# NMAS 10.20

# Safety & Occupational Health (S&OH) - Demining Worksite Safety

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**Edition 2.1**

Lebanon Mine Action Center-LMAC

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**Warning**

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# Foreword

The National Mine Action Standards (NMAS) of Lebanon were first developed in the form of Technical Standards and Guidelines (TSG). After the Lebanon Mine Action Policy was released in 2007, these TSG were edited into the first edition of the NMAS in 2010 and were written to concurrently comply with the first edition of the International Mine Action Standards (IMAS). Since then, the scope of the IMAS has been expanded to include more components of mine action and amended to mirror the most recent changes to standards as required in today's operations. These changes, as well as changes in the local context of Lebanon, have necessitated a review and update of the NMAS.

As detailed in the National Mine Action Policy of 2007, the Lebanon Mine Action Center (LMAC) has the responsibility to execute and coordinate the Lebanon Mine Action Program (LMAP) on behalf of the Lebanon Mine Action Authority (LMAA), including the development and amendment of standards. Such standards shall be developed in a participatory approach that shall involve international, governmental, and nongovernmental organizations.

The NMAS shall be reviewed as needed to reflect amendments in the IMAS as well as incorporate changes to international obligations and local requirements. Such revisions shall be regularly made available on the LMAC's website www.lebmac.org or can be obtained through contacting the LMAC via the email info@lebmac.org.

# Acronyms

| | |
|---|---|
| AP | Anti-Personnel |
| AT | Anti-Tank |
| BAC | Battle Area Clearance |
| EO | Explosive Ordnance |
| EOD | Explosive Ordnance Disposal |
| ERW | Explosive Remnants of War |
| GoL | Government of Lebanon |
| HLS | Helicopter Landing Site |
| HMA | Humanitarian Mine Action |
| IA | Implementing Agency |
| IMAS | International Mine Action Standards |
| ISO | International Organization for Standardization |
| LA | Local Authority |
| LMAA | Lebanon Mine Action Authority |
| LMAC | Lebanon Mine Action Center |
| LMAP | Lebanon Mine Action Program |
| MDD | Mine Detection Dogs |
| NGO | Non-Governmental Organization |
| NMAS | National Mine Action Standards |
| PPE | Personal Protective Equipment |
| QA | Quality Assurance |
| RF | Radio Frequency |
| S&OH | Safety and Occupational Health |
| UXO | Unexploded Ordnance |
| VHF | Very High Frequency |

# Introduction

There is a fundamental need in Humanitarian Mine Action (HMA) to provide and maintain a safe working environment by ensuring that risk levels are always tolerable. Managing risk requires the application and maintenance of recognized Safety and Occupational Health (S&OH) practices including effective management, appropriate training and the use of safe equipment including PPE. All IAs shall have appropriate and effective S&OH systems that apply to the varied environments in which their work is conducted, including the office, the times of transit for work purposes and when at demining worksites.

The Government of Lebanon (GoL) and the LMAC recognize a need to do all that is reasonable to support the safety of all persons undertaking mine action tasks in the field. In the field, 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 people, enforcing working and safety distances, providing safe equipment including PPE, and providing effective medical cover.

In support of this goal, this NMAS gives standards and guidelines related to establishing and maintaining a safe demining worksite. Its content is designed to ensure that S&OH risks in the worksite are identified, assessed, and reduced to a tolerable level using a formal risk management system. The SOPs for all field activities presented by the IA for the LMAC's approval should be based on the requirements stated herein and reflect the content of NMAS 07.14 *Risk Management*.

# Safety and Occupational Health – S&OH
# Demining Worksite Safety

## 1. Scope

This NMAS outlines standards related to establishing and maintaining a safe demining worksite through enabling the identification, assessment, and reduction of risks to a tolerable level, in a systematic and timely manner. NMAS 10.20 should be read in conjunction with the NMAS 10 series and NMAS 07.14 *Risk Management*.

All Implementing Agencies (IAs) intending to engage in mine action interventions in hazardous areas shall abide by the standards provided in the NMAS 10 series and NMAS 07.14 *Risk Management*.

## 2. References

A list of normative and informative references is provided in Annex A.

Normative references provide cross-referencing to other standards referred to in this standard and which form an integral part of the provisions of this standard.

Informative references provide a list of documents that may be consulted for a clearer understanding of this standard.

## 3. Key Terms and Definitions

The following terms and definitions relate to S&OH, and recur throughout this standard:

- *Danger area:* the area between the outer edges of the hazardous area, to the outer edges of the fragmentation hazard radius of the likely mine/ERW contamination in the worksite. The extent of the danger area should initially be measured from the known outer edges of the hazardous area, but may be moved as demining progresses and the actual locations of mines/ERW is discovered.
- *Dangerous areas, (hazardous areas):* all areas within Lebanon that are known to contain an EO hazard are marked and recorded as Dangerous Areas (DAs) in the Information Management System for Mine Action (IMSMA) that is used by the LMAC. DAs are frequently referred to as 'hazardous areas'.
- *Demining organization:* an organization, national or international, accredited by the LMAC to conduct humanitarian demining activities in Lebanon. Demining organizations may also be referred to as *Employers* or *Implementing Agencies* (IAs).
- *Demining worksite:* any workplace where demining activities are undertaken.
- *Employee:* for the purpose of this NMAS, employees are people who work for an Implementing Agency (IA) involved in Humanitarian Mine Action (HMA). Such employees

may be involved in management, in operational activities or in operational support activities.

- *Hazard:* potential source of harm, including mines, Explosive Remnants of War (ERW), cluster munitions and all Explosive Ordnance (EO) etc.
- *Hazardous areas, (dangerous areas):* all areas within Lebanon that are known to contain an EO hazard are marked and recorded as Dangerous Areas (DAs) in the Information Management System for Mine Action (IMSMA) that is used by the LMAC. DAs are frequently referred to as *Hazardous areas* or *Contaminated Areas*.
- *Mine Detection Dog (MDD):* a dog trained and deployed to detect the scent of mines and Explosive Remnants of War (ERW). Also called an *Explosives Detection Dog* (EDD).
- *Risk Assessment: the* systematic use of evidence from experience to evaluate the relative risks associated with an activity and those associated with alternative means of achieving the same end state.
- *Risk Management:* the entire process by which risks are identified, assessed and mitigated appropriately to ensure that 'all reasonable effort' has been taken to achieve a 'tolerable risk'.
- *Safety distance:* the acceptable and minimum distances between staff and equipment and a deliberate demolition/detonation. Safety distances need not be the same as Working distances.
- *Safety lanes:* the generic term for any lane cleared by a survey or clearance team, including access lanes outside the hazardous area or cross/verification lanes inside a hazardous area.
- *Tolerable risk:* level of risk that is accepted in a given context based on the current values of society (ISO/IEC Guide 51: 2014). For the purpose of this NMAS, tolerable risk is defined as the risk remaining after all reasonable effort has been applied to managing, reducing and eliminating risk factors. For example, the ‘tolerable risk‘ remaining after an area has been searched, cleared and released is the risk of explosive hazards being beneath the required search depth in that task area. The ‘tolerable risk’ to demining staff is the risk remaining after all reasonable efforts have been made to train, equip and supervise staff in the conduct of inherently safe demining procedures. All reasonable effort includes the production of a formal task risk assessment designed to ensure that appropriate measures to mitigate risk are taken. All formal risk assessments must be updated as work progresses and new information becomes known. The LMAC shall determine the level of risk that is tolerable at any task. In the event of disagreement, the final arbiters of what is ‘all reasonable effort’ shall be the Government and Courts of Justice in Lebanon.

- *Working distances:* the acceptable and minimum distances between people and between people and equipment at a demining worksite. Because no deliberate detonations will occur, working distances may be less than safety distances.
- *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 their employer.

In addition to the above terms, NMAS 04.10 provides a glossary of terms and definitions used across all standards.

As in the IMAS, the terms 'shall', 'should' and 'may' are used across all standards to indicate the required degree of compliance. For any organization working in Lebanon, the use of 'shall' indicates a compulsory requirement. The term 'should' indicates the national preference which may be varied with LMAC approval. The term 'may' indicates a suggestion that is not obligatory.

# 4. Demining Worksite Layout and General Safety Standards

Ensuring that demining worksites do not pose unnecessary risk to employees or civilians requires the application of S&OH guidelines in terms of general safety measures, layout, marking, and working distances.

At all times, all staff entering task areas (SHA, CHA or DA) shall wear Personal Protective Equipment (PPE) that is compliant with the requirements of NMAS 10.30. All reasonable effort shall be made to exclude persons not working at the task from these areas until the work has been completed.

## 4.1 General Requirements of Demining Worksites

Every demining worksite should be designed to ensure that:

- the marking at the site indicates unambiguously which areas are deemed safe and potentially unsafe;
- site marking is maintained and moved appropriately as work progresses;
- the movement and entry of employees and visitors to and around the worksite is controlled;
- the movement of demining vehicles and other vehicles on the demining worksite is restricted and controlled;
- the number of demining staff and visitors allowed into working areas is appropriately limited;
- civilians and livestock are kept outside the hazardous area during the controlled demolition of mines and EO; and
- ensure that the work imposes minimal environmental or structural damage to the demining worksite and its surroundings.

## 4.2 Demining Working Distances

### 4.2.1 General Standards for Demining

Demining 'working distances' are sometimes confused with 'safety distances'. The NMAS adopt the distinction made in IMAS 10.20 in which a 'working distance' is the acceptable and minimum distances between people (and between people and mechanical assets) at a demining worksite when no deliberate demolitions are planned. The 'safety distance' is the potentially hazardous radius surrounding a deliberate detonation and may be much greater than the 'working distance'.

The greatest EO hazard at any task is not necessarily the largest munition or the one with the greatest range. The greatest EO hazard is the munition most likely to be initiated during the demining process, which is often a small device designed to be initiated by pressure or movement.

During demining, the deminers/searchers who conduct the clearance operations are at the highest risk of injury because they are closest to the hazards on the worksite. There is also a smaller risk that other staff at the worksite may be injured by fragments or blast from an accidental detonation. These are known as 'secondary injuries'. The elimination of the risk of secondary injuries is not practicable but the risk of it occurring must be minimized. IAs shall reduce secondary risk to a tolerable level by enforcing appropriate working distances between deminers/searchers, machinery, Mine Detection Dogs (MDDs), and others at the worksite.

In this respect, formal risk assessments shall be conducted in order to determine the appropriate working distances to use at every task. Assessments shall be based on the likelihood of unintended detonations as well as the likelihood of serious injury resulting from unintended detonation. They shall also take into consideration (a) the type of hazards likely to be found at the worksite, (b) the environmental conditions and the topography of the site, (c) the protection that staff are afforded by PPE or other such equipment, and (d) any other contributing factor. The risk assessment should be made in accordance with the requirements in NMAS 07.14. The assessments shall be reviewed and adapted as conditions change and as demining progresses to adapt to newly discovered hazards, any change in the number of staff at the worksite, or changing environmental conditions.

Working distances should not compromise worksite safety by hindering supervision or communication.

When variations between working distances on a particular worksite exist, such variations should be unambiguously indicated with signs to ensure that staff are always aware of the working distances that apply where they are operating.

When the risk of unintended detonation is found to be ‘high’ (i.e. detonation could be initiated even during the correct application of standard manual procedures), manual

demining should not be conducted. The site supervisor should attempt to change the approach, procedures or equipment in use at the worksite in order to return the level of risk to 'tolerable'. If the risk level cannot be reduced far enough, the working distance between staff and the hazards should be increased in order to reduce the risk of severe injury to more than one staff member. Manual demining shall only be conducted when the risk assessment for the task determines that the level of risk of severe injury to staff conducting the required procedures with the available equipment is tolerably low.

### 4.2.2 Working Distances at Mine Clearance Worksites

Table 1 below indicates the standards for minimum working distances and basic safety requirements that shall be applied by IAs and demining teams during mine clearance. These minimum distances are calculated based on the assumption that staff are wearing NMAS 10.30 compliant PPE and that the most hazardous functional type of mine is present at the worksite. Safety distances should be applied during demolitions or when mines are deliberately detonated (such as during mechanical demining). The working distances shall not apply to work supervisors and authorized LMAC QA/QC staff who may need to approach deminers/searchers during their work. Supervisors and QA/QC staff should maintain at least a three-meter distance from any working deminer/searcher.

IAs should submit SOPs that comply with the distances below to the LMAC for assessment and, when appropriate, approval. Any reduction in the distances outlined herein requires pre-authorization by the LMAC. Working distances may be increased according to the risk assessments conducted by IAs without prior LMAC approval. All risk assessments shall be reviewed whenever any information used in the assessment changes.

When there is no reason to believe that there is a risk of an unintended detonation of any of the hazards present, the working distances that apply to the smallest Anti-Personnel (AP) blast mine should be adopted for that worksite (or area within a worksite).

| Mine Type | Minimum distance between demining staff (distance in meters) | |
|---|---|---|
| | Normal risk | Increased risk |
| AP blast, HE up to 200 gm. | 10 | 15 |
| AP blast, HE more than 200 gm. | 15 | 20 |
| AP fragmentation mines. | 20 | 25 |
| AP Bounding or Directional fragmentation mines and all sub-munitions. | 25 | 30 |
| AT mines. | 15 | 50 |

**Notes to table:**

1. Recommended *minimum* distances are for demining staff wearing NMAS 10.30 compliant PPE.

2. The type of mine selected to determine the minimum working distance should be the most hazardous functional mine that could be initiated using the demining tools and processes that will be used.

3. The risk assessment used to determine the minimum working distance shall be reviewed if any of the information used in the assessment changes.

4. If devices presenting a greater hazard than expected are discovered, the appropriate working distance for the increased hazard shall be adopted unless there is no reason to anticipate the presence of more of those devices in the area.

5. These distances should not be applied during demolitions or any other procedure during which mines are deliberately detonated (such as mechanical demining).

6. Generally, working distances do not apply to those supervising deminers while they work. It is a safety requirement that supervisors may approach any working deminer as part of their task. Supervisors should not approach closer than three meters while the deminer is working.

**Table 1: Minimum working distances on a Mine Clearance Site (from IMAS 10.20)**

Minimum working distances should be increased whenever practicable.

### 4.2.3 Working Distances at Battle Area Clearance (BAC) Sites

Table 2 below indicates the minimum working distances and basic safety requirements that should be applied during Battle Area Clearance (BAC). These minimum distances are calculated for staff that are wearing NMAS 10.30 compliant PPE. The distance should be calculated for the most hazardous functional type of munition that is anticipated at the worksite as part of the task risk assessment. Safety distances should be applied during demolitions or when munitions are deliberately detonated. The working distances do not apply to those supervising the work. Supervisors and authorized LMAC QA/QC staff shall maintain at least a three-meter distance from any working deminer/searcher.

IAs shall submit SOPs that comply with the distances below to the LMAC for assessment and, when appropriate, approval. Any reduction in the distances outlined herein shall require pre-authorization from the LMAC. Working distances may be increased according to the risk assessments conducted by IAs without prior LMAC approval. All risk assessments shall be reviewed whenever any information used in the assessment changes.

In the case that a risk assessment determines a need for greater distances than those displayed in the table below, such as when a greater hazard than expected is discovered, then greater distances shall be enforced unless there is no reason to anticipate the presence of more of such devices in the area (such as may be the case when a single unanticipated aerial bomb or rocket is found in an area).

Further information on Battle Area Clearance (BAC) can be found in NMAS 09.11.

| Minimum Working Distance and PPE requirements for BAC | | |
|---|---|---|
| **Situation** | **Min Safety Distance (meters)** | **Min - PPE** |
| Between working units/teams | 25 m | |
| Between staff conducting non-intrusive actions | N/A | Goggles or blast visor |
| Between staff conducting intrusive actions including cutting vegetation | 15 m | Body armor and blast visor |
| Between staff when one is excavating the ground | 25 m | Body armor and blast visor |
| Between staff conducting supervision or QA/QC and staff operating in the working area | 3 m | Body armor and blast visor |
| Between staff wearing PPE who are directly involved in search and clearance and staff without PPE | 100 m | |
| Between the explosive storage point, the working area, and other designated areas | 50 m | |
| Between the Control Point/Vehicle Park and staff operating in the working area | 100 m | |
| Between unprotected machines/vehicles and staff operating in the working area | 100 m | |

**Table 2: Minimum Working Distance and PPE requirements for a BAC Site**

Minimum distances should be extended whenever practicable.

## 4.3 Demolition Safety Distances

Because demolition involves the use of deliberate detonations that are timed and controlled, the use of safety distances between staff is readily achievable and should be observed by all IAs. Table 3 below indicates the minimum recommended safety distances that should apply between the detonation site and the demolition staff during the explosive demolition of mines. These minimum distances are calculated according to the assumption that staff are wearing NMAS 10.30 compliant PPE.

| Minimum Safety Distances between detonation site and Demolition Staff | | |
|---|---|---|
| Situation | **Min Safety Distance (meters) for Demolition Staff** | **Min Safety Distance (meters) for Other Staff** |
| AP blast, all types | 25 m | 60 m |
| AP fragmentation mines, sub-munitions, all types | 60 m | 100 m |
| AT mines | 200 m | 300 m |

**Table 3: Minimum Safety Distances during Demolitions**

The minimum distances shown in Table 3 are between the site of the detonation and the position of staff at the time of demolition not distances between demining staff. Only one staff member should be conducting the demolition. The safety distances may be reduced if there is a safe place with adequate protection available in the area for example, inside a bunker or behind a hillside.

When using protective works while conducting demolitions, the required safety distance should be assessed by appropriately qualified staff and may be reduced to reflect any reduced risk.

When any demolition is to take place, staff not wearing PPE shall be outside the calculated Danger Area for the site. Only one staff member should be conducting the demolition. All non-essential staff should withdraw to a place of safety until the demolitions supervisor gives them clearance to go back to the worksite.

When multiple munitions are being destroyed in a single demolition, the all-up weight of the high explosive involved and the combined fragmentation hazards should be calculated and an appropriate safety distance determined and applied. The bulk demolition of multiple munitions should only be conducted at a dedicated demolition site and shall always be pre-authorized by the LMAC. See NMAS 09.32 for more information about large scale demolitions.

## 4.4 Dangerous Areas

### 4.4.1 Dangerous areas and 'Danger Areas'

Dangerous areas are areas in which an EO threat is present. They include hazardous areas, demining worksites, and danger areas.

A 'Danger Area' represents the area between the outer edges of the worksite and the outer edges of the fragmentation hazard radius of the anticipated EO contamination at the worksite. The extent of a Danger Area may move as work progresses and the actual location

of hazards is learned. Entry into dangerous and Danger Areas should be controlled by IAs at all times.

### 4.4.2 Control of Entry into Dangerous Areas

The SOPs presented to the LMAC for assessment shall make provision for controlling the entry of unauthorized persons and livestock into dangerous areas, including demining worksites.

The IA's SOPs should comply with the following requirements:

1. IAs should clearly worksite perimeters and inform the local population and relevant Local Authorities (LAs) of the size, borders, and general extent of any potential Danger Area that extends beyond the demining worksite;
2. IAs shall use easily visible and unambiguous marking and sentries to physically restrict entry into dangerous areas during EO demolition procedures.
3. IAs should ensure that warning signs are positioned on all approach routes including roads, paths etc., to inform civilians that they are about to enter a dangerous area. The signs should comply with the requirements set out in NMAS 08.40 and detail the nature of the hazard.
4. IAs should be prepared to engage in Mine Risk Education (MRE) whenever applicable, in coordination with the MRE Steering Committee. They should be prepared to deliver briefings at public events and have appropriate MRE aids such as posters and information sheets. (See NMAS 12.10 for further information about MRE).
5. IAs shall ensure that all demining operations are conducted in a way that causes minimum disruption to the local community who, at times, may require access through dangerous areas to survive or subsist. Local populations should not necessarily be restricted from entering dangerous areas for the entire duration of the clearance task.

In addition to the above, in the case where a Danger Area cuts through a road or path that is frequently used by the local community, IAs shall coordinate with LAs and adopt the following measures to facilitate access.

1. IAs shall allow local community members to pass on marked routes through the fragmentation Danger Area after receiving appropriate warnings EXCEPT when demolitions are taking place.
2. When a demolition is taking place, the demining organization shall establish a cordon/barrier with sentries at the entry points of the Danger Area to prevent entry into the area. It may also be necessary to restrict entry when particular munitions with a large fragmentation radius are being cleared.
3. IAs should identify an inner safety distance with a radius equivalent to the blast area from the anticipated EO contamination. The minimum radius of such a distance should

be 25 meters and members of the local community shall not be allowed to enter this safety distance at any time while demining procedures are being conducted.

4. When feasible, the IA should minimize disruption to the local community by phasing operations in an agreed schedule and consider marking route diversions that maintain the required safety distance. When diversions are not feasible, the IA may consider using protective works.
5. When a worksite is large, the IA should seek the cooperation of relevant LAs, such as the local police or municipality, to identify, mark, and possibly supervise the use of one or more suitable diversionary routes. When diversions are not feasible, the IA should consider using protective works or a combination of diversions and protective works.

### 4.4.3 Traffic Control through Dangerous Areas

In cases where a trafficked road cuts through or within a dangerous area, IAs shall coordinate with LAs to arrange and manage the diversion of traffic through safe areas, away from the Danger Area.

Diversion of traffic may be conducted through the positioning of signs or physical road barriers at the road access points, or through the positioning of staff at traffic control points. When IA staff are used to control public traffic, they shall have the means to be in immediate contact with the worksite supervisor at all times.

IAs should inform all relevant LAs of any necessary traffic control before conducting the demining operations that require the diversion. LAs shall be kept informed of any changes to requirements during the demining operations.

## 4.5 Safety Standards for Radio Frequency (RF) Hazards

When the anticipated hazards include electrically initiated EO, IAs shall take the necessary precautions against Radio Frequency (RF) hazards. The necessary precautions include, but are not limited to, the following:

- vehicles with mounted radios should not enter un-cleared task areas;
- in case where vehicles with mounted radios are unavoidably required to enter an un-cleared task area, all radios shall be switched off;
- communications equipment should not be used in un-cleared task areas near electrically initiated detonators used for the demolition of EO unless such detonators are stored separately from explosives in a manner that prevents their initiation; and
- all staff carrying communications equipment should switch off such equipment if they are required to approach an electrically initiated EO hazard or unidentified hazard.

## 4.6 Control Areas

Demining worksites require a varied number of areas designated for safety and administration. IAs shall ensure that these areas are all clearly marked and located outside Danger Areas.

## 4.7 Vehicle Parking Areas

Vehicle parking areas shall be positioned outside the task area or in cleared areas that have been approved for Land Release. They should be large enough to provide safe parking for the IA's vehicles and those of authorized visitors to the demining worksite, such the LMAC QA/QC staff. Parking areas should be clearly marked and signposted. Signposting should give directions to the visitor reporting area.

When appropriate, worksites may require separate parking and servicing areas for the unloading/loading and field servicing of demining machines.

## 4.8 Visitor Reporting and Briefing Area

All visitors to the demining worksite should find a signposted Visitor Reporting and Briefing Area where they should report on arrival. Visitors should be briefed by a worksite supervisor before entry to the worksite. The briefing should include information regarding the work being conducted and all elements of worksite safety, including marking and field discipline. Visitors shall receive a warning of the danger of touching objects found at the worksite.

## 4.9 Helicopter Landing Site (HLS)

When a helicopter casualty evacuation (CASEVAC) is an available option, a suitable HLS may be established at an appropriate distance from any potentially hazardous areas before work at the site begins. The size of the HLS and all cleared air approaches shall be established before operations and be in accordance with the requirements of the organization that provides the helicopter evacuation service.

The IA shall ensure that the organization providing the helicopter CASEVAC service has access to the following information: (a) demining site number, (b) HLS grid reference, (c) marking features of HLS, and (d) demining site marking features.

The following standards should also apply:

- the HLS should have a minimum radius of 20m (cleared area);
- the exact coordinates of the HLS shall be provided to the LMAC, and any modifications to HLS positioning shall be communicated to the LMAC immediately following changes;
- the HLS should be marked with a visible marker (preferably fluorescent) of a minimum size of 2m x 2m, firmly secured to the ground; and
- the HLS should not be used for any other purpose than evacuation.

## 4.10 Safety Lanes

IAs shall establish safety lanes that are clear of hazards and unambiguously marked to provide staff and equipment access to and around the demining worksite.

During mine clearance operations, access lanes (i.e. marked lanes that have been cleared of hazards, or which do not contain hazards, providing passage through a hazardous area) shall be established. Safety lanes shall not exceed ten meters in length when they are 1 meter wide. Safety lanes of 2 meters width may be as long as necessary. A 2 meter width is considered the minimum necessary to allow a safe CASEVAC operation to be conducted.

Where staff are required to traverse rocks and other obstacles, which may cause additional difficulties, loss of balance, or contribute to them stepping into an un-cleared area, IAs, should ensure that access lanes are made as wide as is necessary for safe CASEVAC.

## 4.11 First Aid

Each demining worksite shall include a clearly marked and identifiable first aid post that is equipped with appropriate first aid and medical supplies/equipment. The first aid post should have easy access to the working area and ambulance parking site. A suitably qualified paramedic should be at the first aid post ready to respond to any accident at all times while work is being conducted in a demining worksite.

## 4.12 Rest Areas

IAs shall make available Rest Areas for staff directly involved in operations to be used during their rest breaks. Rest areas should be located at a safe distance from any part of the task where work is still being conducted.

## 4.13 Explosive Storage Area(s)

IAs may at times store demolition explosives and ancillaries temporarily at a worksite. They should be stored in a secure and marked area at least 50 meters away from all other site features. The demolition explosives and ancillaries should be stored in containers that are pre-approved by the LMAC and the containers should never be left unguarded.

## 4.14 Discipline and Fitness for Work

IAs shall develop and enforce their own procedures to ensure that employees are fit to work. They shall also be responsible for taking appropriate disciplinary action to ensure their staff work and behave appropriately when required. Any disciplinary action against staff should be promptly communicated to the LMAC.

Employees shall inform their employer if they are prescribed medication that may impair their physical or mental ability to work. IAs shall ensure that employees prescribed medication that may impair their ability to work safely are not required to conduct potentially hazardous work until the effects of the medication have dispersed.

IAs shall be responsible for ensuring that a zero tolerance standard to alcohol and recreational drugs is understood and complied with by their entire workforce. Any employee found to be breaking this requirement shall be forbidden from entering worksites or conducting operational work in the field, and should be dealt with according to the SOPs for disciplinary action submitted for LMAC approval by each IA. Details of any disciplinary action against employees shall be communicated to the LMAC within the timeframe required by the LMAC.

# 5. Demining Accidents/Incidents

Procedures for the response to a demining accident/incident shall be established by IAs and formally submitted to the LMAC with their SOPs. The LMAC shall assess and, when appropriate, approve the SOPs before the IA is permitted to start any demining operations. The IA's accident/incident response SOPs should detail:

- the medical capability provided to adequately respond to a demining accident/incident,
- procedures to be followed in the event of an accident/incident'
- the training required by staff,
- the materials and equipment that are made available (see NMAS 10.40 for full details of Medical Support to Demining Operations); and
- procedures for the reporting, investigating, and taking any corrective measures that may be necessary following a demining accident/incident (see NMAS 10.60).

# 6. Roles and Responsibilities

## 6.1 Responsibilities of the LMAC

The LMAC shall ensure that:

- all IA's are appropriately accredited to work in Lebanon and that their relevant SOPs have been assessed and approved for use before any IA is permitted to conduct mine action activities in Lebanon;
- the minimum requirements set in this NMAS for the establishment, layout, and general safety of demining worksites are met;
- a formal procedure for conducting task risk assessments and calculating appropriate working distances is in place and recorded appropriately;
- standards for emergency response and casualty evacuation on demining worksites are appropriate; and
- procedures are present for ensuring employees' fitness to work and for the reporting and investigation of demining accidents/incidents.

## 6.2 Responsibilities of Implementing Agencies (IAs)

In their capacity as demining organizations, IAs shall:

- submit and maintain SOPs in compliance with the provisions laid out in this NMAS for the LMAC's approval before conducting any demining operations; and
- comply with directives from the LMAC regarding demining worksite safety, and meet the commitments laid out in NMAS 10.10 through NMAS 10.70.

## 6.3 Responsibilities of Employees

Demining employees shall:

- abide by the provisions of this NMAS and the LMAC approved SOPs developed by their employer;
- take all reasonable measures to ensure their own safety and that of others on the worksite;
- comply with instructions given by superiors regarding their own safety and the safety of others; and
- immediately report to their supervisor any situation which they have reason to believe makes the level of risk intolerable.

The documents listed below constitute normative references which form an integral part of the provisions of this standard.

- Current LMAC and IMSMA reporting formats (request copies from the LMAC);
- NMAS 07.14 risk Management;
- NMAS 08.40 Marking of Hazards;
- NMAS 12.10 Mine Risk Education (MRE);
- NMAS 9.31 Guide for the Demolitions of Mines and ERW;
- NMAS 10.50 Storage, Transportation and Handling of Explosives;
- NMAS 10.10 General Guidelines for the Development of S&OH Systems;
- NMAS 10.30 S&OH - PPE;
- NMAS 10.40 S&OH - Medical Support to Demining Operations;
- NMAS 10.60 S&OH –Reporting & Investigation of Demining Accidents;
- NMAS 10.70 S&OH - Protection of the Environment; and
- NMAS 04.10 Glossary of Mine Action Terms, Definitions, & Abbreviations used in the Second Edition of the NMAS.

In addition to the normative references listed above, the following informative references may be consulted:

- Lebanon National Mine Action Policy;
- IMAS 10.20 S&OH – Demining Worksite Safety;
- ISO/IEC Guide 51: 2014; and
- ISO 45001.

This is only an example but the details below should all be covered in a worksite safety briefing for Visitors.

**1. INTRODUCTION**

a. Site Supervisor's introduction (name, Organization, responsibility).
b. Site introduction (task number/name, Demining Procedures, Unit/structure).

**2. GROUND ORIENTATION**

a. Accurate direction of North.
b. Location, distance and direction of towns, villages and major geographical features.

**3. SITE HISTORY**

a. Who (laid, fired, dropped the EO), when, for what reason, where and what type.
b. Location of defensive positions or battles, direction of strike, in relation to Site.
c. Accident/incident history (including human, animals and vehicles).
d. Reason for task selection.
e. Who requested/tasked that the Organization to clear this Site?
f. Task start date and estimated completion date

**4. MAP BRIEF**

With the map orientated to the ground, explain the following:

a. Scale.
b. Key.
c. Location of all personnel and key locations on Site.
d. Point out the location of non - Organization accidents and casualties.
e. Point out areas which are peculiar to this hazardous area (for example significant metal contamination, dense vegetation, flooding etc).
f. Reason for clearance (what will happen with the land once it has been cleared).

**5. ASK WHETHER THE VISITORS HAVE ANY QUESTIONS ABOUT THE BRIEFING SO FAR?**

**6. VISITOR CONDUCT AT THE SITE**

"For **their** own safety" they should please behave in the way required.

a. Always follow the instructions given to you by Site Supervisor/TL/Deputy.
b. Never run at the Site.
c. Never throw anything at the Site.
d. Do not pick anything up without permission.
e. Do not stray from your guide (ensure visitors are to the rear of the Supervisor/Team Leader/Deputy escorting the personnel).
f. No photographs shall be taken without permission.
g. In the event of a controlled explosion, you will be escorted to a safe area prior to the demolition.
h. In the event of an uncontrolled explosion, STOP, STAND STILL. Inspect yourself to make sure you have not been injured. If you have, bring it to the attention of the Organization staff otherwise, await further instructions.

i. If at any stage you are unsure whether you are in cleared or un-cleared ground, STOP, STAND STILL and await further instructions.
j. There are trained paramedics at the site who have emergency medical equipment. In the event of an accident, the casualty will be stabilized and transported to the nearest hospital.

**7. ASK WHETHER THE VISITORS HAVE ANY QUESTIONS ABOUT THE BRIEFING SO FAR?**

Fit all visitors with appropriate Personal Protective Equipment. (PPE)

**8. EXPLAIN THE MARKING SYSTEM IN USE BEFORE THEY ENTER THE WORKSITE**

Maintain close control of the visitors at all times in the worksite and insist on their leaving the site if they breach any of the rules and will not be corrected.

# NMAS 10.20, Edition 2.1: Amendment Record

The NMAS are subject to a comprehensive or partial review by the Review Board periodically. Changes in the context as well as safety requirements and efficiency considerations may necessitate amendments to individual NMAS standards more frequently. If this occurs, such amendments shall be given a number, dated, and detailed in the table below. The amendment should also be indicated on the header under the NMAS edition number.

Whenever the formal review of the NMAS is completed, a new edition shall be issued. Amendments that have taken place before the review date shall be incorporated in the new edition and the amendment record table cleared. Consequently, the recording of amendments shall start again until the next review.

The most recent revisions of the NMAS shall be posted on the Lebanon Mine Action Center (LMAC) website on www.lebmac.org.

| Number | Date | Amendment Details |
|---|---|---|
| 1 | March 2020 | Minor revisions throughout. |
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