DFAT) definition of "critical infrastructure" includes MHFs - without specifically describing them as such. Employers should ensure they consult with the Attorney-General's Department regarding security and threat assessments whilst also ensuring that any security measures that may be recommended are evaluated.

7.19 Reporting and investigating incidents – internal systems

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Subdivision A of Division 9.4 of the Regulations provides that employers must establish and maintain an internal system for investigating and reporting of all major accidents.

There are statutory requirements to report a major accident and a dangerous occurrence to RUBOO ARDH ALIRAQ and those requirements are described in this booklet under the heading “Statutory reporting requirements – an overview”.

Employers are not required to report a near miss to ROBOOA ARTH ALIRAQ. However, an internal report of a near miss is required under the Regulations and that report must be made available to a RUBOO ARDH ALIRAQ investigator upon request. This section deals with the internal processes that should be in place to identify and investigate the cause of incidents. The primary objective of these processes is to minimise the likelihood of the incident reoccurring.

A major accident is a sudden occurrence at an MHF causing:

- a) serious danger or harm to any person, including death; or
- b) serious danger or harm to property or the environment surrounding the facility.

A dangerous occurrence is an event that could have resulted in:

- a) a death or serious injury to any person; or
- b) the incapacity of an employee for 30 or more successive working days.

A dangerous occurrence includes events involving:

- a) a major emission of a material or process that contributed to the determination that the facility should be classified as an MHF;
- b) a loss of containment of a material;
- c) any fire or explosion at the facility.

A near miss is any event at the facility or in the surrounding community that may have resulted in injury, damage, and environmental impact etc (including a major accident) if a mitigating effect, action or system had not been in place.

Incident management system

Employers should have an integrated incident management system incorporated into the SMS. The incident management system should:

- a) record details of incidents;
- b) identify incidents which are major accidents, dangerous occurrences and near misses;
- c) contain a procedure for major accident and dangerous occurrence notifications, including all statutory requirements;
- d) contain a procedure for incident investigation;
- e) allocate responsibilities for incident investigation to appropriately qualified people;
- f) involve employees and contractors in the incident investigation and inform all staff about the investigation and its results;
- g) ensure that actions arising from incident investigations are tracked through to completion; and

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- h) record any actions resulting from investigations that result in alterations to the SMS, including alterations to control measures.

Investigation and outcomes

Investigations of incidents should target the root cause and employers should ensure that investigation findings will trigger a review of all control measures connected to an incident. Incidents should be investigated taking into account the potential consequences and actual consequences. This is particularly important where an incident is a dangerous occurrence or near miss. Employers should ensure there are systems for:

- a) selecting and training internal investigators;
- b) activating and supporting an investigation;
- c) production of reports on the results of investigations;
- d) disseminating knowledge gained from the investigation; and
- e) recording and monitoring actions that result from the investigation findings.

In the event that an incident may be classified as more than one type of incident then only one investigation should be undertaken. However, the incident management system should record the fact that the incident fell into multiple categories.

A report of an investigation of a major accident should include:

- a) materials involved;
- b) the cause of the major accident and the contributing factors;
- c) immediate consequences on people, property and the environment surrounding the MHF and steps taken to mitigate consequences;
- d) extent of the involvement of emergency services and a critique of the implementation of the MHF's emergency plan during the incident;
- e) actions taken and planned to prevent the major accident reoccurring;
- f) a description of the alterations to the SMS that have occurred or are proposed following the investigation;
- g) responsibilities and procedures for investigation of the incident;
- h) a record of employee and contractor consultation during investigation and follow-up; and
- i) a description of the how the lessons from the incident have been disseminated to staff.

Reports related to a dangerous occurrence should include:

- a) all the information required by the statutory reporting requirements for the incident; and
- b) the information described above for a major accident report (other than the statutory reporting requirements for a major accident).

The report of a near miss should:

- a) record the nature of the near miss;

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- b) be prepared as soon as practicable after the near miss has been reported to the employer;
- c) describe the investigation of the near miss and record the results of the investigation; and
- d) describe the consultation with employees and contractors at the MHF on ways of avoiding near misses in the future.

All internal reports of investigations should be retained for the life of the MHF. These reports may be requested at any time by a RUBOO ARDH ALIRAQ investigator and may also be requested by an assessor as part of the safety assessment of the facility.

7.20 Control measures

A range of control measures should be in place at an MHF. Choosing the best control measures and being able to demonstrate their effectiveness is a critical feature of compliance with the Regulations.

Control measures should be systematically managed within the SMS. The safety report should include statements on the viability and effectiveness of the range of control measures considered, methods and results of the corresponding risk assessments, and the reasons for selection or rejection of control measures. It should also include the COPs and performance indicators for the adopted control measures and a justification of the adequacy of control measures, including the means by which performance is assured. The SMS must relate to each activity used in the selection and ongoing maintenance of control measures. Each element of the SMS should have performance standards to provide regular monitoring of the effectiveness of each element. Consultative methods used to involve the people working at the facility to identify and develop control measures should be described.

RUBOO ARDH ALIRAQ Guidance Material – *Hazard Identification, Risk Assessment and Control Measures* (booklet 4) provides more detailed guidance on how to select and judge the effectiveness of specific control measures.

8. Measurement and evaluation principles for the SMS

This section will describe the general principles and tools that can be used to:

- a) provide assurance that the SMS is operating effectively; and
- b) sustain a process of continuous improvement of the SMS.

A critical obligation in the Regulations and a fundamental measure of the effectiveness of the SMS is that it provides a comprehensive and integrated management system for managing safety and preventing major accidents. A significant role of the SMS is to support and maintain the control measures adopted at the facility. To be comprehensive and integrated, the SMS will need to fully support all aspects of all adopted control measures and to operate in a coherent fashion that monitors the performance of the control measures and ensures they are not compromised. To achieve continuous improvement, it should also contain elements equivalent to the plan-do-check-act quality management cycle. Sufficient resources, priorities, responsibilities, accountabilities, plans, implementation and monitoring processes need to be allocated to control measures not only individually, but also as a whole.

8.1 Monitoring and measurement

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Employers should have a systematic approach for regularly measuring and monitoring performance of the SMS. Measurement and monitoring activities should provide data and information on such topics as:

- a) performance of the SMS;
- b) monitoring equipment, data quality assurance and system requirements;
- c) monitoring compliance to applicable regulations, codes and standards;
- d) monitoring of performance against set objectives and targets;
- e) performance with respect to the commitments in the MHF major accident prevention policy; and
- f) internal performance criteria.

An essential part of the facility's SMS is to constantly monitor the system and follow-up on issues that are raised. Measurement provides a clear indication of performance against specified targets, aims and objectives. The monitoring process should measure the control aspects; measurements of outputs alone have limited value.

Employers should determine which management controls need to be measured and what purpose the measurement will serve in the achievement of desired goals. The timely measurement and evaluation of work performed to standards provides management (at all levels) with information needed to correct performance and produce desired results.

Monitoring activities within the facility's SMS should include the systematic inspection of premises, plant, equipment, instrumentation and control systems that are important in relation to major accident prevention and mitigation. Monitoring activities should also include systematic observation of the work and activities of employees and contractors to assess compliance with the procedures, standards and rules that have been previously nominated as being safety critical. Employers should also determine the requirement to conduct periodic quality assessments of the monitoring work under the SMS.

To ensure the SMS is working effectively, operators of the MHF should carry out periodic checks on a wide range of activities at the facilities. Some of these include:

- a) isolation procedures;
- b) work procedures;
- c) location and condition of safety equipment;
- d) personnel training;
- e) fire fighting/rescue systems;
- f) first aid/medical equipment;
- g) materials leaks and releases;
- h) accidents/incidents records;
- i) personal protective equipment;
- j) locked open/locked closed valve register;
- k) permit systems;

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- l) interlock override register; and
- m) material safety data sheets.

8.2 Investigating, correcting and preventing non-conformity with SMS requirements

Non-conformity with SMS requirements is a failure to achieve the requirement of the SMS. The employer should have a clear and defined process within the SMS for identifying non-conformities and taking corrective and preventive actions. The key management roles and responsibilities with respect to these activities should be defined. Such a process could draw from the following sources:

- a) incident and accidents;
- b) inspections and observations;
- c) maintenance activities;
- d) audits;
- e) improvement suggestions;
- f) stakeholder feedback; and
- g) hazard reports and risk assessments.

Once an instance of non-conformity is identified it should be investigated to determine the cause and the best solutions for remedying the situation can be planned and implemented, which should include:

- a) mitigation;
- b) correction of the situation;
- c) elimination of causes;
- d) prevention of recurrence;
- e) actions to be consistent with nature and scale of the non-conformity;
- f) systematic follow-up of the effectiveness of corrections; and
- g) related documentation and training adjustments implemented.

8.3 Audits

In general there are three types of audit that may be utilised by the MHF. These are first, second and third party audits.

First party audits (also described as “self-audits”) are carried out internally by employees and are based on assessing compliance of the SMS against the policies and standards of the facility. This should include assessing actual practice for compliance with the SMS. Second party audits are carried out by organisations on their suppliers. Third party audits are carried out by external agencies such as regulators or certification bodies and are completely independent of the facility.

This section addresses first party audits.

The employer should consider incorporating the following key features into their SMS audit regime:

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- a) the audit tool chosen by the employer will, ideally be the same as that chosen for the early audit of the SMS (see under the heading “Planning strategies for a robust SMS”) or be a tool influenced by the lessons of that earlier audit;
- b) audit principles and systems should allow benchmarking of SMS performance over time or across operations;
- c) the results of previous audits should be considered in determining audit frequency;
- d) timely communication of audit requirements to all persons within the MHF;
- e) thorough planning of resources needed to conduct the auditing, including:
- f) availability and timing of meetings with staff who need to be interviewed as part of the auditing process;
- g) access to records, SMS information and data; and
- h) access to areas of the MHF for on-site observations.
- i) provision of training for auditors that addresses items such as auditing processes, use of the audit tool and process and system knowledge;
- j) support for audit documentation and communicating findings, for example:
- k) provision of audit report templates, audit schedules, corrective and preventive action reports, action tracking registers; and
- l) forums for the communication and review of audit findings.

Auditing of the SMS plays a valuable role. It enables the presentation of objective and factual evidence to senior management from system review and improvement activities. The value that audits bring in improving the SMS should be continually emphasised.

9 Management review

This activity enables the closure of the continual improvement loop. The management review process should:

- a) identify the safety critical systems and operational processes and their continued suitability;
- b) assess system and operational control performance; and
- c) review the MHF safety policy for adequacy in light of risk management activities, operational change and system improvement.

The intention of the reviews is for management with executive responsibility for the MHF and the SMS to confirm the continuing suitability and effectiveness of the management system.

A number of key inputs and outputs can be identified as being crucial to the successful completion of the management review process. Reviews should be carried out at least annually. Inputs for the management review process should include:

- a) follow up actions from previous management reviews;
- b) performance levels compared against established performance standards and the major accident prevention policy;
- c) implementation of the safety management system based on audit results;
- d) monitoring results;
- e) incident investigations;
- f) recommendations arising from audit reports on specific elements of the SMS;

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- g) recommendations arising from the regular inspection program;
- h) training needs assessments;
- i) monitoring of safety critical controls;
- j) employee suggestions;
- k) new advice on MHF hazards and risks; and
- l) legislative change.

Outputs for the management review process should be demonstrable and include decisions and actions on:

- a) improvement of the effectiveness of the SMS and its processes;
- b) improvement of incident controls and major accident prevention; and
- c) resources required to support required actions.

Management review becomes the process that collects data and makes decisions with respect to the SMS and key safety critical controls. It provides the employer with formal and systematic opportunities to learn about the effectiveness of the systems in place. Action plans that reflect lessons learned provide a meaningful and effective basis for continual improvement of the SMS.

Summary of key features of a high quality SMS

- a) the necessary performance of each adopted control measure is clearly defined;
- b) adopted control measures are inspected, tested and maintained under the SMS;
- c) performance of the control measures is monitored and reviewed against the defined indicators;
- d) the SMS manages corrective actions to address individual deficiencies or failures in the control measures and to address long-term performance;
- e) employees are informed, educated and trained as necessary to ensure control measures are operated, tested, maintained and repaired correctly;
- f) the SMS provides a reliable process for prompting review and revision of control measures if there are changes to the facility or to the state of knowledge of hazards or of associated control measures;
- g) any control measures adopted are able to function effectively, do not conflict with or compromise other control measures, and this is not adversely affected by facility or control measure changes; and
- h) the SMS clearly and unambiguously defines what activities are needed to ensure safe operation, when these activities should take place, and who should carry them out.

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Appendix A – Part one

Regulation 9.53 - Emergency procedures requirements for major hazard facilities

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

On-site emergency procedures

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

Off-site emergency procedures

1. The name, location and street address of, and the nature of the operations at, the major hazard facility.

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

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

Appendix A – Part 2

Example emergency plan objectives and performance standards

Objectives

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

Employees will be involved in setting, training and testing performance standards for their own roles in emergency response in order to ensure arrangements are workable.

Standards

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

Authorized by:
Chairman of the Board

Dhyaa Abdulla