

Sudan National Mine Action Standards – SNMAS 08.05

Second Edition: December 2018

Version 02

Personal Protective Equipment (PPE)

Contents

1.	Introduction	2
2.	Scope	2
3.	References	2
4.	Terms and Definitions.....	2
5.	Personal Protective Equipment (PPE) Requirements	2
5.1	General	2
5.2	Suitability and Appropriateness	3
5.3	Minimum PPE Requirement	3
5.4	PPE Requirements in Different Roles	4
5.5	Fragmentation Protection	5
5.6	Hand Tools	5
5.7	Blast Resistant Footwear	5
5.8	Protecting Hearing.....	5
5.9	Explosive Ordnance Disposal (EOD) Clearance Sites	5
6.	Responsibilities	5
6.1	Sudan National Mine Action Centre (NMAC)	5
6.2	Mine Action Organizations	6
6.3	Employees	6

1. Introduction

Mitigation of risk in mine action operations including land release and EOD operations is the one of the fundamental responsibilities of mine action management, including establishing a safe working environment for men and women demining staff including deminers, technical survey surveyors, MDD handlers and teams command group. This shall also include visitors and other mine action staff. Risk reduction involves a combination of safe working practices, field risk assessment and operating procedures, effective supervision, command and control, appropriate education, briefing and training, equipment of inherently safe design, and the provision of effective Personal Protective Equipment (PPE) and clothing.

PPE shall be regarded as a 'last resort' to protect against the effects of mine and ERW hazards; after all risk mitigation measures including planning, training, risk assessment and procedural efforts to reduce risk have been taken. PPE protects only the person wearing it, whereas measures managing the risk at source can protect everyone at the demining workplace. To obtain the maximum protection from the PPE it shall be correctly fitted and properly maintained and used.

The risk to deminers comes from all types of explosive ordnance including Anti-Personnel (AP) blast mines, AP fragmentation mines, Anti-Tank (AT) mines and ERW, including unexploded submunitions, the AP blast mine occurs in the greatest numbers and features in the most accidents. PPE, therefore, is principally designed to defeat the injuries caused by AP blast mines. At close quarters, AP fragmentation mines and AT mines overmatch PPE currently available, however, due to the area effect of such mines, they also have the potential to cause 'secondary victims' and PPE is intended to provide some protection to them.

2. Scope

This SNMAS covers the minimum requirements for PPE that shall be considered by mine action staff especially those involved in demining operations in Sudan.

3. References

The main reference for this SNMAS is IMAS 10.30

4. Terms and Definitions

A complete glossary of all mine action terms and definitions is given in IMAS 04.10, which should be referred to, IMAS 04.10 is inclusive and broader in principle, covering all mine action terms and definition that are used globally including Sudan. However, the term related to PPE is covered in this SNMAS.

The term 'Personal Protective Equipment (PPE)' refers to all equipment and clothing designed to provide a reasonable degree of protection, which is intended to be worn, or held by an employee, when conducting specific activities, and which protects him/her against one or more risks to his/her safety or health.

5. Personal Protective Equipment (PPE) Requirements

5.1 General

The primary means of preventing explosive injury in the demining workplace are:

- 1) Application of accredited procedures of Field Risk Assessment;

- 2) Supervised use of appropriate demining tools;
- 3) Supervised application of accredited procedures, and
- 4) Effective supervision and control in a demining worksite.

All above reduce the likelihood of an unintended detonation. PPE is provided as a secondary safeguard to protect against the small risk remaining. It is important that the PPE provided should not restrict the application of demining tools and processes in any manner that increases the risk that an unplanned detonation will occur.

The levels of PPE provided for use in suspected hazardous areas shall be decided based on the Field Risk Assessment (FRA) which includes:

- 1) Anticipated hazards;
- 2) Worksite condition and environment;
- 3) Demining tools and equipment; and
- 4) Operational procedures.

Refer to Annex A of SNMAS 05.03 for details about FRA.

To ensure effective use, management and maintenance of PPE, the following shall be considered by mine action organizations:

- 1) Provided appropriate training to all field personnel on the proper use, maintenance and storage of all PPE provided by the mine action organization.
- 2) Appropriate facilities should be provided for its proper storage, carriage, cleaning and maintenance.
- 3) PPE shall be examined on a regular basis of at minimum 3 months to ensure they are suitable for use.

5.2 Suitability and Appropriateness

The following requirements shall be considered by mine action organizations:

- 1) PPE provided shall fit the employee, male or female;
- 2) Be designed to provide reasonable comfort;
- 3) Be designed and tested to provide protection against the predictable risks present at a demining worksite.

Clothing provided shall be suitable for the prevailing weather conditions and include footwear with suitably slip-resistant soles.

If the predictable risk is from AP blast mines, and Explosive Ordnance (EO) containing greater than 240g of explosive, and the FRA determined that there is a high probability of mine or ERW initiation if current procedures are applied, then the use of other appropriate procedures and enhanced protection shall be considered.

5.3 Minimum PPE Requirement

- 1) PPE shall be capable of protecting the parts of the body that are covered against the blast effects of 240g of TNT at distances appropriate to the wearer's activity.

- 2) The amount of PPE provided shall be determined as a result of a field risk assessment and management decision.
- 3) The minimum PPE inside the safety distance of a demining worksite or when engaged in any activity that involves being close to mines and ERW, shall be:
 - a) Body armor capable of satisfying the ballistic test outlined in STANAG 2920, achieving a V50 rating (dry) of 450m/s for 1.102g fragments;
 - b) Be capable of protecting the chest, abdomen and groin area against the blast effects of 240gm of TNT at 60 cm from the closest part of the body;
 - c) Eye protection that is held over the eyes in a frame that prevents blast ingress from beneath;
 - d) The eye protection shall be capable of retaining integrity against the blast effects of 240 gm of TNT at 60 cm and shall provide protection equivalent to not less than 5mm of untreated polycarbonate; and
 - e) Eye protection shall be a part of frontal head protection capable of protecting against the blast effects of 240gm of TNT at 60 cm and providing full frontal coverage of face and throat.

5.4 PPE Requirements in Different Roles

The minimum PPE requirements in different roles of demining, disposal of ERW and stockpile destruction operations shall be considered as below:

- 1) Manual clearance; full face visor, body armor and protective gloves;
- 2) BAC operations as following:
 - a) Surface visual; search body armor.
 - b) Surface instrumental search; eye protection and body armor.
 - c) Sub-surface search and excavation; protective visor and body armor.
 - d) Surface and sub-surface for sub-munitions; protective visor and body armor.
- 3) MDD handler are permitted to use reduced face protection to avoid voice distortion. Reduced face protection may be half-face visors or the use of ballistic eye protection only.
- 4) Mechanical operators and surveyors may not need to wear protective visor and body armor when working inside an armored cabin, unless there are limitations applied as part of the operational accreditation of the machine that dictate wearing PPE by occupants.
- 5) EOD operators; were protective visors and body armor during handle or working around ERW. An exception may be when the EOD personnel are operating in confined spaces and wearing of PPE could impede the operator potentially creating a higher risk. When dealing with large items including aerial dropped weapons an enhanced level of protection may be necessary.

- 6) Supervisory personnel; ballistic eye protection and body armor, but when approaching within minimum safety distance of clearance activity, full visors and body armor shall be worn.
- 7) Visitors; protective visors and body armor when within the minimum safety distance with working personnel.

5.5 Fragmentation Protection

The fragmentation danger from most fragmentation mines and sub-munitions cannot be protected against with lightweight and practical PPE. This emphasizes the need to minimize risk through the use of inherently safe procedures.

Although the level of protection may not be sufficient, PPE provided to reduce the risk from fragmentation mines shall be at least that used as protection against blast hazards.

5.6 Hand Tools

Hand tools shall be constructed in such a way that their separation or fragmentation resulting from the detonation of an AP blast-mine detonation is reduced to a minimum. Hand tools shall be designed to be used at a low angle to the ground and should provide adequate stand-off from an anticipated point of detonation. The use of gloves can provide protection against non-explosive injury and should be considered.

5.7 Blast Resistant Footwear

Based on FRA findings, organizations may consider providing blast resistant boots for the protection of feet and lower limbs, where there is a significant risk that cannot be reduced by procedures alone. Blast resistance boots shall be proven to be effective in reducing the risk presented by the anticipated hazards.

5.8 Protecting Hearing

When conducting demolitions at minimum safety distances, the use of protection for the eardrums should be considered.

5.9 Explosive Ordnance Disposal (EOD) Clearance Sites

When engaged in the clearance of EOD clearance sites, an enhanced level of protection may be necessary. This should be defined in Standard Operating Procedures (SOPs), and may include conventional body armor or other specialist PPE ensembles.

6. Responsibilities

6.1 Sudan National Mine Action Centre (NMAC)

- 1) Ensure this national standard for PPE is properly applied;
- 2) Monitor the application of PPE as per the requirements of this standards; and
- 3) Undertake periodic reviews of this national standard for PPE and the technologies available to reduce risks.

6.2 Mine Action Organizations

All accredited mine action organizations working in demining operations in Sudan, shall:

- 1) Comply with requirements of this standard for PPE;
- 2) Provide PPE for each activity undertaken that meets, or exceeds, the minimum requirements and is appropriate for the wearer, male or female.
- 3) Provide relevant employees with serviceable and appropriate PPE;
- 4) Provide training and supervision in the selection of appropriate PPE and the correct use and maintenance of PPE;
- 5) Establish and maintain SOPs that specify care and maintenance requirements;
- 6) Provide suitable facilities for the storage, carriage, cleaning and maintenance of PPE.

6.3 Employees

Employees of mine action organizations involved in demining operations, shall:

- 1) Use PPE in accordance with the requirements of this standard and specified in organizations accredited SOP;
- 2) Clean and maintain the PPE in accordance with the specification of SOPs and as trained for;
- 3) Report to the organization, problems with the PPE and suggest improvements to SOPs, which may reduce the requirement for PPE, or improvements in their design or application.