

# IMAS 10.20

First Edition  
01 October 2001  
Incorporating amendment number(s) 1 & 2

---

## Safety & occupational health - Demining worksite safety

---

---

Director,  
United Nations Mine Action Service (UNMAS),  
2 United Nations Plaza, DC2-0650  
New York, NY 10017  
USA

Email: [mineaction@un.org](mailto:mineaction@un.org)  
Telephone: (1 212) 963 1875  
Fax: (1 212) 963 2498

### **Warning**

This document is current with effect from the date shown on the cover page. As the International Mine Action Standards (IMAS) are subject to regular review and revision, users should consult the IMAS project website in order to verify its status at (<http://www.mineactionstandards.org/>, or through the UNMAS website at <http://www.mineaction.org>).

### **Copyright notice**

This UN document is an International Mine Action Standard (IMAS) and is copyright protected by the UN. Neither this document, nor any extract from it, may be reproduced, stored or transmitted in any form, or by any means, for any other purpose without prior written permission from UNMAS, acting on behalf of the UN.

This document is not to be sold.

Director  
United Nations Mine Action Service (UNMAS)  
2 United Nations Plaza, DC2-0650  
New York, NY 10017  
USA

Email: mineaction@un.org  
Telephone: (1 212) 963 1875  
Fax: (1 212) 963 2498

## Contents

|   |     |
|---|-----|
| Contents .....  | iii |
| Foreword .....  | iv  |
| Introduction .....  | v   |
| Safety & occupational health - Demining worksite safety .....                       | 1   |
| 1. Scope .....  | 1   |
| 2. References .....   | 1   |
| 3. Terms, definitions and abbreviations .....                                       | 1   |
| 4. General requirements .....   | 1   |
| 5. Demining worksite layout and procedures .....                                    | 1   |
| 5.1. General requirements .....   | 1   |
| 5.2. Marking of hazardous areas .....   | 2   |
| 5.3. Demining safety distances .....  | 2   |
| 5.4. Control of entry into blast hazard or fragmentation hazard zones .....         | 2   |
| 5.5. Control areas.....   | 3   |
| 5.5.1. Vehicle parking areas .....  | 3   |
| 5.5.2. Helicopter Landing Site (HLS) .....  | 4   |
| 5.5.3. Visitor reporting and briefing area.....                                     | 4   |
| 5.5.4. Safety lanes .....   | 4   |
| 5.5.5. First aid .....  | 4   |
| 5.5.6. Rest areas.....  | 5   |
| 5.5.7. Explosive storage area(s) .....  | 5   |
| 6. Demining incident.....   | 5   |
| 7. Responsibilities and obligations .....   | 5   |
| 7.1. National Mine Action Authority (NMAA).....                                     | 5   |
| 7.2. Demining organisation .....  | 5   |
| 7.3. Demining workers .....   | 6   |
| Annex A (Normative) References.....   | 7   |
| Annex B (Informative) Terms, definitions and abbreviations .....                    | 8   |
| Annex C (Normative) Safety distances for blast and fragmentation hazard zones ..... | 10  |
| Annex D (Informative) Dealing with visitors to demining worksites.....              | 13  |
| Amendment record.....   | 15  |

## Foreword

International standards for humanitarian mine clearance programmes were first proposed by working groups at an international technical conference in Denmark, in July 1996. Criteria were prescribed for all aspects of mine clearance, standards were recommended and a new universal definition of 'clearance' was agreed. In late 1996, the principles proposed in Denmark were developed by a UN-led working group and the International Standards for Humanitarian Mine Clearance Operations were developed. A first edition was issued by the UN Mine Action Service (UNMAS) in March 1997.

The scope of these original standards has since been expanded to include the other components of mine action and to reflect changes to operational procedures, practices and norms. The standards were re-developed and renamed as International Mine Action Standards (IMAS).

The United Nations has a general responsibility for enabling and encouraging the effective management of mine action programmes, including the development and maintenance of standards. UNMAS, therefore, is the office within the United Nations responsible for the development and maintenance of IMAS. IMAS are produced with the assistance of the Geneva International Centre for Humanitarian Demining.

The work of preparing, reviewing and revising IMAS is conducted by technical committees, with the support of international, governmental and non-governmental organisations. The latest version of each standard, together with information on the work of the technical committees, can be found at <http://www.mineactionstandards.org/>. Individual IMAS are reviewed at least every three years to reflect developing mine action norms and practices and to incorporate changes to international regulations and requirements.

## Introduction

The need to reduce risk and to provide a safe working environment are fundamental principles of mine action management. Risk reduction involves a combination of safe working practices and operating procedures, effective supervision and control, appropriate education and training, equipment of inherently safe design, and the provision of effective personal protective equipment and clothing.

The provision of a safe working environment includes the design and layout of a demining worksite by fencing and marking hazardous areas, controlling the movement of deminers, visitors and the public, enforcing safety distances, and providing effective medical cover and insurance. This requires National Mine Action Authorities (NMAA) and demining organisations to develop and maintain appropriate policy and procedures.

It is necessary to clarify the meaning of the term 'safe' in respect of mine action. To say that a situation is safe does not necessarily imply that all risk has been removed. It merely assumes that the risk has been reduced to a 'tolerable' level, i.e. '.... to a level which is accepted in a given context based on the current values of society'. (See ISO Guide 51.)

Given the wide range of operational settings and mine action activities, it is not possible to provide a precise and complete set of specifications or provisions that apply to all mine action worksites. Thus, mine action organisations should develop and maintain management procedures and processes that will enable Safety and Occupational Health (S&OH) risks in the worksite to be identified, evaluated and reduced in a systematic and timely manner.

This standard provides NMAA and demining organisations with guidance on the development and implementation of policy and documented procedures for establishing and managing a safe worksite. The document is in three parts: clauses 1 to 3 define the scope, references and terms used in the standard; clauses 4 to 7 define the requirements, specifications and responsibilities; and the Annexes provide additional detailed information and guidance on how to apply the standard.

---

## **Safety & occupational health - Demining worksite safety**

### **1. Scope**

This standard provides specifications and guidance on the development and implementation of policy and documented procedures and practices which aim to establish and maintain a safe demining worksite.

### **2. References**

A list of normative references is given in Annex A. Normative references are important documents to which reference is made in this standard and which form part of the provisions of this standard.

### **3. Terms, definitions and abbreviations**

A list of terms, definitions and abbreviations used in this standard is given in Annex B. A complete glossary of all the terms, definitions and abbreviations used in the IMAS series of standards is given in IMAS 04.10.

In the IMAS series of standards, the words 'shall', 'should' and 'may' are used to indicate the intended degree of compliance. This use is consistent with the language used in ISO standards and guidelines:

- a) 'shall' is used to indicate requirements, methods or specifications that are to be applied in order to conform to the standard;
- b) 'should' is used to indicate the preferred requirements, methods or specifications; and
- c) 'may' is used to indicate a possible method or course of action.

The term 'worksite' refers to the location where demining activities take place, and which is under the direct control of the demining organisation.

The term 'National Mine Action Authority (NMAA)' refers to the government department(s), organisation(s) or institution(s) in each mine-affected country charged with the regulation, management and co-ordination of mine action. In most cases the national Mine Action Centre (MAC) or its equivalent will act as, or on behalf of, the 'NMAA'.

The term 'demining organisation' refers to any organisation (government, NGO or commercial entity) responsible for implementing demining projects or tasks. The demining organisation may be a prime contractor, subcontractor, consultant or agent.

### **4. General requirements**

The provision of a safe working environment includes the design and layout of a demining worksite by fencing and marking hazardous areas, controlling the movement of deminers, visitors and the local population, enforcing safety distances, and providing effective medical cover and casualty evacuation procedures. This requires NMAA and demining organisations to establish policies and develop and maintain procedures for worksite safety

### **5. Demining worksite layout and procedures**

#### **5.1. General requirements**

The demining worksite shall be designed to:

- a) provide a clearly visible separation of hazardous areas including fragmentation zones, cleared areas, useable areas and unknown areas of and around the worksite;
- b) ensure safe working distances are maintained between individual deminers, machines or Mine Detection Dogs (MDD) and other staff on the demining worksite;
- c) control the movement of demining worksite staff and visitors (including members of the public) at the worksite;
- d) control the movement of demining machines and other vehicles;
- e) limit the number of demining worksite staff and visitors allowed into the blast and fragmentation hazard zones;
- f) during the controlled destruction of mines and Unexploded Ordnance (UXO), take all reasonable precautions to exclude demining worksite staff, visitors and members of the local population from the blast and fragmentation hazard zones, or provide suitable protection inside buildings, bunkers or mobile structures; and
- g) include measures to prevent structural and environmental damage.

## **5.2. Marking of hazardous areas**

Safe and hazardous areas within the worksite shall be separated by providing clear and consistent marking.

## **5.3. Demining safety distances**

Demining organisations shall establish safe working distances between individual deminers, machines or MDD and other staff on a demining worksite. Safety distances shall be established based on a detailed and documented risk assessment taking into account the hazards associated with the site, the topography of the site and the protection provided to staff by equipment. In the absence of such a detailed risk assessment being carried out the default safety distances shown in Annex C should be applied.

Where demining organisations applying demining safety distances based on a specific hazard, find a new hazard that poses a greater danger to staff, the demining safety distance shall be immediately reassessed to take into account the greater hazard. The change shall be recorded on the documented risk assessment for the worksite.

## **5.4. Control of entry into blast hazard or fragmentation hazard zones**

Demining often proves to be an attractive event for the local population, especially children. Procedures shall be developed for controlling the entry of unauthorised persons into mined areas, onto the demining worksite and into blast and fragmentation hazard zones. This should be achieved by:

- a) informing the local population, demining workers and demining worksite visitors of the extent of the worksite, and the blast and fragmentation hazard zones; and
- b) physically controlling entry into the hazard zones during the mine or UXO hazard destruction processes by warning signs and positioning sentries. (See Annex C for specifications and recommendations on the development of standards and SOPs for blast and fragmentation hazard zone safety distances).

Note: Warning systems should include the following:

- a) Warning signs on approach routes (roads, tracks or paths) informing people that they are entering a fragmentation zone. Signs should include information on the nature and extent of the fragmentation zone.

- b) Risk reduction education through briefings or signs or information sheets to people living or working near a demining worksite, and to the local authorities in the area. The briefings and/or information sheets should include information on the audible warning methods used to advise workers and the local public of the demolition of mine or UXO hazards and hazardous material.
- c) Risk reduction education, including site dangers, and the implications of ignoring the directions of demining workers appointed to control access into fragmentation zones.
- d) Documented standards and Standard Operating Procedures (SOPs) should include the use of sentries to control entry into fragmentation zones, warning signs and audible signals to be used during the destruction process.

Planning and execution of demining operations should minimize disruption to the local population, which may need to move through blast and fragmentation hazard zones if they are to subsist or survive. It is unrealistic to expect that the public can be prevented from entering associated blast and fragmentation hazard zones of whole demining worksites for the duration of the clearance task. On the other hand it is important to reduce to tolerable levels the risk of harm to the public. The following example may provide guidance on the development of a reasonable and workable compromise:

- a) the extent of the fragmentation zone should be equivalent to the fragmentation hazard of the likely mine/UXO contamination in the worksite;
- b) the public, having been given appropriate warnings as set out above, should be allowed to pass on marked routes through the fragmentation zone, EXCEPT when demolitions are taking place. When a demolition is taking place the demining organisation shall establish a cordon with sentries on routes at the entry points of the fragmentation hazard zone to prevent entry into the hazard zone. It may also be necessary to restrict entry when particular munitions with a large fragmentation radius, such as bounding mines, are being cleared; and
- c) an inner safety distance should also be identified. For example, a radius equivalent to the blast zone from the likely mine/UXO contamination, demining lane separation, or RF detonator hazard (whichever is greater). The default radius of such a distance should be 25m. The public should not be allowed to enter this safety zone at any time when demining is being undertaken on the worksite.

Where the location of the worksite means that this inner safety distance cuts a frequently used road or path, an alternative solution should be considered. If the worksite is small enough, the demining unit should phase operations in such a way to minimize disruption to the public. If the worksite is large, the demining organisation should seek the assistance of the local administration, police or other appropriate emergency services or the military to identify, mark and possibly supervise the creation of a suitable diversion route. If no such diversion route is feasible, the demining unit should consider using protective works.

## **5.5. Control areas**

Effective control of the worksite requires the establishment and clear marking of a number of areas for safety and administration. Such areas shall be outside the relevant safety distances from clearance activity and explosive storage.

### **5.5.1. Vehicle parking areas**

Vehicle parking areas shall be used or cleared areas large enough to provide safe parking for demining unit and visitor's vehicles. Separate areas may also be required for the unloading/loading of machines.

The boundary of the parking area shall be clearly marked and sign posted. The parking area sign posting shall indicate directions to the demining worksite and visitor reporting area. Where appropriate these directions should include a map that indicates any mine or UXO hazards in close proximity to the parking area or the route from the vehicle parking area to the visitor reporting area of the demining worksite.

#### **5.5.2. Helicopter Landing Site (HLS)**

In the event that helicopter casualty evacuation is an available option a HLS shall be established prior to demining operations commencing on the site. The size of the HLS and cleared air approaches shall be established in accordance with the requirements of the organisation providing the air casualty evacuation service. The HLS should not be located adjacent to potential hazard areas; consideration shall be given to air approaches and the threat from tilt-rod, tripwire and prong initiation through rotor downwash and 'foreign object' dispersal. The demining site number, HLS grid reference and description (including marking features) shall be provided to the organisation providing the air casualty evacuation service.

The HLS shall be marked with an easily visible marker (preferably fluorescent) of a minimum size of 2m x 2m, firmly secured to the ground (the organisation providing the air casualty evacuation service should provide guidance on securing arrangements). It shall also be clearly marked and signposted from all demining worksites it serves. All loose material shall be removed from the site and out to a radius stipulated by the organisation providing the air casualty evacuation service. The HLS should not be used as a car park or administration area.

#### **5.5.3. Visitor reporting and briefing area**

The visitor reporting area and briefing area shall be a clearly marked and identifiable area that is outside the fragmentation zone of the demining worksite. See Annex D for guidance on dealing with visitors to demining worksites.

Any mines, UXO or other components of munitions held on a demining worksite for the purpose of display to visitors shall be strictly managed in accordance with the requirements of IMAS 10.50. Visitors shall be cautioned about touching any objects that may be lying on the ground.

#### **5.5.4. Safety lanes**

The demining organisation shall establish safety lanes, which are confirmed as clear of hazards, to provide access to and around the demining worksite. Safety lanes shall be marked and documented as specified in IMAS and NMAA standards. Safety lanes shall be wide enough to provide safe access for personnel and equipment to the worksite. Safety lanes for victim evacuation shall be wide enough for the safe execution of the demining accident response plan. Safety lanes should be not less than 2.0m wide.

#### **5.5.5. First aid**

Each demining worksite shall include a first aid post, organised and equipped as recommended in IMAS 10.40. The first aid post shall:

- a) be identifiable and clearly marked;
- b) be equipped with appropriate first aid and medical supplies and equipment;
- c) where appropriate, be attended by suitably qualified and experienced medical or para-medical staff; and
- d) provide easy access to the clearance area of the worksite and easy access for ambulances.

### **5.5.6. Rest areas**

The worksite shall include clearly identifiable and marked rest areas for deminers. Rest areas shall be located outside the fragmentation zone if demining continues during rest periods, and should be equipped to provide staff with protection from adverse or extreme weather conditions.

### **5.5.7. Explosive storage area(s)**

Explosives or mine and/or UXO hazardous material may be stored on a demining worksite. Explosives used in the demining process should be stored in a container approved for the type and quantity of explosive being stored, which will be located outside the fragmentation zone of the demining worksite (See IMAS 10.50 for standards for the construction of storage boxes and magazines for explosive materials used in the demining process). Where provision of this standard of container storage is impracticable, the demining organisation shall be responsible for providing adequate safety measures (protective works, safety distances, physical security etc.) and should include protection against environmental factors in accordance with explosive manufacturers' instructions. Such storage should be considered as a temporary measure only.

## **6. Demining incident**

Procedures for the response to a demining incident shall be established and formally documented as SOPs. The SOPs should include:

- a) the organisation and capabilities needed to respond to a demining incident, including the procedures, training, equipment and material (see IMAS 10.40); and
- b) procedures for the investigation, analysis and corrective action to be taken following a demining incident (see IMAS 10.60).

## **7. Responsibilities and obligations**

### **7.1. National Mine Action Authority (NMAA)**

The NMAA shall develop a policy and establish and maintain documented procedures for S&OH on demining worksites. The documented procedures should include:

- a) standards for safety markings to be used on demining vehicles;
- b) standards for emergency response and casualty evacuation procedures on demining worksites; and
- c) procedures for the reporting and investigation of demining incidents.

### **7.2. Demining organisation**

The demining organisation shall establish and maintain documented SOPs that comply with the provisions of IMAS, the NMAA standards and other relevant standards or regulations.

In the absence of a NMAA or authorities, the demining organisation should assume additional responsibilities. These include, but are not restricted to:

- a) issue, maintain and update their own regulations, codes of practice, SOPs and other suitable provisions on worksite safety;
- b) co-operate with other employees in the same country to ensure consistency of standards of safety on worksites; and
- c) support the host nation, during the establishment of a NMAA, with assistance in framing national S&OH regulations and codes of practice for worksite safety.

### **7.3. Demining workers**

Demining workers shall:

- a) take all reasonable care for their own safety and that of other persons on the worksite;
- b) comply with instructions given for their own conduct and safety, especially those contained in SOPs;
- c) comply with national instructions and regulations on conduct and safety on worksites; and
- d) report forthwith to their superior any situation which they have reason to believe could present a worksite hazard which they cannot themselves correct.

## **Annex A (Normative) References**

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of the standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of the standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid ISO or EN:

- a) IMAS 10.10 S&OH - General requirements;
- b) IMAS 10.30 S&OH - Personal protective equipment; and
- c) IMAS 10.50 S&OH - Storage, transportation and handling of explosives.

The latest version/edition of these references should be used. GICHD hold copies of all references used in this standard. A register of the latest version/edition of the IMAS standards, guides and references is maintained by GICHD, and can be read on the IMAS website: (See [www.mineactionstandards.org](http://www.mineactionstandards.org)). NMAA, employers and other interested bodies and organisations should obtain copies before commencing mine action programmes.

---

## Annex B (Informative) Terms, definitions and abbreviations

### B.1.

#### **briefing area**

*in the context of humanitarian demining ...* a clearly identifiable control point intended to be the first point of entry to a demining worksite.

Note: The briefing area contains a plan of the minefield and its current level of clearance, at a scale large enough for briefing purposes, showing the location of control points (car park, first aid point, explosive storage areas, the areas where mine clearance work is progressing and distances), and where safety equipment is issued to visitors.

### B.2.

#### **control area or point**

all points or areas used to control the movements of visitors and staff on a demining worksite.

### B.3.

#### **deminer**

a person qualified and employed to undertake demining activities on a demining worksite.

### B.4.

#### **demining worksite**

any workplace where demining activities are being undertaken.

Note: Demining worksites include workplaces where survey, clearance and EOD activities are undertaken including centralised disposal sites used for the destruction of mines and UXO identified and removed during clearance operations.

Note: Survey, in relation to a demining worksite includes general survey undertaken to identify mine and UXO hazards and hazardous areas.

### B.5.

#### **demolition (dml)**

destruction of structures, facilities or material by use of fire, water, explosives, mechanical or other means.

### B.6.

#### **destroy (destruction) in situ**

blow in situ.

the destruction of any item of ordnance by explosives without moving the item from where it was found, normally by placing an explosive charge alongside.

### B.7.

#### **mine clearance**

the clearance of mines and UXO from a specified area to a predefined standard.

### B.8.

#### **risk**

combination of the probability of occurrence of harm and the severity of that harm. [ISO Guide 51:1999(E)]

### B.9.

#### **risk analysis**

systematic use of available information to identify hazards and to estimate the risk [ISO Guide 51:1999(E)]

**B.10.**

**risk assessment**

overall process comprising a risk analysis and a risk evaluation. [ISO Guide 51:1999(E)]

**B.11.**

**risk evaluation**

process based on risk analysis to determine whether the tolerable risk has been achieved. [ISO Guide 51:1999(E)]

**B.12.**

**secondary fragmentation**

in an explosive event, fragmentation which was not originally part of the mine/UXO.

**B.13.**

**visitor**

for the purposes of IMAS, a person who is neither a member of the demining organisation, nor a demining worker accredited by the NMAA.

Note: In circumstances where the NMAA does not have an accreditation system the demining organisation should determine the status of non-employees.

**B.14.**

**workplace**

all places where employees need to be or to go by reason of their work and which are under the direct or indirect control of the employer. [ILO R164]

---

## **Annex C**

### **(Normative)**

## **Safety distances for blast and fragmentation hazard zones**

### **C.1. General**

Hazard distance calculations can be extremely complex requiring consideration of a range of factors including:

- a) the hazard division and compatibility classification of the mine or UXO hazards that may be on the demining worksite;
- b) the protective measures included in the documented SOPs;
- c) protection offered by vegetation, topography or structures surrounding the worksite and available to the demining workers, visitors and the public; and
- d) climatic conditions.

### **C.2. Calculating safety distances**

The NMAA and demining organisations should seek the advice of a qualified and experienced Explosive Ordnance Disposal (EOD) operator to calculate safety distances appropriate for the mine and UXO hazard risk.

Calculations should be based on the following standard methods of making hazard distance calculations:

#### **C.2.1. Blast hazard zone**

The safety distance for blast hazards shall be calculated to reduce risk of temporary hearing loss. The calculation of a blast hazard zone should be based on the methodology and calculations of 'Kingerey and Bulmarsh'.

Note: This can be found in "Airblast Parameters from TNT Spherical Air Burst & Hemispherical Surface Burst" by Charles N Kingerey & Gerald Bulmarsh, US Technical Report ARBRL-TR-02555 dated April 1984.

This methodology calculates the blast over-pressure in KPa at varying ranges from the source explosive. It is accepted that eardrum rupture occurs at approximately 24.5 KPa, therefore the imposed danger area should be calculated to be that range at which the expected blast overpressure is significantly less than 24.5 KPa. An Explosion Consequence Analysis (ECA) will have to be conducted to establish this range. This ECA should be conducted by a qualified and experienced EOD operator. It is likely that the fragmentation danger area will be greater than the blast danger area in most cases, however for light cased munitions, where there is minimal fragmentation hazard, a blast danger area will usually suffice.

#### **C.2.2. Fragmentation hazard zone**

The fragmentation zone safety distance shall be calculated to reduce the risk of harm from fragmentation to those working on the worksite and the local population. Where necessary, protective works should be used to reduce the extent of fragmentation hazard zones.

The calculation of fragmentation hazard zone areas is a more complex operation than that for blast hazard zone. Various methodologies can be used, but it is accepted that the use of the 'Gurney Equation' to calculate the initial worst case fragment velocity, when combined with the 'Fragment Slowdown Equation', 'Ballistic Range Equation' and a simple 'Pythagoras Equation and Launch Angle Calculation', will produce an acceptable danger area. An alternative is to use the USA Conventional Weapons Effects (CONWEP) equation. Again, this part of an ECA should only be conducted by an appropriately qualified EOD operator.

An alternative approach to the calculation of fragmentation hazard zones is to use simplified equations based on experimental results combined with 'Gurney Equation' predictions. These formulae utilise the all-up-weight of the munition to calculate an estimated hazard zone. They have not been reproduced here, as only a qualified and experienced EOD operator should use these equations; various assumptions have to be made that are not applicable to all scenarios.

### C.3. Default safety distances

In the absence of a detailed risk assessment the safety distances provided in the following table should apply.

#### C.3.1. Default safety distances on demining worksites.

| Activity  | Metres apart   |
|---|--|
| More than one working section                               | 25   |
| Deminers working in the same lane                           | 25   |
| Access route and safety areas                               | 25   |
| Vehicle park, medical teams and active mine clearance sites | 100  |
| Note:   | Distances in this table should be applied to worksites assessed as having an AP blast mine hazard. Safety distances for fragmentation hazards should be considerably greater, depending on the nature of the risk. |
| Note:   | See IMAS 10.50 for distances to be applied to storage of explosives on site.   |

**Table 1. Demining worksite AP blast mine safety distances**

**C.3.2. Safety distances for the destruction of mines and UXO**

| <b>Demolition minimum safety distances</b>  |   |
|---|---|
| <b>Type of munition</b>   | <b>(Open area – metres)</b>   |
| AP mine – Blast   | 100   |
| AP mine – Fragmentation/bounding/directional                                      | 300/500   |
| AT mine – Blast   | 500/1,000   |
| AT mine - Shaped charge (A shaped charge jet can travel up to 1800m in free air.) | 1,800   |
| Off route mine  | 1,000   |
| Mortar up to 82 mm  | 500   |
| Shell up to 80 mm   | 500   |
| Shell up to 160 mm  | 800   |
| Shell above 160 mm  | 1,000   |
| Rocket up to 88 mm  | 500   |
| Hand and rifle grenade  | 300   |
| Note:   | Buried boosted charges estimated at 10 kilograms have a safety distance of 500 metres. 100 metres should be added for each additional 10 kilogram charge.   |
| Note:   | Organisations should seek the advice of a qualified and experienced EOD operator to determine safety distances for all munitions other than those detailed above. All safety distances shall be specified in documented SOPs. |
| Note:   | Protective measures should be used to allow distances to be reduced.  |

**Table 2. Demolition minimum safety distances**

---

## **Annex D** (Informative) **Dealing with visitors to demining worksites**

### **D.1. General**

Demining activities attract a range of visitors from the donor community, government and other officials and the media. These visitors should not be discouraged from visiting demining sites as they can assist in much needed advocacy and resource mobilisation for the mine action sector.

### **D.2. Standard Operating Procedures (SOPs)**

The demining organisation shall develop and maintain documented procedures for dealing with visitors to demining worksites. These SOP should include:

- a) procedures for establishing and maintaining signs that:
  - (1) provide warning that the visitor or public are approaching or entering a demining worksite blast hazard or fragmentation hazard zone;
  - (2) direct visitors to a safe vehicle parking area; and
  - (3) direct visitors to a reporting area.
- b) safety briefing including information on:
  - (1) the site layout, safety marking system and any restrictions. This may include restriction on movement, the use of equipment that may be an RF hazard (mobile telephones, radios etc), smoking or fire restrictions and the use of other electronic equipment or cameras;
  - (2) the requirements to wear PPE;
  - (3) action to be taken in the event of a demining incident or accident; and
  - (4) the restriction on touching any object lying on the ground.
- c) liabilities in case of an accident.

### **D.3. Insurance**

The demining organisation should have third party liability insurance to cover risk of harm to visitors to demining worksites. This should cover liability not only of the demining organisation, but also of its employees. Insurance for employees of the demining organisation is covered in IMAS 10.10 (S&OH general requirements).

An alternative is for the demining organisation to ensure that the visitor signs a disclaimer or waiver, drafted with legal advice indicating:

- a) that the visitor has been briefed on the risks and threat;
- b) that the visitor accepts personal responsibility for an undesired event to their person whilst visiting the site;
- c) that the visitor authorises the demining worksite personnel to provide whatever medical treatment and evacuation necessary to sustain life and to minimise further injury; and

- d) the visitor absolves the demining organisation of any legal responsibility for any injury or fatality that occurs to the visitor, or for any damage to the visitor's equipment, during the visit or arising from the visit.

## Amendment record

### Management of IMAS amendments

The IMAS series of standards are subject to formal review on a three-yearly basis, however this does not preclude amendments being made within these three-year periods for reasons of operational safety and efficiency or for editorial purposes.

As amendments are made to this IMAS they will be given a number, and the date and general details of the amendment shown in the table below. The amendment will also be shown on the cover page of the IMAS by the inclusion under the edition date of the phrase *'incorporating amendment number(s) 1 etc.'*

As the formal reviews of each IMAS are completed new editions may be issued. Amendments up to the date of the new edition will be incorporated into the new edition and the amendment record table cleared. Recording of amendments will then start again until a further review is carried out.

The most recently amended IMAS will be the versions that are posted on the IMAS website at [www.mineactionstandards.org](http://www.mineactionstandards.org).

| Number | Date        | Amendment Details  |
|--------|-------------|--|
| 1      | 1 Dec 2004  | 1. Formatting changes.<br>2. Minor text editing changes.<br>3. Changes to terms, definitions and abbreviations where necessary to ensure that this IMAS is consistent with IMAS 04.10.<br>4. Substantive changes:<br>a) Annex D clause D3. Inclusion of new sub clause 'c' and text changes to sub clause 'd' (previously 'c').  |
| 2      | 23 Jul 2005 | 1. Clause 5.1. Inclusion of a new sub clause b) concerning maintaining safe working distances. Inclusion of a new sub clause d) concerning control of demining machines and vehicles. Removal of the word 'deminers' in sub clauses c), e) and f) and replacement with the term 'demining worksite staff'.<br>2. Clause 5.3, new clause inserted on demining safety distances.<br>3. Clause 5.4, second paragraph, sub clause c), third sentence, change the word 'minimum' to 'default'.<br>4. Clause 5.5, last sentence, removal of reference to contaminated areas.<br>5. Clause 5.5.1, first paragraph, inclusion of a new sentence concerning areas for unloading and loading of machines.<br>6. Clause 5.5.3, inclusion of a new paragraph concerning display mines/UXO held on demining worksites for viewing by visitors and cautioning visitors about touching objects on the ground.<br>7. Annex C, clause C.2, C.2.1, C.2.2 and C.3.2 (second note to table 2), replacement of the words 'EOD expert' and 'EOD specialists' with a single term 'qualified and experienced EOD operator' (4 times).<br>8. Annex C, clause C.3, removal of reference to calculations and change of a 'shall' to a 'should'.<br>9. Annex C, second note to table 2, change of a 'shall' to a 'should'.<br>10. Annex D, clause D.2, sub clause b), inclusion of new sub sub clause (4). |
|        |             |  |
|        |             |  |
|        |             |  |
|        |             |  |
|        |             |  |