HEALTH AND (OCCUPATIONAL) SAFETY

References

1. This document has been developed with reference to the following documents:

i. IMAS 10.10 S&OH General Principles
ii. IMAS 10.20 Demining Worksite Safety
iii. IMAS 10.30 Personal Protection Equipment -- PPE
iv. IMAS 10.40 Medical Support to Demining Operations
v. IMAS 10.50 Storage, Transportation and Handling of Explosives
vi. IMAS 10.60 Reporting and Investigation of Demining Incidents
vii. Jordan Law of Explosive Material (1953)
viii. TNMA 10.20 Calculation of Explosion Danger Areas

Scope

2. This chapter 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. This chapter broken into 3 parts:

Part 1: Personal Protective Equipment (PPE) requirements

Part 2: Work Site Requirements

Part 3. Transport and Storage of Explosives

Objective

3. To ensure that all clearance operations are conducted with the minimum exposure to risk and enhance the safety and quality of all clearance operations.

Introduction

4. 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.

5. 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.

PART 1: PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

General

6. This Chapter provides specifications and guidance to demining organisations on the minimum requirements of personal protective equipment (PPE), including protective clothing, for use in mine action.

7. The levels of PPE provided for use in hazardous areas shall be based on a number of factors including: the local risk(s), operational procedures and practices, and local environmental conditions.

8. Training must be provided on the proper use, maintenance and storage of the PPE in use within the demining organisation. Facilities should be provided for its proper storage and carriage. Equipment must be examined on a regular basis to ensure that it is suitable for use.

9. All employees involved in demining should be provided with comfortable and serviceable clothing and footwear appropriate to the task and Jordanian conditions.

10. As a minimum, deminers must wear “combat” style boots, trousers and long sleeve shirts. Where possible these should be made of natural materials. Personnel involved in burning activities should wear flame proof clothing where possible and as a minimum must wear cotton material rather than synthetics

11. Although this standard lays down distances at which the PPE must be effective it must be emphasised that this does NOT imply to deminers that they will be safe at such distances. Distance itself is an excellent attenuator of blast effects and the further away from an undesired explosive event the better!

Blast / Fragmentation protection

12. PPE should be capable of protecting against the effects of last blast and fragmentation appropriate to the activity performed in accordance with SOPs.

13. The frontal protection ensemble provided to employees, whether required to kneel, sit or squat shall be designed to cover the eyes, throat (frontal neck), chest, abdomen and genitals. Equipment provided to reduce the risk from such hazards shall include, as a minimum:

i. Frontal protection, appropriate to the activity, capable of protecting against the blast effects of 240 gm of TNT at 30 cm from the closest part of the body.
ii. Face protection capable of retaining integrity against the blast effects of 240 gm of TNT at 60 cm, providing full frontal coverage of face and throat.

14. Ballistic body armour and face protection should have a STANAG 2920 v50 rating (dry) of 450m/s for 1.102g fragments. Where such a rating has not been obtained equipment may still e approved for use subject to in country trails monitored by the NCDR.

Hand Tools

15. Hand tools should be constructed in such a way that their separation or fragmentation resulting from the detonation of an AP blast-mine incident is reduced to a minimum. They should be used with appropriate hand protection such as a hand-shield or gloves. Hand tools should be designed to be used at a low angle to the ground and should provide adequate stand-off from an anticipated point of detonation.

Part 2: WORK SITE REQUIREMENTS

General

16. The demining worksite shall be designed to:

i. Provide a clearly visible separation of hazardous areas including fragmentation and evacuation safety areas, cleared areas, uncleared areas and unknown areas of and around the worksite.

ii. Control the movement of deminers and visitors (including members of the public) at the worksite.

iii. Limit the number of deminers and visitors allowed into the fragmentation and evacuation safety areas.

iv. During the controlled destruction of mines and UXO, take all reasonable precautions to exclude deminers, visitors and members of the local population from the fragmentation and evacuation safety areas, or provide suitable protection inside buildings, bunkers or mobile structures.

v. Include measures to prevent structural and environmental damage.

Marking of hazardous AREAS

17. Safe and hazardous areas within the worksite shall be separated by providing clear and consistent marking. See Chapter 6 – Site Layout and Marking Systems for further information.

Medical

18. See Chapter 5 – Task Site requirements for further information

Communications

19. See Chapter 5 – Task Site requirements for further information

Safety distances for the destruction of mines and UXO

Demolition minimum safety distances	
Type of munition	**(Open area – metres)**
AP mine – Blast	100
AP mine – Fragmentation/bounding/directional	200
AT mine – Blast	300
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	300
Shell up to 80 mm	300
Shell up to 160 mm	600
Shell above 160 mm	1,000
Rocket up to 88 mm	300
Hand and rifle grenade	200

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.

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.

Protective measures may be used to allow distances to be reduced.

Deminers / operational staff

20. Demining workers shall:

i. Take all reasonable care for their safety and that of other persons on the worksite.

ii. Comply with instructions given for their own conduct and safety, especially those contained in SOP.

iii. Comply with NTSG on conduct and safety on worksites.

iv. Report forthwith to their superior any situation, which they have reason to believe could present a worksite hazard, which they cannot themselves correct.

Mechanical site safety

20. A mine clearance site that incorporates both mechanical and manual mine clearance procedures will require strict control and greater safety distances than those used for manual mine clearance.

22. When using flails and inspecting the area afterwards through clearance or visual inspection, all found mines or mine parts that include the fuse are to be destroyed in situ. Under no circumstances are these objects to be remotely moved or neutralised and recovered because of the possible unstable nature of the mine, firing train or firing train component.

23. When operating a remote controlled clearance machine the operator is to be no closer than 50 metres (AP threat) to the machine, minimum PPE requirements are visor, helmet and apron. At no time is the operator to be directly in front of or behind the machine.

24. When operating a remote controlled clearance machine from inside a protected vehicle the minimum safety distance will be determined by the level of protection provided. The manufactures guide for the vehicle should be referred to.

25. These distances maybe reduced if there is adequate protection available from blast and fragmentation and essential personnel required for supervision are wearing full PPE. The safety distance shall be increased when necessary. Any reduction in safety distances must first be authorisation by the NCDR.

Demining incidents

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

i. The organisation and capabilities needed to respond to a demining incident, including the procedures, training, equipment and material.

ii. Procedures for the investigation, analysis and corrective action to be taken following a demining incident.

27. See Chapter 9 – Investigations of Mine / UXO incidents for further information.

Part 3: TRANSPORT, STORAGE AND HANDLING OF EXPLOSIVES

28. Recognising the regulatory legislation of Jordanian Law of Explosive Materials (No 13 dated 17/1/1953, Paper 1131), dully deal with the security of movement of explosives and storage of explosives.[1]

Definition

29. The term *explosives* is used throughout this NTSG to include all items of an explosive nature.

[1] This document is available on the NCDR website www.ncdr.org.jo

Certification

30. The NCDR will provide certification for certain people within demining organisations to take responsibility for the transport, storage, security and handling of explosive materials.

Standard operating Procedures

31. All procedures and requirements required for the transport, storage and handling of explosives are to be fully explained in step-by-step detail in the clearance organisations SOP.

32. Internal agency QA should ensure compliance to agency SOP, which should reflect the principles of Jordan's guidelines for the transport, storage and handling of explosives.

Coordination

33. The NCDR will be the focal point for the coordination the security of explosive materials in transit and storage with the military.

Inspection

34. The NCDR will inspect explosive storage facilities and the use of explosives as part of the QA process.

Reporting

35. Agency reporting must contain details of explosive use on a monthly basis.