

**GUIDELINE FOR THE COMPILATION OF A MANDATORY CODE OF PRACTICE FOR
RISK-BASED EMERGENCY CARE ON A MINE**

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I DAVID MSIZA, Chief Inspector of Mines, under section 49(6) of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and after consultation with the Council, hereby issues the guideline for risk based emergency care on a mine in terms of the Mine Health and Safety Act, as set out in the Schedule.

(Signed)

DAVID MSIZA
Chief Inspector of Mines

SCHEDULE

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**DEPARTMENT OF MINERAL RESOURCES
MINE HEALTH AND SAFETY INSPECTORATE**

**GUIDELINE FOR THE COMPILATION OF A MANDATORY CODE OF PRACTICE FOR
RISK-BASED EMERGENCY CARE ON A MINE**

(Signed)

CHIEF INSPECTOR OF MINES



mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

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PART A: THE GUIDELINE

1 Foreword

- 1.1 The numerous risks associated with work at a mine may lead to various incidents, ranging from relatively minor to major injuries and disasters at a work site and which injuries may lead to complications if the required emergency care is not rendered to the injured persons timely.
- 1.2 The aim of this guideline is to provide a framework to assist the employer of every mine to prepare a risk based Code of Practice (**COP**) on emergency care on a mine.

2 Legal status of guidelines and Codes of Practice

In accordance with section 9(2) of the **MHSA**, an employer must prepare and implement a **COP** on any matter affecting the health or safety of employees and other persons who may be directly affected by activities at the mines if the Chief Inspector of Mines requires it. These **COPs** must comply with any relevant guideline issued by the Chief Inspector of Mines (section 9(3)). Failure by the employer to prepare or implement a **COP** in compliance with this guideline is a breach of the **MHSA**.

3 The objective of the risk-based emergency care guideline

This guideline has been developed to assist employers in achieving the objectives of ensuring the provision of appropriate emergency care at any working site determined in accordance with the relevant risks at the working site, which objectives are to:

- 3.1 outline the competencies required to render risk based emergency care at a working site;
- 3.2 minimise any complications that may result from any, accident or incident that adversely affects the health or safety of any person at the mine; and
- 3.3 ensure that any injured persons are stabilised, transferred, transported and received as soon as practicable by appropriately trained, qualified and skilled personnel, from first aiders to the most advanced emergency care personnel.

4 Definitions and acronyms

'COP' means Code of Practice.

'Emergency' means a situation, event or set of circumstances at a mine that could threaten the health or safety of any persons at the mine and which requires immediate remedial action.

'Emergency Care' means all immediate and appropriate medical care required by any persons injured or experiencing any medical emergency at the mine, ranging from basic first aid to the most advanced emergency medical care.

'EMS' means Emergency Medical Services.

'Health Care Facility' means a hospital, medical clinic or doctor's surgery that has the capability of providing emergency medical care.

'MHSA' means Mine Health and Safety Act, Act 29 of 1996, as amended.

'Medical Emergency' means an injury or illness that is acute and poses an immediate risk to a person's life or long term health.

'Response time' means the time it takes for EMS to respond to the emergency (= EMS response time to the operation site plus the time to the side of the patient).

'FA' means Functional Assessment.

5 Scope

This guideline:

- 5.1 Should be read in conjunction with the following guidelines:
 - 5.1.1 Guideline for the Compilation of a Mandatory Code of Practice for Emergency Preparedness and Response. (DMR reference no 16/3/2/1-A5).
 - 5.1.2 Guideline for the Compilation of a Mandatory Code of Practice for Cyanide Management (DMR reference no 16/3/2/4-A4).
- 5.3 Apply to all emergency care required at the mine.
- 5.4 Addresses areas of emergency care required in case of an injury or any medical emergency, from basic first aid to the most advanced emergency medical care rendered.

6 Members of task committee

This guideline was prepared by Members of the Mining Occupational Health Advisory Committee which consisted of:

Dr. L. Ndelu	(Chairperson)
Ms. F B Senabe	(State)
Ms. N O Masekoa	(State)
Ms. M Lazenby	(State)
Ms. A. Van der Merwe	(State)
Dr. K Baloyi	(Employers)
Dr. M R Hansia	(Employers)
Dr. Z. Eloff	(Employers)
Ms. P Mboniswa	(Labour)
Mr. A. Letshele	(Labour)
List of Experts:	
Mr. J W Johnson	(Expert)
Dr. K. Naidoo	(Anglo American)
Dr. D. van Tonder	(AngloGold Ashanti)

PART B: AUTHOR'S GUIDE

- 1 The **COP** must, where possible, follow the sequence laid out in **Part C 'Format and Content of the mandatory COP'**. The pages as well as the chapters and sections must be numbered to facilitate cross-reference. Wording must be unambiguous and concise.
- 2 It should be indicated in the **COP** and on each annex to the **COP** whether:
 - 2.1 The annex that forms part of the guideline must be complied with; or
 - 2.2 Incorporated in the **COP** or whether aspects thereof must be complied with or incorporated in the **COP**, or
 - 2.3 The annex is merely attached as information for consideration in the preparation of the **COP** (ie compliance is discretionary).
- 3 When annexes are used the numbering should be preceded by the letter allocated to that particular annex and the numbering should start at one (1) again. (eg 1, 2, 3 A1, A2, A3).
- 4 Whenever possible illustrations, tables, graphs and the like should be used to avoid long descriptions and/or explanations.

- 5 When reference has been made in the text to publications or reports, references to these sources must be included in the text as footnotes or side notes as well as in a separate bibliography.

**PART C:
FORMAT AND CONTENT OF THE MANDATORY CODE OF PRACTICE**

1 Title page

DMR 16/3/2/3-A5

The title page must include the following:

- 1.1 Name of mine;
- 1.2 The heading: 'Mandatory Code of Practice for risk based Emergency Medical Care on a Mine';
- 1.3 A statement to the effect that the **COP** was drawn up in accordance with this guideline **DMR 16/3/2/3-A5** issued by the Chief Inspector of Mines;
- 1.4 The mine's reference number for the **COP**;
- 1.5 Effective date of the **COP**; and
- 1.6 Revision dates.

2 Table of contents

The **COP** must have a comprehensive table of contents.

3 Status of Mandatory Code of Practice

This section must contain statements to the effect that:

- 3.1 The mandatory **COP** was drawn up in accordance with Guideline **DMR 16/3/2/3-A5** issued by the Chief Inspector of Mines.
- 3.2 This is a mandatory **COP** in terms of sections 9(2) and (3) of the **MHSA**.
- 3.3 The **COP** may be used in an incident/accident investigation/inquiry to ascertain compliance and also to establish whether the **COP** is effective and fit for purpose.
- 3.4 The **COP** supersedes all previous relevant **COPs**.
- 3.5 All managerial instructions or recommended procedures (voluntary **COPs**) and standards on the relevant topics must comply with the **COP** and must be reviewed to assure compliance.

4 Members of drafting committee

- 4.1 In terms of section 9(4) of the **MHSA** the employer must consult with the health and safety committee on the preparation, implementation or revision of any **COP**.
- 4.2 It is recommended that the employer should, after consultation with the employees in terms of the **MHSA**, appoint a committee responsible for the drafting of the **COP**.
- 4.3 The members of the drafting committee assisting the employer in drafting the **COP** should be listed giving their full names, designations, affiliations and experience. This committee should include competent persons sufficient in number to effectively draft the **COP**.

5 General information

The general information relating to the mine must be stated in this paragraph.

The following minimum information must be provided:

- 5.1 a brief description of the mine and its location;
- 5.2 the commodities produced;
- 5.3 the mining methods/mineral excavation processes taking care to identify the potential situation and/or sources that could give rise to a medical emergency;
- 5.4 the unique features of the mine that have a bearing on the **COP** must be set out and cross referenced to the risk assessment conducted; and
- 5.5 other relevant **COPs**.

6 Terms and definitions and acronyms

Any word, phrase or term of which the meaning is not absolutely clear or which will have a specific meaning assigned to it in the **COP**, must be clearly defined. Existing and/or known definitions should be used as far as possible. The drafting committee should avoid jargon and abbreviations that are not in common use or that have not been defined. The definitions section should also include acronyms and technical terms used.

7 Risk management

- 7.1 Section 11 of the **MHSA** requires the employer to identify hazards, assess the health and safety risks to which employees may be exposed while they are at work, record the significant hazards identified and risk assessed. The **COP** must address how the significant risks identified in the risk assessment process must be dealt with, having regard to the requirements of sections 11(2) and (3) that, as far as reasonably practicable, attempts should first be made to eliminate the risk, thereafter to control the risk at source, thereafter to minimise the risk and thereafter, insofar as the risk remains, to provide personal protective equipment and to institute a program to monitor the risk.
- 7.2 To assist the employer with the hazard identification and risk assessment all possible relevant information such as accident statistics, locality of mine and emergency services, ergonomic studies, research reports, manufacturers' specifications, approvals, design criteria and performance figures for all relevant equipment should be obtained and/or considered.
- 7.3 In addition to the periodic review required by section 11(4) of the **MHSA**, the **COP** should be reviewed and updated after every serious emergency, or if significant changes are introduced to procedures, mining and ventilation layouts, mining methods, plant or equipment and material.

8 Aspects to be addressed in the Code of Practice

The **COP** must set out how significant risks identified and assessed in terms of the risk assessment process referred to in paragraph 7.1, will be addressed. The **COP** must cover at least the aspects set out below:

- 8.1 Determining emergency care requirements for each working site:

The **COP** should set out a process for determining the emergency care requirements for each work site. In order to provide appropriate emergency medical care this process should entail at least the following steps:

- 8.1.1 Risk rating of the work site

The employer should use a risk assessment process to classify each work site into low, medium or high risk for employees requiring emergency care. As the risk rating increases so do the requirements

for emergency care services in terms of the number and qualifications of first aid providers and the type and quantities of first aid equipment and other supplies.

8.1.2 Calculating the response time and classifying the work sites

In order to calculate the response time to the emergency and classify work sites in terms of response time, the **COP** should require that the following steps be taken:

Step 1: Determine the EMS response time to the operation site.

EMS response time is the time from calling EMS to the time that the EMS arrives on the operation site.

Step 2: Determine the time to the side of the patient.

The time it would take for the EMS staff to get from the point of arrival on site to the side of the patient to start administering treatment. This will depend on several local factors such as opencast vs underground mining work site, depth/level of work site underground, size of surface operation, etc.

Step 3: Response time to the emergency = EMS response time to the operation site plus the time to the side of the patient.

Step 4: Classify work sites in terms of response time.

- Close Work Site = Time to site < 30 minutes
- Distant Work Site = Time to site 30-60 minutes
- Isolated Work Site = Time to site > 60 minutes

8.1.3 Establishing First Aid requirements

Once each working site has been appropriately rated in terms of risks, and response time established, the first aid requirements must be determined in accordance with the following:

8.1.3.1 number of employees at the work site per shift;

8.1.3.2 level of first aid training that could be required by persons having to administer first aid;

8.1.3.3 first aid equipment (pack) as illustrated in table in Annexure C; and


8.1.3.4 special risks, eg cyanide poisoning, pregnancy, etc.

8.1.4 Determining appropriate First Aid Competencies

8.1.4.1 determine number of first aiders that need to be trained to ensure appropriate emergency care can be provided at all times.

8.1.4.2 determine the appropriate levels of first aid competencies that could be required at each work site having regard to the different levels of competencies in Table 1 below.

**TABLE 1:
Mining industry First Aid Training levels in relation to applicable National
Qualifications Framework (NQF) registered unit standards**

LEVEL RANKING	NQF STANDARDS	COMPETENCIES
<p align="center">Most competent</p> 	<p>Competencies to be customised to the mining industry and aligned to the first aid standards of the Sectoral Education and Training Authority (SETA), as established under the Skills Development Act 97 of 1998.</p>	
	<p>NQF Level 3 First Aid Training</p>	<ol style="list-style-type: none"> 1 Principles of advanced first aid in emergencies. 2 Demonstrate an advanced level of preparedness to deal with sudden illness or emergency. 3 Assess and manage an emergency scene/disaster. 4 Anatomy and macro physiology of the human body. 5 Disorders and diseases. 6 Primary first aid support for adults, children and infants. 7 Causes of shock and emergency treatment. <p>First Aid for cyanide poisoning (Additional training where the risk exists/applies)</p> <ol style="list-style-type: none"> 1 Preparation required to administer first aid for cyanide poisoning. 2 First Aid for cyanide poisoning. 3 Recording and reporting duties. 4 Final duties.
	<p>NQF Level 2 First Aid Training</p>	<ol style="list-style-type: none"> 1 List relevant information from South African Qualifications Authority (SAQA) standards Principles of First Aid. 2 Contents of first aid kit plus maintenance and storage. 3 Emergency scene management. 4 Choking. 5 One-man Cardio-Pulmonary Resuscitation. 6 Recovery position. 7 Control of bleeding. 8 Management of general shock and anaphylaxis. 9 Immobilisation and transport techniques, especially neck & spinal injuries. 10 Head Injuries and levels of unconsciousness. 11 Fractures, dislocations and sprains. 12 Wound management. 13 Burns. 14 Thermal stress especially febrile patient & hyper/hypothermia. 15 Poisons eg common and working site accidental poisoning; overdose: animal/marine/insect/reptile bites and stings. 16 Common illnesses, eg diabetes, epilepsy, asthma, stroke, heart attack. 17 Keep records of incident/accident. 18 Communicated on transferral of injured or ill person. 19 Reported in accordance with current & accepted work site procedures and policies.

	NQF Level 1 First Aid Training	1 Principles of First Aid. 2 Emergency Scene Safety. 3 Elementary Anatomy & physiology. 4 Cardio-Pulmonary Resuscitation (one man). 5 Choking. 6 Severe haemorrhage. 7 Common injuries (wounds; fractures; dislocations; soft tissue injuries; burns; unconsciousness; head injuries; spinal injuries). 8 Common conditions (shock; hyperthermia; poisonous gases). 9 Transport of casualty. 10 Report and transfer of patient.
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Least competent	First Aid Awareness	1 Understanding First Aid. 2 Protection against infections. 3 First Aid and the law. 4 First Aid principles. 5 Assessing the scene. 6 Make area safe. 7 Give emergency aid. 8 Calling for assistance. 9 Head to Toe examination.
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8.1.5 Control of First Aid equipment

The **COP** must set out a procedure to ensure effective control and management of all first aid equipment.

8.2 Ensuring sufficient and appropriated trained first aiders

The **COP** must set out a procedure to ensure that:

- 8.2.1 the first aid training is aligned with levels of first aid competencies that could be required at each work site;
- 8.2.2 sufficient numbers of first aiders are trained and available to ensure appropriate emergency care can be provided at all times;
- 8.2.3 the first aid training provided to employees complies with First Aid unit standards determined by the South African Qualifications Authority and recognised by the Mining Qualifications Authority;
- 8.2.4 the First Aid training is conducted by an accredited service provider and refreshers are conducted at appropriate intervals;
- 8.2.5 the accredited service provider must have a programme to ensure quality control of systems and competencies of trainers, as well as updated training material; and
- 8.2.6 the minimum competencies of first aiders are as set out in Table 1.

8.3 Transfer and transportation arrangements from the mine

If the required level of emergency care is beyond the capabilities of the first aiders and facilities available at the mine, appropriate alternative pre-hospital transfer and transportation arrangements must be in place. In order to ensure that the patient is transferred and transported in accordance with the requirements for the type of emergency care required, the **COP** must set out a procedure to ensure that:

- 8.3.1 where required, transfer agreements with service providers are entered into for transportation and recipients of transfers, such as ambulance services and neighbouring hospitals;

- 8.3.2 the patient is stabilised before transfer, in order to avoid further complications;
 - 8.3.3 any receiving health facility/institution is given adequate prior notice about the transfer and the condition of the patient;
 - 8.3.4 where possible, the patient is informed of the need to be transferred to a health care facility;
 - 8.3.5 the patient's information is appropriately recorded in an accident/incident register; and
 - 8.3.6 follow-up is done to confirm the patient's arrival and acceptance by the receiving health facility/institution.
- 8.4 Information related to emergency care signage

The **COP** must set out a procedure to ensure that emergency care signage is brought to the attention of all persons at a mine, which measures could include the display of appropriate, prominently displayed and clearly visible notices at working sites. In respect of notices and signs, note should be taken of SANS standards 0400 SABS 1186.

PART D: IMPLEMENTATION

1 Implementation plan

- 1.1 The employer must prepare an implementation plan for its **COP** that makes provision for issues such as organisational structures, responsibilities of functionaries and programs and schedules for this **COP** that will enable proper implementation of the **COP**. (A summary of/and a reference to, a comprehensive implementation plan may be included).
- 1.2 Information may be graphically represented to facilitate easy interpretation of the data and to highlight trends for the purpose of risk assessment.

2 Compliance with the Code of Practice

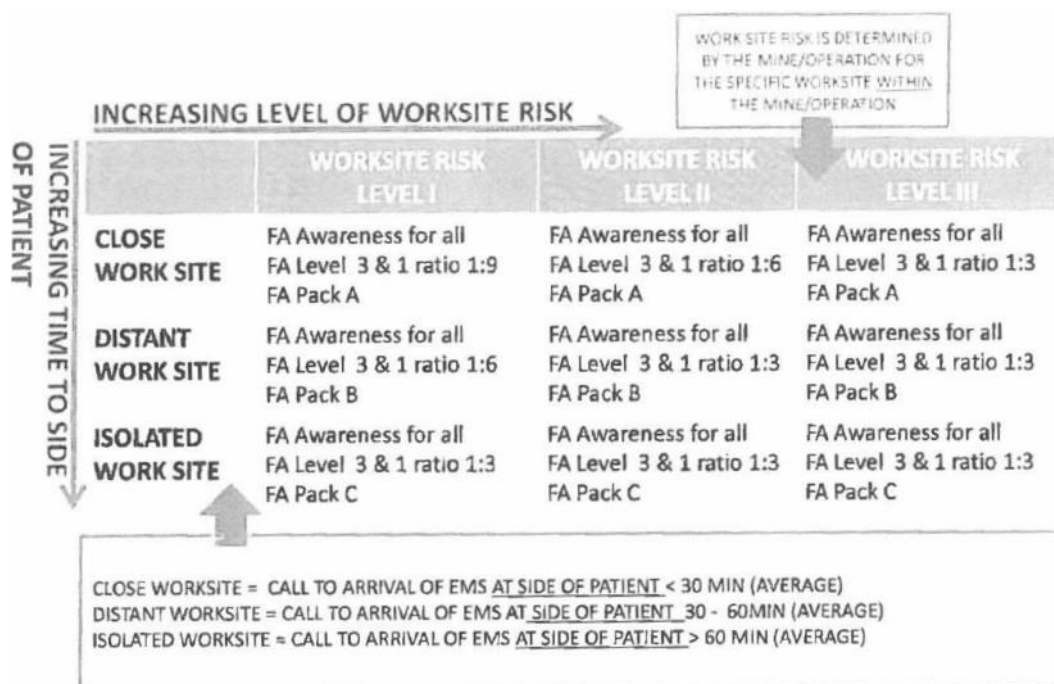
The employer must institute measures for monitoring and ensuring compliance with the **COP**.

3 Access to the Code of Practice and related documents

- 3.1 The employer must ensure that a complete **COP** and related documents are kept readily available at the mine for examination by any affected person.
- 3.2 A registered trade union with members at the mine or where is no such union, a health and safety representative on the mine, or if there is no health and safety representative, an employee representing the employees on the mine, must be provided with a copy on written request to the manager. A register must be kept of such persons or institutions with copies to facilitate updating of such copies.
- 3.3 The employer must ensure that all employees are fully conversant with those sections of the **COP** relevant to their respective areas of responsibility.

**ANNEXURE A:
Table 1A:
Minimum standards to be complied with**

INTEGRATION OF RISK INDICATORS AND MITIGATING FACTORS



**Annexure B:
Table 1B:
Mandatory Minimum competency for inclusion in the training to deal with cyanide poisoning where applicable**

Specific Outcome	Assessment Criteria
Prepare to administer first aid in the event of cyanide poisoning.	<ul style="list-style-type: none"> The administration of first aid in the event of cyanide poisoning and the consequences of non-adherence. The importance of the administering of first aid in the event of cyanide poisoning in terms of the consequences to individuals and the organisation. Explanation of symptoms of cyanide poisoning. Identification of the antidote required for the administration of first aid to treat the different types of cyanide poisoning and the potential effects on the patient. Identification of types of cyanide poisoning, ie inhalation, ingestion absorption through the skin. Hazards and associated risks, pertaining to the administering of first aid in the event of cyanide poisoning. Actions to be taken should hazards and risks be encountered. Identification and equipping of first aid equipment essential for the administering of first aid. Equipment must include: First Aid equipment, personal protective and safety equipment, cyanide antidote, oxygen, Hydrogen cyanide gas monitor, neutralising reagents, Hazchem information, communication equipment. First Aid procedures pertaining to the various forms of cyanide poisoning. Communication with the medical emergency response team. Emergency procedures to be followed in the event of administering of first aid.

	<ul style="list-style-type: none"> Emergency procedures must include: First Aid treatment for cyanide poisoning, entry into confined places, evacuation procedure, spillage neutralising and disposal. Preparation of the patient for treatment in line with operational requirements. Summoning emergency services.
	<ul style="list-style-type: none"> Patient handling and removal from contaminated area. Proper handling of contaminated clothing. Handling and use of Personal protective and safety equipment.
1 Administer first aid.	<ul style="list-style-type: none"> Handling and use of Personal protective and safety equipment. Administration of Cyanide antidote in accordance with prescribed practices. Patient stabilization. Neutralisation and disposal of cyanide spillage as per requirements. Legal and site specific requirements considerations in handling problems.
2 Complete the duties pertaining to the administering of first aid.	<ul style="list-style-type: none"> Handling and use of personal protective and safety equipment. Restocking of the cyanide first aid kit/pack is in line with operational requirements. Housekeeping practices according to plant policy. Recording and reporting of information in line with legal and site specific requirements.

Annexure C:

Table 1C:

Minimum contents of the first aid pack and other equipment

(Must be complied with and maintained as per regulation 24.7 of the MHSa)

Contents of First Aid Packs and other equipment

PACK	CONTENTS
A	10 antiseptic cleaning towelettes, individually packaged. 25 sterile adhesives dressing, individually packaged. 10 10 cm x 10 cm sterile gauze pads, individually packaged. 2 10 cm x 10 cm sterile compress dressings, with ties, individually packaged. 2 15 cm x 15 cm sterile compress dressings, with ties, individually packaged. 2 gauze bandages - 7.5 cm. 3 cotton triangular bandages. 5 safety pins assorted. 1 pair of scissors. 1 pair of tweezers. 1 25 mm x 4.5 m roll of adhesive tape. 1 crepe tension bandages 1 artificial resuscitation barrier device with a one-way valve. 4 pairs of disposable surgical gloves. 1 first aid manual. 1 inventory of kit/pack contents. 1 waterproof waste bag.
B	10 antiseptic cleaning towelettes, individually packaged 50 Sterile adhesives dressing, individually packaged

	20	10 cm x 10 cm sterile gauze pads, individually packaged
	3	10 cm x 10 cm sterile compress dressings, with ties, individually packaged
	3	15 cm x 15 cm sterile compress dressings, with ties, individually packaged
	1	20 cm x 25 cm sterile abdominal dressing
	2	gauze bandages - 7.5 cm
	4	cotton triangular bandages
	8	safety pins assorted
	1	pair of scissors
	1	pair of tweezers
	1	25 mm x 4.5 m roll of adhesive tape
	2	crepe tension bandages
	6	pairs of disposable surgical gloves
	1	artificial resuscitation barrier device with a one-way valve
	1	first aid manual
	1	inventory of kit/pack contents
	1	waterproof waste bag
C	240	antiseptic cleaning towelettes, individually packaged
	100	sterile adhesives dressing, individually packaged
	50	10 cm x 10 cm sterile gauze pads, individually packaged
	6	10 cm x 10 cm sterile compress dressings, with ties, individually packaged
	6	15 cm x 15 cm sterile compress dressings, with ties, individually packaged
	4	20 cm x 25 cm sterile abdominal dressing
	6	gauze bandages - 7.5 cm
	12	cotton triangular bandages
	12	safety pins assorted
	1	pair of scissors
	1	pair of tweezers
	2	25 mm x 4.5 m roll of adhesive tape
	4	crepe tension bandages
	12	pairs of disposable surgical gloves
	1	tubular finger bandage with applicator
	1	artificial resuscitation barrier device with a one-way valve
	1	first aid manual
	1	inventory of kit/pack contents
	2	waterproof waste bag
Personal/pack	10	sterile adhesive dressings assorted sizes, individually packaged
	5	10 cm x 10 cm sterile gauze pads, individually packaged
	1	10 cm x 10 cm sterile compress dressings, with ties
	5	antiseptic cleaning towelettes, individually packaged
	1	cotton triangular bandage
	1	first aid manual
	1	waterproof waste bag
	1	pair disposable surgical gloves
Other equipment		Stretcher and blanket. (These must be kept at a convenient and accessible location, within reasonable time or distance from each work site)