



Mining & Quarrying
OCCUPATIONAL HEALTH &
SAFETY COMMITTEE

Workplace Emergency Plans Guide

Promoting Work Health and Safety in the Workplace

The South Australian Mining and Quarrying Occupational Health and Safety Committee

Promoting Work Health and Safety in the Workplace

This workplace industry safety resource is developed and fully funded by the Mining and Quarrying Occupational Health and Safety Committee (MAQOHSC).

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Emergency Plans

AIM

The aim of this guidance material is to provide mine/quarry operators with practical guidance on how to develop and maintain an effective emergency plan to meet the requirements under the South Australian WHS Regulations 2012.

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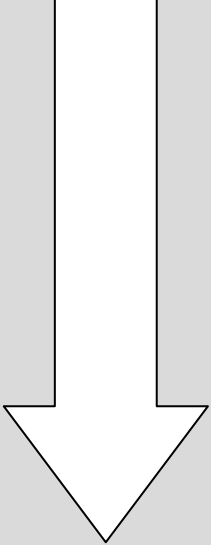
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Introduction

An emergency plan enables a mine/quarry operator to respond effectively and re-establish control of hazards in an emergency. The same principles could be used to manage other events, such as damage to property or the environment.

The emergency planning process may be described as a series of considerations the mine/quarry operator asks in order to develop an emergency plan that satisfies both site safety requirements and legislative obligations. This may include:

Emergency planning process considerations	
What situations could escalate into an emergency at your site or nearby that involve risks to the health, safety or welfare of workers or other people?	
How you will respond to each of these emergencies?	
What resources will you need to respond to the identified emergencies?	
Who do you communicate/consult with internally and externally to organise the emergency response plan? How will the communication/consultation be carried out?	
What training, instruction and information must be given workers and other people?	
What is to be written in the emergency plan for the mine/quarry and other related documents?	
How is the emergency plan to be tested, audited and reviewed to maintain it and to ensure there is an appropriate response should an emergency occurs?	

More specifically, emergency planning involves identifying emergency scenarios that could occur at your site/s and then risk-assessing the potential hazards and consequences of those scenarios in order to identify effective response and controls. The purpose of emergency planning is to help prepare your workers to respond to such emergencies and to allow the mine/quarry to effectively regain control of all hazards.

1. What is an Emergency Plan?

An emergency plan details the response procedures and control measures that are essential for effective and timely management of an emergency situation at a mine/quarry that involve a serious risk of injury or illness. Prompt action and advance preparation can help save lives and protect financial investments in the event of emergencies. An emergency plan ensures that all persons are prepared physically and mentally to respond and control an emergency by helping to determine the following:

- what precautions would minimize the effects of an emergency, should one occur;
- what immediate actions personnel should take to contain an emergency;
- whether workers have the competency necessary to carry out the procedures outlined within the emergency plan;
- who will assume temporary command of the emergency effort;
- who is in charge of which parts of the emergency operation;
- what kinds of external emergency services are available to sustain rescue actions;

- how key personnel will obtain information and assess reports to make critical decisions; and
- what media relations procedures are necessary in the event of an emergency?

The emergency plan must address all aspects of emergency response including ensuring:

- the establishment of a system that enables all persons at the mine/quarry to be promptly located;
- the provision of adequate rescue equipment; and
- that an adequate number of persons trained in the use of rescue equipment are available (either on-site or on call) if a person is working at the mine/quarry.

An emergency plan can be applied to a single mine/quarry or to a group of mines/quarries, so long as it successfully addresses the unique conditions and requirements of each mine/quarry site. Emergency response procedures help to organise and prepare personnel for emergency situations by:

- assisting personnel in responding quickly and effectively to an emergency;
- providing a common set of practices that govern the activities needed for an orderly response;
- outlining strategies for early containment and control of an emergency; and
- establishing a common set of rules for training all emergency response personnel.

The emergency plan must be documented and set out and expressed in a way that is easily read and understood by all persons who use it.

2. Who has duties for an emergency plan?

All persons who conduct a business or undertaking (PCBUs) at a mine/quarry have the duty to ensure that an emergency plan is prepared, implemented and maintained for their workplace.

A mine operator has additional requirements in relation to the development of an emergency plan for the mine/quarry. These specific requirements are detailed in schedule 22 of the South Australian WHS Regulations 2012.

Note: An extract of schedule 22 is included in Appendix A

3. Consultation

Throughout the development and implementation of the emergency plan, the mine/quarry operator must consult with their workers (inclusive of employees, contractors, labor hire personnel, etc.) and other PCBU's (contractors) at the mine / quarry.

The South Australian WHS Regulations 2012 also require that in preparing the emergency plan, the mine/quarry operator to consult with:

- a) the primary emergency services that have responsibility for the area in which the mine/quarry is located; and
- b) any other emergency service organisation (this may include MFS, CFS, SES, SA Ambulance) including any mines rescue organisation, that may be required to participate in implementing the emergency plan; and
- c) in relation to principal mining hazards that may cause or contribute to an incident that may adversely affect the health and safety of persons in the area surrounding the mine/quarry (local community) – the local authority for the area in which the mine is located.

When consulting with the local emergency services, the following should be discussed:

- what resources the local emergency services can contribute to when responding to emergencies at the mine/quarry;
- what resources the mine/quarry might need to ensure that the equipment used by the local emergency services is able to function effectively; and
- how long it will take the emergency services to respond to any emergency at the mine/quarry.

4. Developing the Emergency Plan

In developing the emergency plan some basic factors must be considered. As stated above, an emergency plan can be applied to a single mine/quarry or to multiple mines/quarries so long as it addresses the unique conditions or requirements of those sites. This includes taking into consideration the type of operation, unique site hazards, the range and number of workers, training of workers, geography of the surrounding area, remoteness of the operation and the available equipment and services.

The emergency plan must be written in plain English with critical information well indexed and easily referenced. The emergency plan should contain relevant information relating to the site. While these elements may vary from site to site, they should cover the following generic items:

- Mine/quarry information;
- Plans and drawings;
- Risk management;
- Emergency equipment and facilities;
- How to locate all personnel;
- Emergency Assembly Points;
- First aid requirements;
- Training;
- Incident control;
- Communication;
- Contact lists;
- Securing of the site;
- Procedures for controlling specific hazards;
- Testing of the emergency plan; and
- Record keeping.

4.1. Mine Information

The following basic information should be included in the emergency plan:

- Name of the mine/quarry;
- The name of the PCBU;
- Location in relation to the nearest town;
- Location of the property (GPS Location);
- Mailing address and contact phone numbers (as well as fax and email details if applicable);
- Mining lease details;
- Name of the site senior manager;
- Type of operation (e.g. underground, surface, quarry, exploration, etc.); and

- The number of workers on site, including management, administration and contractors.

The emergency plan should provide clear written directions to the site, including maps/plans that can be used for navigation. This is particularly important in remote areas. In addition the plan should identify locations for possible transfer sites for mine/quarry emergency transport vehicles to ambulances.

4.2. Plans and Drawings

The emergency plan will need to include a documented set of site plans, which details as a minimum:

- Emergency facilities, including:
 - Emergency assembly points;
 - First aid kits and or first aid rooms;
 - Fire extinguishers and hydrants;
 - Other relevant emergency equipment.
- Site services (e.g. electrical and gas) particularly underground services and power lines;
- Location of buildings and structures (e.g. offices, workshops and fixed plant)
- Old mine/quarry workings; and
- Location of any hazardous substances stored on site.

4.3. Risk Management

The emergency plan must use a risk management process and record the risk assessments undertaken to identify the reasonably foreseeable emergencies or potential emergency scenarios. It must also record the identified and implemented controls that ensure the mine/quarry can effectively respond to the emergency.

A good starting point for identifying foreseeable and potential emergency scenarios is to look at:

- Current existing risk assessments and your risk register;
- Records of previous incidents; and
- Incident investigations.

Below is a list of potential emergency scenarios that may present at your site. Note this list is not exhaustive and is a guide only.

Natural disasters

- Major Earthquake / seismic activity
- Severe animal / insect infestation (e.g. bees, snakes, spiders, etc)
- Cyclone
- Extreme weather events (dust, electrical)
- Flood
- Bush fire

Off-site Incidents

- Light vehicle accident
- Bus accident

- Heavy vehicle accident

On-site Incidents - Surface

- Light vehicle accident
- Heavy vehicle accident
- Heavy vehicle v Light vehicle accident
- Mobile plant / equipment incident
- Hazardous chemicals release/spill
- Fixed plant incident
- Conveyor incident
- Bulk LPG leak/fire/explosion
- Bulk fuel leak/spill/fire/explosion
- Explosive magazine fire/explosion
- Fall/collapse into old workings
- Tails dam wall failure
- Building fire
- Working at heights incident
- Confined space incident
- Electrical incident (e.g. electric shock, electrical fire)
- Tyre fire/explosion
- Plant fire
- Inrush into open pit
- Pit wall/ramp failure
- Bomb or other external threat
- Others as applicable

On-site Incidents – Underground

- Rockfall/rock-burst or ground collapse
- Underground mobile equipment (UGME) accident
- Light vehicle accident
- UGME v LV accident
- Underground fire
- Underground explosion/air blast
- Sulphide dust explosions
- Trapped persons
- Trapped UGME
- Stope failure
- Flooding/inrush
- Others as applicable

When conducting risk assessments for the potential emergency scenarios, it is worth taking into account the following factors;

- Local patterns of extreme weather events;
- Your proximity to flood plains, seismic faults, dams water tables, etc;

- The condition of the roads leading to and from your site – are they ever impassable due to heavy rain?
- For isolated/remote sites – what is the availability of emergency services, fire, ambulance and rescue;
- Typical drive time for workers to travel to and from work;
- How reliable is phone coverage/service?

4.4. Emergency Equipment and Facilities

The equipment/facilities required to deal with emergencies should have been identified from the risk assessments. The location of your mine/quarry will have a great deal to do with the emergency resources available and the time required for them to respond.

A list of the actual equipment/facilities available on site must be recorded in the emergency plan. This record should also include other sources of equipment that may be needed in the event of an emergency. Examples of equipment/facilities include the following:

- First aid supplies;
- Fire extinguishers, hydrants, pumps, tanks, etc;
- Rescue equipment (if applicable);
- Equipment that can be assigned to an emergency task (e.g. a bulldozer or excavator can be used to in an emergency to dam or dyke a flood, a water cart for firefighting);
- Industrial ambulance or emergency transport vehicle;
- Emergency assembly points;
- External agencies that can source specific equipment; and
- External agencies that can provide specific services.

4.5. First Aid Supplies

Some of the most critical equipment required on site is adequate and appropriate first aid equipment and facilities. This equipment is essential for response to any illness or injury that persons may sustain. To ensure first aid equipment is adequate and appropriate for your site:

- Identify hazards which may cause an injury or illness (also consider workers' existing illnesses, e.g. diabetes, asthma, epilepsy, heart conditions, etc);
- Assess the risk based on the type and extent of injuries or illnesses that may occur;
- Decide on the appropriate first aid equipment and facilities. Standard or generic first aid kits may need to be added to or modified to ensure they meet the needs of the mine/quarry;
- Obtain the identified first aid first aid supplies and facilities; and
- Monitor and review the first aid equipment, facilities and services to ensure they continue to meet your requirements.

Note: *Additional information relating to first aid equipment, facilities and first aid training requirements is available in the Code of Practice – First Aid in the Workplace, which is available from the SafeWork SA website.*

4.6. Training

All persons working at the mine/quarry need to be trained in the use and location of the emergency management plan. In addition, once you have completed the risk management phase and have

identified the emergency resources/equipment and first aid requirements, you will have also identified that members of your workforce will require additional training in the use of the emergency response equipment and in first aid.

The levels of training and the number of workers that will require this training will depend on the size, nature, complexity and location of your mine/quarry.

This can vary from having a fully functioning emergency response team for a large remote mine/quarry to having workers trained in the use of fire extinguishers and provided first aid training.

When considering the training requirements, it is worth taking into account the following questions:

- Who is to be trained?
- Who will provide the training?
- What training is required for all workers?
- What specialised training is required and for whom?
- What training is required for contractors?
- What training is required for visitors and others?
- How can external emergency services be involved in the training?
- At what intervals (time frames) is training and refresher training to be provided?

4.7. Incident Control

The emergency plan must identify:

- First steps, including who to call, how to call and when to call;
- Who is responsible for implementing the emergency plan;
- Who will be in charge of controlling the emergency response;
- What communication systems are to be used during the emergency response (e.g. two-way radio, mobile phone, satellite phone, etc);
- List of tasks that need to be assigned to help manage the emergency; and
- Instructions on how to carry out those tasks.

4.8. Communication

Effective communication is often the hardest element to initiate and sustain. The emergency plan should outline the communication processes needed to ensure workers, along with external agencies, are contacted and information transferred.

The following should be considered:

- Establish a list of emergency contacts and display this list near phones and radios;
- How will workers be accounted for during an emergency and where will they assemble;
- Assign a dedicated emergency frequency for radios;
- Find best coverage on site for mobile and satellite phones;
- Always have back up communications;
- Have spare batteries and power sources;
- Have regular meetings to keep workers informed of the emergency progress;

- Always have someone on site available for contact; don't leave phones and radios unattended;
- Identify how to control communications leaving site and persons seeking information from the site: And
- How to communicate the "all clear" when it is safe to return to normal operations.

4.9. Contact Lists

Smaller mines/quarries usually have limited emergency response resources. As a result, on becoming aware of an emergency, they should contact external help as soon as possible. The persons or agencies required to be contacted should be determined through the risk assessment.

An emergency plan should include a stand-alone page or pages with all contact information for persons or agencies that may need to be contacted during an emergency.

The following are some examples of contacts that should be included, but this is by no means an exhaustive list:

External resources and contacts

Assistance on offer

Company management	Advise and approvals for resources
Emergency services <ul style="list-style-type: none"> • Police • Ambulance • MFS • CFS • SES • Royal Flying Doctor 	Emergency response a core function and well resourced.
Company doctor	Medical advice
Neighbouring mines/quarries and other businesses	General assistance, enact any MOU's for mutual assistance
Government bodies	Legal advice/obligations and assistance
Local Councils	Legal advice/obligations and assistance
Equipment suppliers	Specialised rescue equipment
Site contractors management	Advice and assistance
Consultants and equipment specialist	Specific technical advise

Larger sites might need to include contact details of onsite workers or key locations. As noted above, contact details should be documented, kept as part of the emergency plan and displayed near phones and radios.

4.10. Securing the Site

In the event of an emergency, external personnel may try to gain access to the site. These persons can obstruct the progress of the emergency response, and may even make the situation worse or put themselves in danger. Their effect on the situation needs to be minimised. The emergency plan should

identify how the site is to be secured and how the movement of persons and equipment on and off site will be controlled.

Unauthorised communications leaving the site or external inquires coming in, should be controlled and kept secure.

4.11. Additional Procedures

Your site may need to have specific procedures for controlling site specific hazards (such as cyanide and sulphuric acid), those documents will need to be included or referenced by the emergency plan.

4.12. Testing of the Emergency Plan

The emergency plan must be regularly tested to ensure its effectiveness. Tests should include desk top as well as drills with all affected persons. In some cases, evacuation drills will be required to examine persons' movements, actions and response times.

Exercise debriefing should take place to analyse the effectiveness of the ERP. Any identified additional controls or changes to controls should be undertaken as soon as practicable after the exercise.

At a minimum testing of the emergency plan must occur at least once per year.

Note: *Evacuating persons from the site for blasting purposes does not equate to a drill.*

4.13. Record Keeping

Documentation that either supports the emergency response plan or is required by the plan must be retained on file. These records allow an organisation to show:

- how the emergency response plan has been developed,
- evidence of testing and verifying the effectiveness of plans, and
- the emergency response plans resources are being maintained.

Therefore, the following records should be kept on site:

- All risk assessments,
- Training (first aid, operational tasks and emergency response),
- Emergency response and first aid equipment checks,
- Implementation of emergency procedures (if applicable),
- Incident debriefing (if applicable), and
- Operational plans and drawings.

Appendix A

Schedule 22—Matters to be included in emergency plan for a mine

Regulation 664

1—Site and hazard detail

- 1.1 The location of the mine, including its street address and the nearest intersection (if any). Note—sufficient detail must be provided to enable a person not familiar with the site to find it.
- 1.2 The current mine survey plan required under Chapter 10 Part 5.
- 1.3 A brief description of the nature of the mine and mining operations.
- 1.4 The maximum number of persons, including workers, likely to be present at the mine on a normal working day.
- 1.5 The emergency planning assumptions for different emergencies, and likely areas affected.
- 1.6 The protective resources available to control an incident that could result in an emergency.
- 1.7 The emergency response procedures, including procedures for isolating areas of the mine in an emergency.
- 1.8 The infrastructure likely to be affected by an emergency.

2—Command structure and site personnel

- 2.1 The command philosophy and structure to be activated in an emergency, so that it is clear what actions will be taken, who will take these actions and how, when and where they will be taken.
- 2.2 Details of the person who can clarify the content of the emergency plan if necessary.
- 2.3 The contact details of, and the way to contact, the persons at the mine responsible for liaising with emergency services.
- 2.4 A list of 24 hour emergency contacts.
- 2.5 Arrangements for assisting emergency services.

3—Notifications

- 3.1 In the event of the occurrence of a notifiable incident or an event that could reasonably be expected to lead to a notifiable incident, procedures for notifying—
 - (a) any person whose health or safety may be affected, even if—
 - (i) the person is located underground; or
 - (ii) there is no electrical power that can be used for the notification; and
 - (b) the emergency services in circumstances where emergency services are required.
- 3.2 On-site and off-site warning systems.
- 3.3 Contact details for emergency services and other support services that can assist in providing resources and implementing evacuation plans in an emergency.
- 3.4 On-site communication systems.

4—Resources and equipment

- 4.1 On-site emergency resources, including—
 - (a) first aid equipment, facilities, services and personnel; and
 - (b) emergency equipment and personnel; and
 - (c) gas detectors, wind velocity detectors, sand, lime, neutralising agents, absorbents, spill bins and decontamination equipment.

- 4.2 Off-site emergency resources, including arrangements for obtaining additional external resources (specific to the likely incidents), including mines rescue services, as necessary.
- 4.3 Arrangements for mines rescue that state the following:
 - (a) the minimum mines rescue training to be provided;
 - (b) any arrangements for the mine operator and mine operators of mines in the vicinity to assist each other in an emergency;
 - (c) how inertisation equipment is to be used;
 - (d) the procedures to be followed in carrying out mines rescue.
- 4.4 For an underground mine, a means of communication between the surface of the mine and any underground area of the mine where persons are located, that is effective even if there is no electrical connection between the surface and the relevant underground area.

5—Procedures

- 5.1 Procedures for the safe evacuation of, and accounting for, all persons at the mine.
- 5.2 Procedures and control points for utilities, including gas, water and electricity.
- 5.3 Procedures in the event of the ventilation system at the mine failing totally or for more than 30 minutes.

FURTHER ASSISTANCE

MAQOHSC Work Health and Safety Specialists are available to provide further advice and assistance on all Work Health and Safety matters.

MAQOHSC Work Health and Safety Specialists are able to be contacted via our website at www.maqohsc.sa.gov.au or email maqohsc@sa.gov.au.

ADDITIONAL INFORMATION

Work Health and Safety Legislation, Codes of Practice, fact sheets, Health and Safety Representatives (HSR) information and guides can be found at the following websites:

SafeWork SA – www.safework.sa.gov.au or call 1300 365 255

Safe Work Australia – www.safeworkaustralia.gov.au or call 1300 551 832

REFERENCES

(SA) Work Health & Safety Act 2012,

(SA) Work Health & Safety Regulations 2012,

Code of Practice – First Aid in the Workplace

Safe Work Australia – Draft Code of Practice, Emergency Response at Australian Mines,

QLD Guidance Note QGN 15 – Emergency preparedness for small mines and quarries

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