

A Guide to the International Mine Action Standards



IMAS

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Geneva International Centre for
Humanitarian Demining
Centre International de
Démunage Humanitaire - Genève



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The **Geneva International Centre for Humanitarian Demining** (GICHD) works towards a world free of anti-personnel landmines and for the reduction of the humanitarian impact of remnants of war by providing operational assistance, creating and sharing knowledge, and supporting instruments of international law.

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Introduction

The IMAS and the aim of the Guide

The IMAS — the International Mine Action Standards — are standards issued by the United Nations to guide the planning, implementation and management of mine action programmes. They have been developed to improve safety and efficiency in mine action.

The IMAS cover a wide range of issues from the accreditation of mine detection dogs to medical support for demining teams, from safety and occupational health to survey, from sampling of cleared land to the storage and transport of explosives.

The IMAS also provide general information to the mine action community on existing regulations and treaties which affect mine action, particularly those referring to international humanitarian law, clearance requirements, hazard marking and general safety issues.

As the IMAS can sometimes be complex, this handbook is intended to explain the purpose of the IMAS and what each of the different standards says.

What is mine action?

According to the IMAS, the term *mine action* refers to activities which, together, aim to reduce the social, economic and environmental impact of landmine contamination. Mine action is made up of five core groups of activities:

- mine risk education;
- humanitarian demining, including marking, survey and clearance of mines and explosive remnants of war (ERW);
- victim assistance;
- advocacy to stigmatise the use of landmines and support a total ban on anti-personnel landmines; and
- stockpile destruction.

What are the IMAS used for?

The IMAS are a framework for the development of *national* mine action standards, which can more accurately reflect specific local realities and circumstances in a given country. National mine action standards should therefore take account of the IMAS, but will not necessarily follow the IMAS in every respect. They will differ from country to country depending on the local situation.

On the other hand, where the United Nations (UN), or some other recognised international body, assumes the responsibilities and functions of a national mine action authority, the IMAS will be applied directly as the mine action standards.

IMAS are also the base for developing legal contracts between donors and implementing organisations.

In addition to preparing *national* mine action standards, each mine action organisation should also write what are called **standing operating procedures** (SOPs). These are more detailed instructions for organisations and mine action centres on how to carry out specific operational tasks or activities safely and effectively.

SOPs should ensure that mine action standards are maintained on a day-to-day basis. They will differ from country to country.

The IMAS series

To make it easier to find the standard you are looking for, the IMAS are broken down into a number of “series”, each of which deals with a different aspect of mine action. For example, Series 9 deals with mine and unexploded ordnance clearance and Series 11 deals with stockpile destruction.

The different series are set out below. Different colours have been used to help the reader find the relevant series quickly.

- 01 — Guide for application of the IMAS
- 02 — Establishment of mine action programmes
- 03 — The procurement of mine action equipment
- 04 — Glossary of terms and definitions
- 05 — Information systems
- 07 — Management, accreditation and monitoring
- 08 — Risk assessment and survey
- 09 — Mine and UXO clearance
- 10 — Mine action safety and occupational health
- 11 — Mine stockpile destruction
- 12 — Mine risk education
- 14 — Evaluation of mine action programmes

The standards

Within each series, there is usually more than one standard. Thus, for example, Series 9 on mine and UXO clearance contains eight different standards. These deal with, respectively:

- clearance requirements (Standard 09.10),
- inspections of cleared land and sampling procedures (Standard 09.20),
- explosive ordnance disposal (Standard 09.30), and
- the use of mine detection dogs (of which there are five different standards: 09.40 to 09.44).

In addition, new standards, 09.50-09.52, on mechanically-assisted clearance are currently under development.

A full listing of the standards is set out in the diagram overleaf. The ones marked in **green** have already been completed; those marked in **red** are either planned or still being drafted.

Each standard is explained in a separate section according to the series number. Each new section starts with a brief overview of the content of the series.

This guide covers the standards in Series 1, 3, 4, 7, 8, 9, 10, 11, 12 and 14. The other series are still under development.

How are the IMAS developed?

The United Nations first issued a set of international standards for humanitarian mine clearance in March 1997. In 2000, these standards were updated to incorporate changes in the way clearance operations were being undertaken. They were also broadened beyond clearance operations to include other components of mine action, including stockpile destruction, survey and training. To reflect this broader approach, the standards were renamed the **International Mine Action Standards**, or **IMAS** for short.

New IMAS are produced periodically and existing IMAS can be amended or replaced with a new edition as a result of the review process. The latest version of each standard can be found on the Internet at www.mineactionstandards.org. A CD-ROM of the Standards is also produced periodically.

The work of preparing, reviewing and revising the IMAS is conducted by technical committees, with the support of international, governmental and non-governmental organisations (NGOs). This process is coordinated by the Geneva International Centre for Humanitarian Demining (GICHD). UNMAS is the office within the UN Secretariat responsible for the development and maintenance of the IMAS.

The IMAS Review Board, responsible for overseeing the review and revision of the IMAS, is composed of representatives of concerned UN agencies, donors, commercial demining companies, research and development institutions, demining NGOs, national mine action authorities and/or mine

action centres and, as required, subject specialists. The Review Board is chaired by UNMAS and a representative of the GICHD serves as Secretary to the Board as well as being a member. A higher level IMAS Steering Group, chaired by the Director of UNMAS with UN Agency representation from UNICEF, the United Nations Development Programme (UNDP) and the United Nations Office for Project Services (UNOPS), oversees the work of the Review Board.

Technical language in the IMAS

Mine action — and therefore the IMAS — uses a wide range of technical vocabulary. For this reason, the IMAS contain a detailed glossary in Series 4, Standard 04.10.

Key words that appear in the glossary are marked in colour the first time they appear in the guide to the different standards. These terms and their explanations are included in Appendix 1 to this guide.

In the IMAS, the words “shall”, “should” and “may” are used to indicate specific levels of obligation.

“*Shall*” is used to indicate a requirement or obligation and is therefore not used very often.

“*Should*” is used to indicate a preferred or suggested course of action.

“*May*” indicates a possible way to do things.

Framework of the IMAS - January 2006

(green = extant Standard, red = in progress/planned)

General mine action standards and guidelines

- 01.10 Guide for the application of the IMAS
- 02.10 Establishment of mine action programmes
- 03.10 Guide to procurement of mine action equipment
- 03.20 The procurement process
- 03.30 Guide to the research of mine action technology
- 03.40 Test and evaluation of mine action equipment
- 04.10 Glossary of terms and definitions
- 05.10 Information systems

Training needs of mine action managers and staff

- 06.10 Series is discontinued.

Management, accreditation and monitoring

- 07.10 Guide for the management of demining operations
- 07.11 Guide for the management of mine risk education
- 07.20 Guide for the development and management of mine action contracts
- 07.30 Accreditation of demining organisations and operations
- 07.31 Accreditation of mine risk education organisations and operations
- 07.40 Monitoring of demining organisations

- 07.41 Monitoring of mine risk education programmes and projects
- 07.42 Monitoring of stockpile destruction programmes

Risk assessment and survey

- 08.10 General mine action assessment
- 08.20 Technical survey
- 08.30 Post-clearance documentation
- 08.40 Marking mine and UXO hazards
- 08.50 Data collection and needs assessment for mine risk education

Mine and UXO clearance

- 09.10 Clearance requirements
- 09.20 Inspection of cleared land: guidelines for the use of sampling procedures
- 09.30 Explosive ordnance disposal
- 09.40 Guide for the use of mine detection dogs
- 09.41 Operational procedures for mine detection dogs
- 09.42 Operational accreditation of mine detection dogs
- 09.43 Remote Explosive Scent Tracing (REST)
- 09.44 Guide on medical and general health care
- 09.50 Mechanical application
- 09.51 Mechanical operator safety specifications
- 09.52 Mechanical area reduction

Mine action safety and occupational health

- 10.10 Safety and occupational health: general requirements
- 10.20 Safety and occupational health: demining worksite safety
- 10.30 Personal protective equipment
- 10.40 Medical support to demining operations
- 10.50 Storage, transportation and handling of explosives
- 10.60 Reporting and investigation of demining incidents

Anti-personnel mine stockpile destruction

- 11.10 Guide for the destruction of stockpiled anti-personnel mines
- 11.20 Principles and procedures for open burning and open detonation (OBOD) operations
- 11.30 National planning guidelines for stockpile destruction

Mine risk education

- 12.10 Planning for mine risk education programmes and projects
- 12.20 Implementation of mine risk education programmes and projects

Evaluation of mine action programmes

- 14.10 Evaluation of mine action programmes
- 14.20 Evaluation of mine risk education programmes

Series 1.

Guide for the application of International Mine Action Standards (IMAS)

There is currently only one **standard** in the **IMAS** Series 1:

01.10 – Guide for the application of IMAS.

This standard defines what constitutes a “standard” in the IMAS, explains the role of the IMAS in **mine action** and sets out five guiding principles for their use.

Standard 01.10 was revised and issued as a second edition in 2003.

STANDARD 01.10

Guide for the application of International Mine Standards (IMAS)

The **IMAS** follow the **International Organization for Standardization (ISO)** definition of a standard. This defines a **standard** as an agreement containing technical and other information to ensure that processes and services are fit for their purpose. **Mine action** standards aim to improve safety and efficiency in mine action by promoting preferred procedures and practices at both headquarters and field level.

The ISO is a worldwide federation of national bodies from more than 138 countries. Its work results in international agreements which are published as ISO standards and guides.

ISO is an NGO and the standards it develops are voluntary, although some have been adopted by many countries as part of their regulatory framework.

The guiding principles of the IMAS

Standard 01.10 sets out the five guiding principles of the IMAS, namely that:

- National governments have the right to apply national standards to national programmes (“national responsibilities and obligations”);
- Standards should protect those most at **risk** (“humanitarian imperative”);
- There should be an emphasis on building a national capacity to develop, maintain and apply appropriate standards for mine action (“capacity-building”);
- Consistency should be maintained with other international norms and standards; and
- International conventions and treaties should be complied with.

1. National responsibilities and obligations

The primary responsibility for mine action lies with the government of the mine-affected State. This responsibility is normally given to a **national mine**

action authority, which has to regulate, manage and coordinate a national mine action programme. Sometimes, the UN, or another recognised international body, may have to assume some or all of the responsibilities, and to fulfil some or all the functions, of a national mine action authority.

2. Humanitarian imperative

Landmines are a humanitarian concern and should be addressed from the humanitarian perspective. In this regard, the framing of standards and their application to national mine action programmes and local projects should reflect the fundamental humanitarian principles of neutrality, impartiality and humanity, so that mine action is focused on giving support to those who are most vulnerable.

3. Capacity-building

In countries with long-term mine action needs, an indigenous capacity should be developed from the outset of a mine action programme. This means that at the national level a State should eventually be able and willing to plan, coordinate, manage and sustain an effective and efficient mine action programme.

An indigenous capacity includes the formation of a national mine action authority and other operational organisations, and the ability to develop, maintain and apply appropriate national standards for mine action.

4. Other international standards

The IMAS are written to be consistent with other international standards and to comply with international regulations, conventions and treaties. Relevant standards include those adopted by the International Labour Organization (ILO) for safety in the workplace and ISO standards on risk management and the application of quality systems.

Other standards dealing with electronic data are relevant to the management of mine action information.

5. International treaties

IMAS draws on the two main international law treaties regulating landmines:

- the 1997 *Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction* (often referred to as the **Anti-Personnel Mine Ban Convention** or the **Ottawa Convention**); and
- **Amended Protocol II** on Mines, Booby-Traps and Other Devices of the *UN Convention on Certain Conventional Weapons*.

States that are party to one or both of these treaties have, for instance, certain specific obligations regarding the marking of **mine hazards**. The provisions of IMAS do not replace these and other relevant obligations.

The application of mine action standards

IMAS have no legal standing except where they have been adopted by a national authority as national standards, or where one or more of the specific IMAS is specified in a contract or some other legal instrument.

Series 3.

The procurement of mine action equipment

There are currently four **standards** in Series 3 on the **procurement** of **mine action** equipment:

- *03.10 – Guide to the procurement of mine action equipment;*
- *03.20 – The procurement process;*
- *03.30 – Guide to the research of mine action technology;* and
- *03.40 – Test and evaluation of mine action equipment.*

“Procurement” refers to the process of research, development, production and purchase which leads to an item of equipment being accepted as suitable for use in mine action programmes, and continues with the provision of spares and post-design services throughout the life of the equipment.

Mine action programmes have traditionally relied on manual practices, procedures and drills, which are slow, deliberate and labour intensive. In many situations, a manual approach may be the most appropriate and effective means of detecting and clearing landmines. However, other technologies may enable ground preparation and mine clearance to be conducted more effectively, cheaply and quickly, and with less **risk**.

The Series 3 standards provide guidelines for, and promote a common approach to, the procurement of mine action equipment. They recommend a decentralised approach to procurement.

STANDARD 03.10

Guide to the procurement of mine action equipment

Standard 03.10 provides guidance on the basic requirements of the application of technology and the **procurement** of equipment for **mine** clearance.

Procurement refers to the process of research, development, production and purchase which leads to an item of equipment being accepted as suitable for use in **mine action** programmes. It continues with the provision of spares and post design services throughout the life of the equipment.

The aim of the procurement process is to deliver effective, appropriate and cost-effective equipment to the user.

A common approach to procurement within the mine action community could lead to significant benefits. There are, however, a number of obstacles to the universal acceptance of technology standards. These include:

- a real, or perceived, difference in national and local needs and priorities;
- an inability to meet new standards;
- a reluctance to change procedures to conform to externally imposed standards;
- the transfer of information that has military or commercial sensitivity; and
- for collaborative projects, the allocation of work share, potential profits and exposure to risk between partners.

The outcome of the process will depend on three key factors: user needs, the availability of technology, and the availability of funding. These factors should be assessed by conducting a “formal investment appraisal”.

According to the UN, the appraisal should take account of a number of principles and priorities, including:

- *Functionality*. Potential technologies shall meet the “essential” equipment requirements as defined in the Statement of Requirement;
- *Cost-effectiveness*. The cost-effectiveness of different technologies shall be fully assessed, and compared against existing equipment and methods.
- *Reliability*. The reliability of technologies shall be determined.

Ruggedness and repairability are essential criteria for most mine action technologies.

- *Utility.* Ideally, equipment should have a broad utility. Equipment which is of use in a large number of mine action programmes will benefit from “economies of scale”: lower unit costs, availability, familiarity, ease of training and user confidence.
- *Ease of use.* Complex technologies will impose a significant training burden unless they are to be operated by specialists, such as military peacekeeping forces. Ergonomics and the man machine interface are to be given high priority.
- *Technology maturity.* Use should be made of systems based on fully developed technologies.

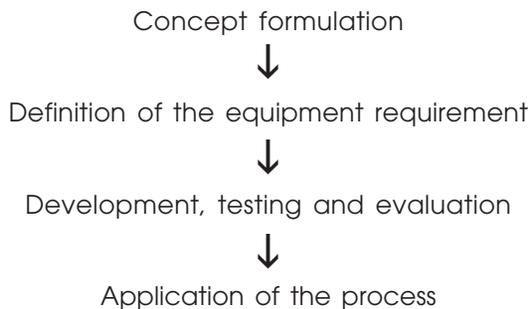
STANDARD 03.20

The procurement process

Standard 03.20 provides an overview of the **procurement** process for **mine action** equipment. Detailed guidance is also given on the preparation of documentation to support the process.

As a principle the procurement of mine action equipment should be decentralised. There should also be as much participation as possible from the user, industry and the **donor** community.

The procurement process should ideally follow a certain number of steps in a particular order, although in practice this is not always possible. The ideal process has four steps:



Concept formulation

Concept formulation is the first stage of the procurement process, and covers the period from the idea for a project through to the initial statement of operational need. It should end with a preliminary statement of operational need, prepared by the originator of the idea or by a **sponsor** acting on his or her behalf. This should be a broad statement based on an assessment of current capabilities and predicted future requirements.

Definition of the equipment requirement

Definition of the equipment requirement usually requires four steps:

- a Preliminary Study;
- a Statement of Tasks and Output;
- Feasibility Studies; and
- a Statement of Requirement.

A *Preliminary Study* should be carried out by the project sponsor once a need has been identified. Its purpose is to give an indication of the practicability of the idea in terms of technological possibilities and cost.

The sponsor of an equipment trial is the authority requiring the trial to be carried out. This is most likely to be an international organisation, national **mine action centre**, donor or **demining organisation**.

A *Statement of Tasks and Output* should be prepared by the sponsor based on the findings of the preliminary study. It should set out the user's needs in broad terms, explaining more *what* the equipment should be able to do than *how* it should do it, so as to enable a wide range of solutions to be considered.

A *Feasibility Study* should be carried out to establish the feasibility of the Statement of Tasks and Output in terms of technology, cost and time, assuming the sponsor has agreed to proceed. For small equipment projects involving minimal costs and engineering risk, it may be possible to move straight to development or even to an evaluation of **commercial off-the-shelf** equipment.

A *Statement of Requirement* should be developed from the Statement of Tasks and Output by the sponsor, based on the findings of the feasibility study. This Statement provides a detailed justification for the required solution, details what is expected of the equipment, and estimates costs, technical factors and timings. It provides the necessary information for final project approval and should also provide suppliers/contractors with sufficient detail for design work to be undertaken.

The sponsor of an equipment trial shall make a clear distinction between *essential* and *desirable* requirements. A clear distinction should also be made between generic requirements and local needs. The aim should be to maximise generic requirements. Wherever possible, local needs should be met by adjustments or modifications to major components or by software changes.

Development, testing and evaluation

The development stage is normally divided into a number of sequential activities and decisions which together provide effective management control of the project, particularly over costs and engineering risk. For most mine action equipment projects, two principal groups of activities can be identified: preliminary development and full development.

Preliminary development involves initial planning, design and engineering work. This identifies technical obstacles and provides detailed estimates of duration and cost before a decision to proceed to full development is made.

Preliminary development is normally undertaken by industrial suppliers. The output of preliminary development should be a comprehensive report prepared by the contractor.

Full development involves all the engineering processes, trials and tests necessary to draw up the final production design. This should include the manufacture of models and prototypes for user field trials. It should include the preparation of all necessary information, drawings, full logistic support in the form of handbooks, documentation, spares, test equipment, tools and a full user training package. It should also involve the necessary tests, trials and evaluation leading to acceptance by the sponsor and/or certification of the equipment.

Test and evaluation of equipment should be conducted to prove system performance before incorporation into new or modified equipment.

Acceptance: the sponsor is responsible for “accepting” the equipment as suitable for use in mine action. Provisional acceptance may be given by the sponsor so that minor problems can be corrected.

Certification is a particular form of acceptance normally initiated by an equipment manufacturer. It should normally be conducted at an approved test and evaluation establishment.

Production: planning for production is a key part of full development. Before starting full production, there should be sufficient confidence that a standard acceptable to the user can be achieved.

Management of risk: the effective management of **risk** by the sponsor throughout the procurement process improves the likelihood of the equipment being delivered on time and to cost, and will meet its performance objectives.

Application of the process

This standard has described the “ideal” procurement process for mine action equipment. In theory, every equipment project should pass through each stage of the process in sequence. In practice, the process is flexible and some stages will overlap or may even be omitted, particularly in the case of small projects with limited engineering risk, i.e. those involving the procurement of commercially available equipments already in production. Each project may be different and shall be treated on its relative merits.

STANDARD 03.30

Guide to the research of mine action technology

Standard 03.30 explains the principles and processes of research in **mine action**. Research is an integral part of the **procurement** process. Without ongoing research it will not be possible to improve existing mine action equipment.

Indeed, it is difficult to imagine any equipment in use in mine action programmes today — from mine detectors and Global Positioning Systems (GPS) to protective visors and prodders — which have not been the result of research activities.

Research categories and groups

There are two main categories of research: “pure research” and “applied research”. Pure research normally refers to research activities that are not linked to any specific application. Pure research aims to establish generic principles. Applied research addresses clearly defined problems and market opportunities, within defined parameters such as cost, time and risk.

Research involves four distinct groups of activities:

- analysis of the problem;
- analysis of constraining factors;
- analysis of potential technologies; and
- communication of research results.

Analysis of the problem: for mine action technology, analysis of the problem basically involves an analysis of the Statement of Operational Need (SON). This important activity is often overlooked or conducted with insufficient effort.

Analysis of constraining factors: factors which constrain the technological solution should then be analysed. Such limiting factors should include the operational imperative, the environmental conditions, the **mine** threat, manufacturing constraints and in-country support (including maintenance and repair, operator skills and the availability of funding).

Analysis of potential technologies: potential technologies should be analysed to determine their suitability, availability and affordability. This should include

an assessment of the **risk** of using new components, materials, manufacturing processes and unproven software.

Communication of research results: the results of research should be sent to those who need to make decisions. Pure research may involve peer review to establish the necessary validity and authority. Peer review is normally exercised via academic and/or professional journals and conferences. Applied research is normally presented to the project **sponsor** in a formal report, reinforced where necessary with technology demonstrations.

Research facilities

Traditionally, most research has been conducted in universities and technical institutes of higher learning.

In recent years, applied research has increasingly moved from academia to industry. It may involve substantial investment, and is unlikely to be made readily available to potential competitors, even for humanitarian causes such as mine action.

Governments have developed national research facilities for strategic capabilities such as defence, nuclear power and public health. There is growing pressure to transfer more information into the public domain. This includes the results of government-sponsored research into mine action technologies, although the procedures for such sharing have yet to be fully developed.

International research facilities are normally the result of two or more countries sharing facilities for mutual benefit. Such benefit may reduce the overall costs, or the objectives may have a political imperative.

Direction and control

At national level, decisions on the use of national resources and research facilities for the benefit of mine action are driven by government policy and perceived national interests.

Although many governments have committed themselves to assisting affected States by providing the information and facilities needed to improve technology, they have yet to develop the national procedures for making the information and facilities readily available. National security, intellectual property rights and funding all limit the quantity and quality of information that can be made available.

At international level, a number of fora develop international policies which provide direction and cooperation on research. These mainly exist within existing regional, defence or trade groupings such as the European Union, the Organization of American States, the North Atlantic Treaty Organisation (NATO), the European Union and the NATO Partnership for Peace programme.

The UN has an obligation and the mandate to provide direction and guidance. For details, see E-MINE (www.mineaction.org).

STANDARD 03.40

Test and evaluation of mine action equipment

Standard 03.40 is aimed at **test and evaluation** “stakeholders” at the international level (the International Test and Evaluation Programme for Humanitarian Demining) and the national level (manufacturers).

The purpose of test and evaluation is to provide an independent assessment of the suitability and effectiveness of **mine action** equipment. Test and evaluation can assess the potential of new technologies or confirm the performance and characteristics of **commercial off-the-shelf** equipment.

Key definitions

A **test** is a method of examining software or a material, component or equipment against a set of criteria designed to achieve a positive result.

A **trial** is a series of systematic tests, the individual results of which lead to an overall evaluation of a component, equipment or system.

An **evaluation** is the analysis of results to establish the effectiveness of software, a component, equipment or system, within the environment in which it will operate.

The purpose of trials

The principal purpose of a trial is to provide quantitative data that can be used with statistical confidence to support valid conclusions and recommendations. Since trials are costly in time, resources and manpower, very careful thought and planning is required in their design.

Trials are a way of finding out early enough what may be wrong, not merely to confirm that everything is right. The failure of components and sub-assemblies can be addressed as part of the development process, without jeopardising the findings of the trial.

Control of test and evaluation

Trials, and the subsequent evaluation of trials data, require an effective control organisation. The form and scope of this organisation may vary.

The full cost of resources, including the use of test facilities, consumable stores, instrumentation, maintenance, salaries and travel shall be assessed as soon as possible.

Trials should be conducted at test and evaluation facilities that are accredited to the appropriate national standards institutes for the maintenance of technical standards in laboratories, test and evaluation establishments.

Categories of trials and evaluation

Concept and technology *demonstrator trials* are designed to gather data on the potential use of equipment in the field, for example to assess the most effective and efficient mix of equipment and procedures for conducting a **technical survey**. They take the form of carefully controlled “scenarios”, often using pre-production equipment. Such trials may also involve existing equipment and procedures to provide a benchmark against which the research equipment and new procedures can be measured.

Development trials should normally be conducted by the contractor who is developing the equipment. The aim is to establish that the design is technically satisfactory and meets the parameters of the agreed Statement of Requirement. Trials of components and sub-systems to be incorporated in a complete piece of equipment are included in this category. For example, a new type of engine or flail unit could be fitted to a proven vehicle so that the engine or flail is on trial, not the whole new vehicle.

Acceptance trials are undertaken to provide the **sponsor** with sufficient information for decisions on the acceptability of a piece of equipment for its intended use. Acceptance trials shall be conducted on equipment which is representative of the production equipment.

Consumer reports are prepared from trials of a range of commercial “off-the-shelf” mine action equipment. These trials may involve a review of previous trials, tests in laboratory conditions and new field trials. The format of the results shall be based on a rigorous evaluation methodology as the conclusions may be subject to considerable commercial interest.

Conduct of trials

Trials may vary widely in their aim and scope. However, there are four common stages of managing a trial: planning, preparation, execution and reporting.

Planning includes a clarification of the type of measurements to be made, data to be collected and proposed methods of analysis, procedures for dealing with proprietary information, and the requirements for public release of the test results.

Preparation involves all the activities that develop the capacity to carry out a trial. This should include setting up the trials organisation, acquiring specialist equipment and stores, carrying out necessary training and deploying to the test site. For trials that will be conducted in, or close to, mined areas it shall

always be a pre-condition that full medical arrangements are established before the main trial is allowed to start.

Execution of the trial should present no problem if the planning and preparation stages are conducted thoroughly. The main concern is to ensure that the momentum of the trial is not lost due to equipment failures or bad weather. If practicable and affordable the trial should continue so long as useful data can be obtained. Generally, the trial should be conducted in a series of distinct tests each covering a main objective. At the end of each test a report shall be required as a record of progress and as a guide to any alterations which may be needed in a later phase.

Reporting: the end product is the final trial report. This shall contain the information that the trial is intended to determine and shall reach the sponsor promptly.

International Test and Evaluation Programme

The International Test and Evaluation Programme for Humanitarian Demining (ITEP) is a global network of test and evaluation capabilities for scientifically measuring performance, and evaluating effectiveness and suitability, of all forms of **humanitarian demining** equipment, systems and methods. See: *www.itep.ws*.

CEN Workshop Agreements (CWA)

The *European Committee for Standardization (CEN)* works in collaboration with the UN and GICHD to research and produce CEN Workshop Agreements which are voluntary standards of best practice as agreed by the specific workshop members. The resulting CWA can be used as references within IMAS. To date the following CWA have been produced:

- CWA 14747:2003 — Test and evaluation of metal detectors;
- CWA 15044:2004 — Test and evaluation of demining machines;
- CWA 15564:2005 — EOD competency standards.

Further information can be obtained from *www.cenorm.be*.

Series 7.

Management, accreditation and monitoring

There are currently seven full **standards** in Series 7 and one draft **standard**. Of these, four standards address the management of **demining** operations:

- *07.10 — Guide for the management of demining operations;*
- *07.30 — Accreditation of demining organisations and operations;*
- *07.40 — Monitoring of demining organisations; and*
- *07.42 — Monitoring of stockpile destruction programmes.*

Demining involves the clearance of contaminated land and return to mine-affected communities by the detection, removal or destruction of all mine and UXO hazards.

Demining is carried out by many different types of organisations, such as non-governmental organisations, commercial companies, national mine action teams or military units. Despite differences in approach, there are common «core» activities and therefore common responsibilities.

The effective management of demining operations aims to clear land in a safe and efficient manner. This is achieved by developing and applying appropriate management processes, by establishing and continuously improving the skills of managers and deminers, by obtaining accurate and timely information on the mine and ERW threat, by applying safe and effective operational procedures, and by using appropriate and efficient equipment.

Three standards address the management of mine risk education (MRE) projects and programmes:

- *07.11 — Guide for the management of mine risk education;*
- *07.31 — Accreditation of mine risk education organisations and operations; and*
- *07.41 — Monitoring of mine risk education programmes and projects.*

The first two editions of the IMAS did not include MRE-specific standards and guides. This guide and other MRE standards (see Series 8, 12 and 14) address the particular needs of MRE, as an integral part of mine action. The IMAS standards for MRE have been developed from, and replace, the 1998 *International Guidelines for Landmine and UXO Awareness Education* drafted by

UNICEF on behalf of the UN system. These draft standards became full standards in 2004. IMAS 07.31 is currently under review.

One draft standard awaits approval of the Inter-Agency Coordination Group on Mine Action:

- *07.20 — Guide for the development and management of mine action contracts.*

STANDARD 07.10

Guide for the management of demining operations

The management of **demining** operations is not just about planning and supervising current tasks. It is also about reviewing current practices and procedures to improve **safety**, effectiveness and efficiency, and ensuring a constant link between demining operations and the mine-affected communities.

The process and procedures that aim to achieve this continuous improvement to an organisation's management system and operational practices are commonly referred to as **quality management**.

Standard 07.10 examines the demining process and recommends a management system that will ensure the **safe**, effective and efficient conduct of demining.

Responsibility for the management of demining operations

The **national mine action authority**, or the organisation acting on its behalf, is responsible for ensuring that national and local conditions enable the effective management of demining projects. The national mine action authority is ultimately responsible for all phases of a demining project within its national boundaries, including defining the clearance requirement, the **accreditation** of **demining organisations**, the **monitoring** of demining organisations during clearance, and post-clearance inspections prior to accepting full responsibility for the cleared land.

Ultimately, though, it is the individual demining organisation, of whatever type, that is required to establish an appropriate and effective management system, demonstrate it to the national mine authority, and apply it throughout the demining project. Where the national mine action authority is in the process of formation, the demining organisation is also responsible for assisting the formation process, by giving advice and assistance, including the framing of national standards.

The four stages of the demining management process

There are four stages of the demining management process: planning, preparation, clearance and post-clearance activities.

Planning for **mine action** requires information on the form, scale and impact of the threat posed by **mines**, **unexploded ordnance** and other explosive **hazards**. Such information will come from assessment missions and surveys, from ongoing local mine action projects and tasks, and from local knowledge.

For new mine action programmes, the planning process should ideally start with a formal assessment of the country situation. Should a decision be taken to develop a national mine action programme, it will be necessary to conduct a comprehensive assessment of the mine-affected country; this is known as the **general mine action assessment**. Guidance on the requirements for the general mine action assessment is given in **IMAS 08.10**.

Preparation includes all enabling activities that help to clarify the clearance requirement and develop the capacity of a demining organisation and its sub-units to carry out a clearance task. This includes the selection and **accreditation** of demining organisations as set out in **IMAS 07.30**.

Clearance: The need for effective and **safe** operational procedures is essential. **Standing operating procedures** (SOPs) should be prepared for all operational processes, practices and drills and to achieve the standards that have been set for a particular task. SOPs are instructions that define the preferred method of conducting an operational task or activity. Their purpose is to establish recognisable and measurable degrees of uniformity, consistency and commonality within an organisation, with the aim of improving operational effectiveness and safety. SOPs should reflect local requirements and circumstances.

Post-clearance: The inspection of **cleared land** aims to provide confidence that the clearance requirements have been met, and as such forms an essential part of the overall clearance process. **IMAS 09.20** provides guidance on the implementation of a management system for inspecting the quality of land by **sampling**. This includes determining responsibility for any residual **risk** and ensuring that the local community have been fully briefed.

Prior to the **handover** of cleared land, the area should be surveyed and marked, and all necessary documentation should be prepared, including a formal handover certificate. **IMAS 08.30** provides guidance on post-clearance handover requirements and management responsibilities.

STANDARD 07.11

Guide for the management of mine risk education

What is mine risk education?

The term **mine risk education (MRE)** refers to educational activities which seek to reduce the **risk** of injury from **mines** and **explosive remnants of war (ERW)** by raising awareness and promoting behavioural change. These activities include public information dissemination, education and training, and **community mine action liaison**.

MRE aims to ensure that communities are aware of the risks from mines, UXO and/or abandoned **munitions** and are encouraged to behave in a way which reduces the **risk** to people, property and the environment. The objective is to reduce the risk to a level where people can live safely and recreate an environment where economic and social development can occur free from the constraints imposed by landmine contamination.

MRE should not normally be a stand-alone activity. It is an integral part of **mine action** planning and implementation. It has three components: public information dissemination, education and training, and community mine action liaison. They are complementary and mutually reinforcing.

Public information dissemination

Public information dissemination as part of MRE refers to information activities that seek to minimise deaths and injuries from mines and ERW by raising awareness of the risk among individuals and communities, and by promoting behavioural change. It is primarily a one-way form of communication transmitted through mass media.

In an emergency post-conflict situation, due to time constraints and lack of accurate data, public information dissemination is often the most practical means of communicating safety information to reduce risk.

Education and training

Education and training refers to all educational and training activities that seek to minimise deaths and injuries from mines and ERW by raising

awareness of the risk among individuals and communities and by promoting behavioural change. Education and training demand a two-way process, which involves the imparting and acquiring of knowledge, attitudes and practices through teaching and learning. Activities may be conducted in formal and non-formal environments.

Community mine action liaison

Community mine action liaison refers to the system and processes used to exchange information between national authorities, mine action organisations and communities on the presence of mines, **unexploded ordnance (UXO)** and abandoned munitions and their potential dangers. It enables communities to be informed about demining activities near to them and allows communities to inform local authorities and mine action organisations on the location, extent and impact of contaminated areas. Community mine action liaison aims to ensure that mine action projects address community needs and priorities.

Needs assessment

Prior to implementing MRE projects, activities and tasks, a needs assessment should be conducted (see **IMAS 08.50** for guidance). There may be other data collection activities, such as **landmine impact surveys**, task assessment and planning or other community studies, as well as ongoing community mine action liaison. All of these form part of an active surveillance process to establish and to monitor the problems faced by affected communities.

The purpose of collecting data and conducting a needs assessment is to identify, analyse and prioritise the local mine and ERW risks, to assess the capacities and vulnerabilities of the communities, and to evaluate the options for conducting MRE. A needs assessment will provide sufficient information necessary to make informed decisions on the objectives, scope and form of the resulting MRE project.

Planning

The strategic planning of MRE should be conducted as part of the overall planning process for mine action. At the level of the mine-affected community, the planning of MRE should be conducted in close conjunction with the planning of other mine action activities (in particular **demining**). At the community level, planning may be conducted with affected communities themselves.

The purpose of the planning phase of a specific MRE project is to identify the most effective ways to address the needs. The plan should define the overall objectives, establish a plan of activities and tasks aimed at achieving these objectives, determine suitable measures of success, and establish systems for monitoring and evaluation.

Guidance on conducting planning for MRE organisations is given in IMAS 12.10.

Monitoring

Monitoring is an essential part of the MRE project cycle. Together with **accreditation** and **evaluation**, it provides stakeholders with the necessary confidence that MRE projects are achieving the agreed goals and objectives in an appropriate, timely and affordable manner.

Monitoring will normally involve an assessment of the MRE organisation's capabilities (people, procedures, tools and methods) and how these capabilities are being applied.

Monitoring is an ongoing process, conducted throughout implementation to provide feedback and information on the application, suitability and effectiveness of MRE tools and methods.

Guidance on the monitoring of MRE programmes and projects is given in IMAS 07.41.

Evaluation

For MRE, evaluation aims to measure the acquisition of knowledge, attitudes and practices among the target communities, assess the impact and use of specific tools and methods, and make recommendations for changes to these tools and methods. In practice, the evaluation of MRE is usually difficult to achieve as it may not be possible to identify the connections between the cause (i.e. the MRE intervention), and the effect (i.e. behavioural change).

Evaluation is usually conducted upon completion of a project but may also be conducted at specific intervals throughout the life of the project, to assess its actual impact and justify its continuation. Guidance on the evaluation of MRE programmes and projects is given in IMAS 14.20.

Accreditation of MRE organisations and operations

Organisational accreditation is the procedure by which an MRE organisation is formally recognised as competent and able to plan and manage MRE activities safely, effectively and efficiently.

Operational accreditation, sometimes referred to as *certification*, is the procedure by which an MRE organisation is formally recognised as competent and able to carry out specific MRE activities.

For most mine action programmes, the **national mine action authority** will be the body which provides accreditation. International organisations such as the United Nations or regional bodies may also introduce accreditation schemes. Accreditation will be given to the in-country headquarters of an organisation for a finite duration, normally for a period of two to three years.

Guidance on the accreditation of MRE organisations and operations is given in IMAS 07.31.

Guiding principles for MRE

Guiding issues and principles for MRE programmes can be grouped into eight generic requirements:

- stakeholder involvement;
- coordination requirements;
- integration;
- community participation and empowerment;
- information management and exchange;
- community targeting;
- educational tools and methods; and
- the provision of appropriate and effective training to those responsible for implementing MRE projects.

These principles are considered in each of the MRE **standards** in the IMAS.

STANDARD 07.20

Guide for the development and management of mine action contracts (draft standard)

The aim of the standard is to provide guidelines for the preparation of contracts for **mine action** and the subsequent management of the contracted activity. Even when work is carried out under an arrangement such as a letter of agreement rather than a formal contract, certain basic principles and considerations should be contained in that arrangement.

The **standard** considers mine action contracting in general terms and therefore does not propose a specific contract structure. This will be dependent on the nature of the parties to the contract and the situation and environment in which the contracted activity will be conducted. Furthermore, many bodies and organisations have their own established procedures for developing and managing mine action contracts.

The standard uses the term “principal” rather than “donor” or “client”. This has been done in recognition of the fact that the organisation seeking to establish the mine action contract is paying a mine action organisation to achieve a particular outcome. This holds true whether the contracting organisation is a direct beneficiary of the mine action such as an infrastructure contractor, or an indirect beneficiary such as a donor seeking an outcome for a local community.

The definition of a mine action contract

A mine action contract is a formal agreement between two or more parties that allows a mine action activity to be implemented and conducted. The use of contracts serves three purposes. Firstly, it binds the parties involved in the activity and gives a degree of assurance that the activity will be carried out, and that the commitments and undertakings made by the parties will be honoured. Secondly, it clearly defines the work to be undertaken, the outcomes to be achieved and the roles, responsibilities and interaction of the respective parties. Thirdly, it serves to assign responsibilities to the respective parties.

There are six crucial elements to the formation of a contract. The absence of any of these elements renders the contract invalid. The elements are:

- an offer;

- an acceptance of that offer;
- a promise to perform;
- a valuable consideration (payment);
- a timeframe in which performance must be made; and
- terms and conditions for performance.

General principles

There are seven principles underpinning the development of effective, efficient and appropriate mine action contracts. These are:

- a) the contract must recognise the environment and conditions in which the activity is to be undertaken;
- b) it must recognise the capabilities and capacities of the parties;
- c) it must be realistic in its performance requirements and other obligations, and must specify them as completely as possible;
- d) it must be fair and equitable to all parties;
- e) it should assign specific risk to that party most able and best motivated to control it;
- f) the wording of the contract should be clear, concise and unambiguous; and
- g) it should encourage cooperation rather than confrontation between the parties.

In addition, it is essential that the principal incorporates any requirements for the contractor to comply with **IMAS** and/or national mine action standards of the country involved, in the contract. Even if the contracting authority has opted for a single preferred mine action organisation under an arrangement such as a letter of agreement, it is recommended that relevant IMAS or national standards are applied within the terms of the agreement.

The IMAS are too large to attach to the contract so they should be incorporated by reference. It is also strongly recommended that those IMAS or national standards most relevant to the contract be specifically referred to in the statement of work.

Types of mine action contracts

There are a variety of contract types but the two primary contracts used in mine action are:

- a) fixed price contracts — either for a specific scope of work to be achieved within an agreed time-frame or for a specific number of assets to be provided over an agreed time-frame;
- b) cost-plus contracts.

Fixed price contracts

In a fixed price contract, the principal pays a fixed price to the contractor regardless of what the contract actually costs the contractor to perform. The contractor carries all the risk of loss associated with higher than expected costs but benefits if costs turn out to be less than expected.

Fixed price contracts provide an incentive for the contractor to tightly manage and reduce activity costs through increased efficiency or using the most cost-effective approaches. They also make it easy for the principal to compare tenders assuming that all other things, including the expertise of the tendering organisations, are equal and that the principal has been able to completely specify the activity requirements and conditions.

Cost-plus contracts

With a cost-plus contract, the principal reimburses the contractor for all costs and pays a percentage of these costs as a fixed fee. The cost of overcoming any errors, omissions and other charges is borne by the principal.

There is no definite rule as to the best type of contract to be used for a given mine action activity. It will depend on the environment in which the activity will be conducted, any past relationship between the principal and the potential contractor, the technical knowledge of the principal, the intimate oversight the principal is able to give, and the degree to which both the principal and the contractor are “risk adverse”.

For a specific activity, the most appropriate type of contract may be fixed price, cost-plus or a combination of both. A combination contract may have a fixed price for those components of the activity in which the requirements and operating conditions can be completely and thoroughly specified, and a cost-plus system for those components that cannot.

Structure of mine action contracts

A mine action contract can be considered to consist of three distinct but inter-related components. These are the *legal component* which describes the relationship between the parties and general requirements and obligations, the *technical component* which describes the outcomes to be achieved and the manner in which the work is to be conducted, and the *price component* which describes the price to be paid by the principal and the payment structure and methodology to be adopted.

Legal component of the contract

The specific content of the legal component of the contract will be driven by the standard practices and other requirements of the principal. However, as a minimum, it should contain detail on:

- a) date of the agreement;
- b) parties to the agreement;

- c) a written introduction giving a brief background to the contracted activity;
- d) relevant definitions and interpretations;
- e) the legal jurisdiction under which the contract is to be formed and any rules for interpreting the agreement;
- f) the role of the contractor and the use of any sub-contractors;
- g) the role of the principal;
- h) Safety and Occupational Health (S&OH);
- i) any required releases and indemnities to be provided by the contractor and the principal;
- j) insurance to be held by the contractor (i.e. medical, life, disability, worker's compensation and third party liability);
- k) current and residual liabilities for both the principal and the contractor;
- l) the reporting of incidents;
- m) the format and delivery of reports by the contractor to the principal;
- n) the format and requirements or milestones for the payment of contract fees;
- o) requirement for parent company guarantees, bank guarantees and/or performance bonds;
- p) the system and processes to be used for variations to the services to be provided during the life of the contract should the need arise;
- q) grounds for the termination of the contractor's services;
- r) the residual ownership of equipment purchased for the contracted activity;
- s) privacy and confidentiality requirements;
- t) the management of unavoidable delay or *force majeure*;
- u) the systems and procedures for dispute resolution;
- v) IMAS/national standards incorporated by reference to the applicable standards; and
- w) other matters of relevance to the specific contracted activity.

Technical component of the contract

The technical component of the contract is the statement of work. The content of the statement of work will vary depending on the nature of the contracted activity and the environment in which the activity will be conducted but, as a minimum, it should contain detail of:

- a) the background and objectives of the contract;
- b) relevant terms, definitions and abbreviations;
- c) the role of other parties involved in the contract such as independent **quality assurance** agencies and the principal's representatives; and
- d) the scope of work including:

- (1) the intentions of the principal and the outline structure of the contracted activity,
- (2) the specific objectives and outcomes to be achieved by the contract,
- (3) the timeframe and target duration of the contracted activity,
- (4) specific milestones within the life of the contract and the timeframe in which they are to be achieved,
- (5) standards to be achieved,
- (6) any limitations on or requirements for the method of operation to be adopted by the contractor,
- (7) the requirements for the production and maintenance of a contract works programme,
- (8) reporting requirements including progress reports and post-contract auditing and documentation,
- (9) **quality management** requirements,
- (10) S&OH requirements,
- (11) any specific environmental issues,
- (12) administration and logistical details such as insurance requirements and details of equipment, materials and other support, if any, to be provided by the principal or other agencies, and
- (13) requirements for compliance with IMAS/national standards.

Price component of the contract

The structure of the price component of the contract will depend on whether the contract is to be a fixed price, cost-plus or a combination contract. Regardless, it should include detail of:

- a) the total contract price or the unit rates, including the units of measurement for each rate;
- b) the frequency and methods of payment, including advanced payments and recovery mechanisms if relevant;
- c) the milestones or actions that will act as triggers for payment; and
- d) the requirement for performance bonds or similar control measures and details of how these may be applied, including penalty clauses if relevant.

STANDARD 07.30

Accreditation of demining organisations and operations

Most **national mine action authorities** already apply some form of **accreditation** procedures. The form and extent of such accreditation varies from country to country, but the aim is similar — to establish and confirm the quality of **demining organisations**, particularly those with specialist capabilities such as **mine detection dogs** or **mechanically-assisted demining**.

Standard 07.30 provides guidance for the implementation of an accreditation system for a demining organisation, both before and during the clearance process.

Organisation and operational accreditation

Standard 07.30 makes a distinction between *organisational* accreditation and *operational* accreditation.

Organisational accreditation is the procedure by which a demining organisation is formally recognised as competent and able to plan and manage demining activities safely, effectively and efficiently. For most **mine action** programmes, the national mine action authority will be the body which provides accreditation. International organisations such as the United Nations or regional bodies may also introduce accreditation schemes.

Accreditation will be given to the in-country headquarters of an organisation for a finite duration, normally for a period of two to three years.

Operational accreditation is the procedure by which a demining organisation is formally recognised as competent and able to carry out particular demining activities. This may sometimes be referred to as certification in order to distinguish between an organisation's accreditation to work in a country and its accreditation for certain distinct tasks.

Each operational accreditation shall refer to the capabilities required to carry out a particular activity such as survey, manual clearance, **community liaison** or use of mine detection dogs.

A two-stage process for accreditation

In most situations accreditation is awarded in two stages.

The first stage involves a provisional desk assessment by the national mine action authority or its agent based on documentary evidence presented by the demining organisation, such as organisational charts, management qualifications and proven experience.

The second stage involves an on-site assessment to confirm that people, equipment, materials and procedures are being used as intended, and that demining activities are being conducted in a **safe**, effective and efficient manner.

The national mine action authority shall establish a fair and impartial system to enable demining organisations to appeal against decisions of the accreditation body that they feel are unfair, or when new evidence comes to light.

The appeals system shall include the use of independent arbitration from the international community present in a mine-affected country, for example a representative from the UN system.

STANDARD 07.31

Accreditation of mine risk education organisations and operations

Most **national mine action authorities** already apply some form of **accreditation** procedures to establish and confirm the quality of **mine action** organisations (see **Standard 07.30**). The aim of Standard 07.31 is to apply a similar accreditation requirement to **mine risk education (MRE)**. This applies whether the organisation is conducting MRE within an integrated mine action programme or as a stand-alone activity.

There are obvious operational, logistic and administrative advantages in combining the national accreditation and **monitoring** bodies into one overall “quality management” body. This should be considered by the national mine action authority.

Organisation and operational accreditation

Standard 07.31 makes a distinction between *organisational* accreditation and *operational* accreditation.

Organisational accreditation is the procedure by which an organisation is formally recognised as competent and able to plan and manage MRE activities safely, effectively and efficiently. For most mine action programmes, the national mine action authority will be the body which provides accreditation. International organisations such as the United Nations or regional bodies may also introduce accreditation schemes.

Accreditation will be given to the in-country headquarters of an organisation for a finite duration, normally for a period of two to three years.

Operational accreditation is the procedure by which an organisation is formally recognised as competent and able to carry out particular MRE activities. This may sometimes be referred to as “certification” in order to distinguish between an organisation’s accreditation to work in a country and its accreditation for certain distinct tasks.

Each operational accreditation shall refer to the capabilities required to carry out a particular MRE function (or component) such as **community liaison**, public information dissemination, or education and training activities. The granting of such operational accreditation assumes that the capability will not change beyond the scope or intention of the original accreditation.

A two-stage process for accreditation

In most situations it will be appropriate to award accreditation in two stages.

The first stage involves a provisional desk assessment by the national mine action authority or its agent based on documentary evidence presented by the MRE organisation, such as curricula, organisational charts, management and training qualifications and proven experience.

The second stage involves an on-site assessment to confirm that curricula, materials and procedures are being used as intended and that MRE activities are being conducted in a **safe**, effective and efficient manner.

STANDARD 07.40

Monitoring of demining organisations

Control of the **demining** process is achieved through the **accreditation** and **monitoring of demining organisations** before and during the clearance process, and by the inspection of **cleared land** prior to its formal release. **Standard 07.40** aims to provide a framework for a monitoring system as part of the demining process.

Most **national mine action authorities** already apply some form of external monitoring. The form and extent of such monitoring varies from country to country, but the aim is similar — to confirm that demining organisations are applying their approved management processes and operational procedures in a manner that will result in the **safe**, effective and efficient clearance of land.

The role of monitoring

Monitoring is an essential part of the **demining** process. It examines the demining organisation's capability (people, equipment and procedures) and observes how this capability is being applied. Monitoring is an activity conducted by or on behalf of the national mine action authority. It involves observation, recording and reporting.

External monitoring complements the demining organisation's own internal **quality management** system. It verifies that the demining organisation's **quality assurance** procedures and internal **quality control** inspections are appropriate and are being applied — but it does not replace the demining organisation's responsibility for ensuring the application of safe, effective and efficient operational procedures.

Monitoring will also be used, particularly at the beginning of a demining project as on-site verification, which is part of the accreditation of a demining organisation. Guidance on accreditation is given in **IMAS 07.30**.

Planning and preparation for monitoring

The role and responsibilities of the **monitoring body**, including the frequency and form of site visits, should be defined in the clearance contract or other formal agreement.

Site visits should be well prepared. Prior to the visit, the monitoring body should inform the demining organisation of the objectives and programme, and any preparation required (such as ensuring the availability of certain documents or key staff).

The actual date and timing of site visits may be given in advance or visits may be unannounced. Both have advantages and disadvantages. Unannounced visits tend to observe demining organisations in their normal working mode, but such visits may be disruptive and key members of staff may be absent. Announced visits tend to be more productive and less disruptive, but some problems may be hidden from the monitoring body. A combination of both may be appropriate.

The conduct of monitoring

The national mine action authority shall monitor the demining organisation and its sub-units to confirm that the management systems and operational procedures are consistent with the terms of the accreditation. Such monitoring should be random, non-intrusive and should not interfere with the conduct of planned demining activities.

The frequency of monitoring should be dependent on the task and the previous performance of the demining organisation. It should be agreed between the national mine action authority and the demining organisation.

Monitoring should include inspection of:

- demining management documentation;
- worksite **safety**;
- available medical support;
- **community liaison**;
- storage, transportation and handling of explosives;
- investigations of incidents and accidents;
- equipment; and
- demining activities.

Corrective action

Any problems identified by the monitoring body should be addressed by the demining organisation. If the problems are sufficiently serious, the demining organisation should be invited to present its corrected management or operational procedures to the national mine action authority, and demonstrate that it is in full compliance with the stated requirements.

Monitoring body — general obligations

The national mine action authority may accredit and appoint a body to carry out the monitoring on its behalf. Any monitoring body appointed by the national mine action authority shall be adequately staffed, equipped and

trained to monitor the demining organisation and its sub-units in an effective and appropriate manner.

The personnel of the monitoring body shall be free from any political, commercial, financial and other pressures which might affect their judgement. Policies and procedures shall ensure that persons or organisations external to the monitoring body cannot influence the results of observations, inspections and evaluations carried out by the monitoring body.

STANDARD 07.41

Monitoring of mine risk education programmes and projects

Monitoring is a process of tracking or measuring progress towards the objectives of programmes and projects. In the case of **mine risk education (MRE)** programmes and projects, it includes the following:

- internal monitoring of systems and operational procedures in relation to the implementation plan for the project;
- external monitoring of organisations to ensure that they are consistent with the terms of **accreditation**; and
- monitoring change in the **mine** and **explosive remnants of war (ERW)** threat and the environment (i.e. changes to initial assumptions regarding target groups, the mine/ERW threat or the broader country context, such as the security situation).

Monitoring should be conducted both internally by the MRE implementing organisation and externally by or on behalf of the **national mine action authority**. External monitoring should complement (not replace) the MRE organisation's own internal quality management processes.

Internal and external monitoring and the monitoring of change should be an ongoing process. Monitoring is essential for effective **evaluation** to take place.

The development of monitoring systems should be guided by the following principles:

- monitoring systems should be kept simple to be sustainable;
- data collection should be focused on those activities and aspects of the project that may have an impact on achieving its objectives; and
- in order to be useful, data collection and analysis should feed into decision-making events, such as management meetings, periodic reviews, programme and funding cycles, and national events outside the context of the project.

To ensure that monitoring continues throughout the MRE project cycle, adequate resources should be given for monitoring at the inception of all MRE projects. The monitoring plan should be developed during the planning phase.

Monitoring should lead to action, and recommendations arising from monitoring activities should be used to revise and plan activities to improve performance in the short term and influence the impact of the project in the longer term.

STANDARD 07.42

Monitoring of stockpile destruction programmes

An overview of the **stockpile destruction** process can be achieved through the **accreditation** and **monitoring** of **destruction** organisations before and during the **anti-personnel mine** destruction process, and by the inspection of the explosive **safety** and verification systems being used.

Standard 07.42 aims to provide a framework for monitoring the anti-personnel mine destruction process. The goal is to promote a common and consistent approach to the external monitoring of destruction organisations.

The role of monitoring in stockpile destruction

Monitoring is an essential part of the destruction process. It provides the **national mine action authority** with the necessary confidence that the destruction organisation has destroyed its anti-personnel mine stockpile in accordance with its contractual obligations, and that the destruction process was conducted in a **safe**, effective and efficient manner.

Monitoring is an activity conducted by or on behalf of the national mine action authority. It involves observation, recording and reporting.

General requirements

Planning and preparation: the role and responsibilities of the monitoring body, including the frequency and form of site visits, should be defined in the destruction contract or other formal agreement.

Site visits should be well prepared. The actual date and timing of site visits may be given in advance or visits may be unannounced. Both have advantages and disadvantages. Unannounced visits tend to observe destruction organisations in their normal working mode, but such visits may be disruptive and key members of staff may be absent. Announced visits tend to be more productive and less disruptive, but some problems may be hidden from the monitoring body. A combination of both may be appropriate.

Monitoring: the national mine action authority shall monitor the destruction organisation and its sub-units to confirm that the management systems and operational procedures are consistent with the terms of the accreditation and

licenses. Such monitoring should be random, non-intrusive and should not interfere with the conduct of planned demining activities.

Monitoring should include the inspection of:

- destruction management documentation;
- worksite **safety**;
- medical support;
- storage, transportation and handling of explosives;
- investigations of incidents and accidents;
- equipment; and
- **destruction** activities.

Corrective action: any problems identified by the monitoring body should be addressed by the destruction organisation. If the problems are sufficiently serious, the destruction organisation should be invited to present its corrected management or operational procedures to the national mine action authority, and demonstrate that it is in full compliance with the stated requirements.

Monitoring body — general obligations

The national mine action authority may accredit and appoint a body to carry out the monitoring on its behalf. Any **monitoring body** appointed by the national mine action authority shall be adequately staffed, equipped and trained to monitor the destruction organisation and its sub-units in an effective and appropriate manner.

The monitoring body shall prepare and maintain records of all site visits, and any information needed to understand and interpret them. All records shall be safely stored for a period of at least five years, held secure and in confidence to the applicant, unless otherwise required by law.

The personnel of the monitoring body shall be free from any political, commercial, financial and other pressures which might affect their judgement. Policies and procedures shall be implemented to ensure that persons or organisations external to the monitoring body cannot influence the results of observations, inspections and evaluations carried out by the monitoring body.

Series 8.

Risk assessment and survey

There are currently five full **standards** in Series 8 on **risk** assessment and survey:

- *08.10 – General mine action assessment;*
- *08.20 – Technical survey;*
- *08.30 – Post-clearance documentation;*
- *08.40 – Marking mine and UXO hazards; and*
- *08.50 – Data collection and needs assessment.*

Planning for **mine action** requires accurate and timely information on the form, scale and impact of the threat posed by **mines, UXO** and other explosive **hazards**. Such information will come from assessment missions and surveys, from ongoing local mine action projects and tasks, and from local information.

Series 8 of the **IMAS** focuses on the role of risk assessment and survey in mine action operations. For the purposes of the IMAS, an “assessment” defines a continually refined process of information gathering and **evaluation**, whereas a “survey” is a distinct operational task capable of being contracted.

STANDARD 08.10

General mine action assessment

Should a decision be taken to develop a national **mine action** programme, a comprehensive assessment of the mine-affected country will be needed. Existing programmes should also begin the **general mine action assessment** process as early as possible.

The **national mine action authority** is ultimately responsible for all phases of a **demining** project within its national boundaries, including the general mine action assessment. In particular, the national mine action authority shall establish and maintain a system and procedures for the collection, collation, analysis and dissemination of information on the **mine** and **unexploded ordnance** (UXO) threat and its ongoing **impact**.

Purpose and scope

The aims of the **general mine action assessment** are to:

- assess the scale and impact of the landmine problem on the country and individual communities;
- investigate all reported and/or suspected areas of mine or UXO contamination, quantities and types of explosive **hazards**; and
- collect general information such as the security situation, terrain, soil characteristics, climate, routes, infrastructure and local support facilities, to assist the planning of future mine action projects.

The general mine action assessment process gathers information on national capabilities and potential to address the problem, and the need for external assistance including financial, human skills, material and information. The information collected should be sufficient to enable priorities to be established or updated and plans to be developed. It is a continuous process.

The scope and extent of the general mine action assessment depends on many factors, including the availability of (and access to) existing information, the local security situation, and the human and financial resources available. Its scope and thoroughness will also depend on the urgency and need for planning information. The process of gathering information carried out in the early stages of an emergency programme will be quite different in form

and detail to those conducted as part of a more stable developmental mine action programme.

General principles

Although general mine action assessments will vary significantly in terms of scope, complexity and duration, four general principles apply:

1. *The general mine action assessment forms part of a national mine action programme.* It should therefore be controlled by the national mine action authority, or by an agency or organisation acting on behalf of the national mine action authority. The national mine action authority should normally be custodian of the data, reports and related products such as maps.

2. *The general mine action assessment is a continuous process.* It is not merely a “snapshot” of the situation on a particular date. As such, a general mine action assessment should use systems and methods which are robust and sustainable.

3. *The general mine action assessment is a collaborative process.* Government departments, UN agencies, NGOs, commercial demining contractors and other organisations operating within a mine-affected country shall assist the general mine action assessment by providing access to information, and by giving practical support, if needed.

4. *Whenever possible, information collected during the general mine action assessment should not be restricted or sensitive.* The use of unclassified material will assist and encourage the wide distribution of survey reports, maps, data and assessments. But there will be occasions when information is provided with national security implications, and with restrictions on its further distribution. Where information collected is not sensitive or restricted it should be made widely available to all stakeholders.

Planning and preparation

Careful planning and preparation is essential in order to ensure that the general mine action assessment objectives can be achieved with the resources available and in a timely manner. All possible sources of information should be considered. Survey or assessment teams will provide the principal sources of information.

Collection

The type and detail of the data collected will vary and should be appropriate to its intended use. Time and resources will be obvious constraints, but the general mine action assessment should aim to implement as comprehensive a system of data collection as early as possible.

The general mine action assessment shall collect information on:

- the numbers, locations and livelihoods of communities at risk and otherwise affected by the presence, or perceived presence, of mine

and **explosive remnants of war (ERW)** hazards. It should identify the numbers and demography of mine victims and survivors, and the availability of victim assistance. It should include an assessment of the ability of the affected communities to cope and adapt to the threat;

- the extent of the national mine and UXO threat;
- the approximate location and extent of each suspected or confirmed hazard area;
- the local terrain including ground profile, soil type, soil contamination (mineral and scrap metal), drainage, vegetation (type and density) and access;
- the mine and ERW types and density; and
- the **anti-personnel mine stockpile** situation.

The general mine action assessment *should also* collect information on:

- the condition and potential of the local infrastructure, including logistic facilities, transportation, communications and medical facilities which could be used to support **technical survey** and/or clearance projects;
- the availability of suitable local staff for employment as **deminers**, support staff and management; and
- the local climate (rainfall, temperature and humidity) and its potential impact on technical survey and/or clearance projects.

The information should be collected in a systematic manner. Wherever possible, standard and proven information management systems and **Geographic Information Systems (GIS)**, such as the **Information Management System for Mine Action (IMSMA)**, should be used.

Data reliability

Each source of information should be assessed in terms of its proven reliability and credibility. Inaccurate and misleading data will impact on later stages of the process, and may reduce confidence in other (and more accurate) information collected during the survey.

Reporting obligations

States Parties to the **Anti-Personnel Mine Ban Convention** are required to provide information to the UN through their Article 7 reports. They should consider using the general mine action assessment process to collect, collate and present the necessary information on mined areas which contain, or are suspected to contain, anti-personnel mines.

The UN Department of Disarmament Affairs provides guidance on the level of detail required, the form in which it should be provided, and the reporting schedule.

STANDARD 08.20

Technical survey

The gathering of detailed technical and topographical information of known or suspected hazardous areas is conducted through a **technical survey**. Such areas will have been previously identified during the **general mine action assessment**.

The primary aim of a technical survey is to collect sufficient information to enable the clearance requirement to be more accurately defined, including the areas to be cleared, the depth of clearance, local soil conditions and the vegetation characteristics.

Scope

The technical survey is a critical step during the general **mine action** assessment process and it should normally take place after sites have been selected from a prioritised list and prior to actual **demining** activities. If feasible, technical surveys should be conducted a reasonable time ahead of demining activities to allow advance planning to take place.

Technical survey information is needed to prepare a tasking order before it is issued by the **mine action centre**. The tasking order indicates the area to be cleared and the required clearance depth, as well as the requirements for **monitoring** and inspection.

Responsibility for technical survey

Demining organisations trained and accredited by the national mine action authority should carry out technical surveys. Suitable organisations shall be tasked by the **mine action** authority.

Information to be collected

During the technical survey the following information should be collected:

- a) confirmation of the presence of **mines** and **unexploded ordnance**;
- b) confirmation of data that was initially collected to support the general

- mine action assessment process;
- c) assessment of the ground in terms of the soil, metal contamination, vegetation and slope;
- d) a definition of the area in terms of its size, described through angles and bearings;
- e) the suggested depth per area to which clearance should be conducted; and
- f) the resources required to carry out demining activities per identified area and the estimated time for manual teams, mechanically assisted teams, **mine detection dog** teams and **explosive ordnance disposal (EOD)** teams as appropriate.

In addition to the information mentioned above, a detailed site sketch shall also be prepared as this will be provided to the **demining organisation** that will eventually carry out the task.

Methodology

In order to collect the required information, it will often be necessary to enter hazardous areas through breaching exploratory lanes into the suspect area. When the information has been collected and documented, it should be returned to the mine action authority to be included in the mine database.

Outputs

The information obtained from a technical survey should be summarised in a survey report, which should be used to define subsequent clearance tasks.

The output of a technical survey may also include perimeter marking of the defined area, to reduce the risk of unintentional entry into the hazardous area. It may also produce data for any ongoing **mine risk education** programme.

If clearance does not immediately follow a technical survey, then **survey markers** should be left securely in place. Such markers will enable the hazardous area to be located accurately and safely at a later date.

Marking

The **marking** of mine and **ERW hazards** is undertaken to provide a clear and unambiguous warning of danger to the local population and, where possible, to install a physical barrier to reduce the **risk** of unintentional entry into hazardous areas.

Permanent marking systems should be used to indicate the outer edge of mine and UXO hazard areas which will not be cleared immediately. They should employ a combination of markers, signs and physical barriers. Temporary marking systems may be used to mark the perimeter of a mine and UXO hazard area in preparation for immediate clearance operations.

The design of mine and ERW hazard marking systems should take account of local materials freely available in the contaminated region and the period for which the marking system will be in place. Guidance on permanent and temporary hazard marking systems is given in **IMAS 08.40**.

International treaties

Two international treaties place special obligations on the governments of mine-affected countries (who are States Party to the treaties) regarding the survey and marking of mined areas.

Amended Protocol II to the *UN Convention on Certain Conventional Weapons* and the **Anti-Personnel Mine Ban Convention** both place an obligation on mine-affected States Parties to ensure that all mined areas under their jurisdiction and control are accurately surveyed, and then perimeter-marked by fencing or other means.

Such marking and fencing will normally form part of a technical survey.

STANDARD 08.30

Post-clearance documentation

Once land has been cleared of **mines** and **unexploded ordnance** there is usually an urgent need to make it available for productive use without delay. But there are some important issues which should be addressed before the land can be considered formally “cleared” and available for use.

In particular, all post-clearance inspections should be completed and any corrective action carried out. Permanent **survey markers** should be put down and accurately recorded for future reference. And all necessary information such as **monitoring** and inspection reports should be collated and made available for the formal **handover**.

In addition, the **demining organisation**, or its nominated **community liaison** representative, shall ensure that the mine-affected community is fully aware of all **demining** activities in the area and the implications for the community.

Standard 08.30 provides guidance on the procedural requirements for the handover of cleared land.

Clearance confirmation

The documentation which is made available for handover shall provide sufficient evidence that the clearance requirement has been met. Clearance is achieved and demonstrated in two stages.

Stage 1 involves the monitoring of the demining organisation’s management systems and operational procedures before and during the clearance process. **IMAS** 07.40 provides guidance on the monitoring requirements

Stage 2 involves the inspection of cleared land by **sampling**. **IMAS** 09.20 provides guidance on the procedures to be adopted for post-clearance inspections.

Reports produced during the monitoring and post-clearance inspections, together with follow-up inspections to confirm that any corrective action has been successfully completed, should be included in the handover documentation.

Completion report

A completion report should be prepared, including the following information:

- **hazard** area and task identification numbers;
- clearance requirements — **specified area** and **specified depth**;
- a copy of the **technical survey** report (if available);
- details of the clearance organisation, including references to its **accreditation**;
- a summary of the procedures and equipment used to clear the area;
- details of **quality assurance** of the work;
- post-clearance inspection reports;
- details of the **cleared area**, including a list of the mines and **ERW** located and destroyed during clearance;
- details of **reduced** and cancelled **areas**;
- details of any incidents and accidents which occurred during clearance;
- a formal recognition from the mine-affected community of community involvement and acknowledgement of the final status of the land;
- a comparison with known minefield records; and
- a formal declaration that indicates that the land has been cleared over the specified area to the specified depth.

Responsibilities and obligations

The **national mine action authority** shall:

- prepare and publish standards and provide guidance for the documentation required for handover;
- following handover, maintain documentation and keep safely all completion reports, handover certificates and supporting information; and
- make available documentation to authorities, organisations and the local population as required.

STANDARD 08.40

Marking mine and ERW hazards

The **marking** of **mine** and **ERW hazards** is undertaken to provide a clear and unambiguous warning of danger to the local population. Where possible, it should install a physical barrier to reduce the **risk** of unintentional entry into hazardous areas.

Standard 08.40 draws on the two international law treaties which deal with landmines: the **Anti-Personnel Mine Ban Convention** and the **Amended Protocol II** to the *Convention on Certain Conventional Weapons*. Countries which are States Party to the Mine Ban Treaty and/or Amended Protocol II have certain specific obligations regarding the marking of mine hazards.

Hazard marking systems

The design of mine and ERW hazard marking systems should take account of local materials freely available in the contaminated region and the period for which the marking system will be in place.

Materials used in marking systems should have little value for purposes other than mine and ERW hazard area marking. If material with any alternative value is used, then it is likely to be removed.

Categories of marking systems

There are three general categories of marking systems:

- *Permanent marking systems* should be used to mark the perimeter of mine and ERW hazard areas which are not scheduled for clearance in the near future. They should employ a combination of markers, signs and physical barriers.
- *Temporary marking systems* may be used to mark the perimeter of a mine and ERW hazard area in preparation for clearance operations. They should include the use of physical barriers.
- *Improvised marking systems* are generally placed by the local population. They may also be used by **demining organisations** when materials are not available to construct temporary or permanent marking systems.

Marking system maintenance

The **national mine action authority** shall be responsible for the maintenance of permanent and temporary marking systems. This should be integrated with national and local **mine risk education** programmes, and should actively involve the communities at risk.

Responsibilities

The national mine action authority shall publish **standards** for the design and construction of hazard marking systems to be used in national mine action programme and demining projects. It shall also give guidance to regional and local authorities on the retention and maintenance of minefield marking systems.

In the absence of national standards and specifications on hazard marking, demining organisations shall apply the specifications of this standard, and should coordinate their marking systems with other demining organisations operating locally, until a national mine action authority is established.

Legal obligations

Each State Party to the Anti-Personnel Mine Ban Convention is obliged *“to ensure as soon as possible that all anti-personnel mines in mined areas under its jurisdiction or control are perimeter-marked, monitored and protected by fencing or other means, to ensure the effective exclusion of civilians, until all anti-personnel mines contained therein have been destroyed.”*

Amended Protocol II requires States Party to ensure *“the effective exclusion of civilians from the (mined) area by fencing or other means. ... Marking must be of a distinct and durable character and must at least be visible to a person who is about to enter the perimeter-marked area.”*

STANDARD 08.50

Data collection and needs assessment for mine risk education

An essential part of any **mine risk education (MRE)** programme or project is the needs assessment and the development of a data collection system, which allows an MRE organisation to plan, implement, monitor and evaluate its activities.

Although the needs assessment should precede the planning and implementation of an MRE programme or project, it is not a one-off activity but an ongoing task to review the different needs, vulnerabilities and expectations of the affected communities.

This **standard** should be read in conjunction with *IMAS 08.10 — General Mine Action Assessment*.

The purpose of the needs assessment

The purpose of a needs assessment in MRE is to identify, analyse and prioritise the local **mine** and **explosive remnants of war (ERW)** risks, to assess the capacities and vulnerabilities of the communities, and to evaluate the options for conducting MRE.

The needs assessment should take account of both primary and secondary information. Primary information involves data collected directly at the community level. Secondary information involves data derived from other sources, for example from the **mine action** database or other institutional and governmental sources.

Ethics of data collection

The following basic principles should apply during data collection:

- when data is collected from secondary sources, the original source should be fully referenced as the owner of the data;
- where information is given in confidence the wishes of the respondent/ data provider should be respected;
- interviewers should be careful not to raise the expectations of the target communities through their data collection activities by inadvertently

- implying mine action will commence immediately;
- d) care should be taken not to “over-survey” communities, i.e. visit communities which have previously been visited by mine action organisations and ask similar questions; and
 - e) interviewers should conform to basic ethics for conducting interviews, such as being polite, respectful and non-intrusive.

Data to be collected

The data collection and needs assessment provide the foundations upon which the plan can be developed. The data collected will allow the following to be determined:

- a) target groups (by collecting data on who is injured, who is taking risks, and who is affected by mines and ERW);
- b) areas of work (by collecting data on where people are injured, where is the threat, etc.);
- c) messages (and subsequently the activities) according to target groups (by assessing how people are injured and how they take risks);
- d) approaches and methodologies likely to induce behavioural change;
- e) channels of communication and the way the target groups communicate and learn;
- f) institutional arrangement and partnerships for providing MRE messages and an emergency response;
- g) resources available and their allocation; and
- h) timeframe for the project (by collecting data on the nature and size of the mine/ERW problem, and estimated timeframe for removing the impact).

Assessment should be objective and free of bias. The process of data collection and analysis should be transparent.

Series 9.

Mine and ERW clearance

There are currently eight **standards** in Series 9 on **mine** and **ERW** clearance:

- *09.10 – Clearance requirements;*
- *09.20 – Inspection of cleared land: guidelines for the use of sampling procedures;*
- *09.30 – Explosive ordnance disposal;*
- *09.40 – Guide for the use of mine detection dogs;*
- *09.41 – Operational procedures for mine detection dogs;*
- *09.42 – Operational accreditation of mine detection dogs;*
- *09.43 – Remote Explosive Scent Tracing (REST); and*
- *09.44 – Guide to medical and general health care.*

IMAS 09.40 is a guide to the application of the IMAS 09.4 series of standards on the use of MDDs. The IMAS 09.4 series addresses most aspects of MDD operations and should be viewed as technical standards and guidelines. There are five IMAS in this series, included in this document, all of which are currently in draft form in their second edition. They are:

- *IMAS 09.40: Guide for the use of mine detection dogs;*
- *IMAS 09.41: Operational procedures for mine detection dogs;*
- *IMAS 09.42: Operational accreditation of mine detection dogs;*
- *IMAS 09.43: Remote Explosive Scent Tracing (REST);*
- *IMAS 09.44: Guide to medical and general health care of dogs.*

Humanitarian demining aims to identify and remove or destroy all mine and ERW **hazards** from a **specified area** to a **specified depth**. The beneficiaries of demining programmes must be confident that **cleared land** is **safe** for their use. This requires management systems and clearance procedures which are appropriate, effective, efficient and safe.

The local community should also receive regular briefings and explanations during the clearance operation from the **demining organisation**; this acts as a very effective confidence-building measure. **Community liaison** is an integral part of the **demining** process and can be achieved by the services of a **mine risk education** team, or by suitably trained members of the demining organisation.

Series 9 of the **IMAS** provides guidance on appropriate clearance methods and techniques.

STANDARD 09.10

Clearance requirements

Standard 09.10 adopts a two-stage approach. Stage 1 (**quality assurance**) involves the **accreditation** and **monitoring** of the **demining organisation** before and during the clearance process. Stage 2 (**quality control**) involves the process of an inspection of **cleared land** before it is formally released to the beneficiary for use.

This combined application of quality assurance (before and during the clearance process) with post-clearance quality control will contribute to ensuring that the land is **safe** for its intended use. The quality of clearance must be acceptable to the both the **national mine action authority** and the local community that benefits, and must be measurable and verifiable.

Specification of clearance quality

Land shall be accepted as “cleared” when the demining organisation has ensured the removal and/or **destruction** of all **mine** and **unexploded ordnance hazards** from the **specified area** to the **specified depth**.

In the absence of any reliable information on the expected depth of buried mines and UXO, a default depth should be applied. Normally, this should not be less than 13 centimeters below the original surface level. This figure is based on the effective detection depth of the majority of metal detectors.

The specified area to be cleared shall be determined by a **technical survey** or from other reliable information which establishes the extent of the mine and ERW hazard area.

The removal and/or destruction of all mine and ERW hazards in the specified area to the specified depth shall be ensured by:

- using accredited demining organisations, such as manual clearance teams, dog detection teams, mechanical systems and **community liaison** teams;
- using appropriate management practices and applying safe and effective operational procedures;
- monitoring the demining organisation and its sub-units; and
- conducting a process of post-clearance inspection of cleared land.

Responsibilities and obligations

The national mine action authority, or an organisation acting on its behalf, shall:

- specify the area to be cleared and depth of clearance in contracts and agreements;
- specify the standards and guidelines for quality assurance and quality control to be applied to clearance contracts and agreements;
- accredit demining organisations as fit to undertake clearance; and
- maintain a registry of cleared and uncleared land showing the clearance status for each mined area.

In the absence of a national mine action authority or authorities, the demining organisation shall:

- for each mined area, and prior to any clearance, agree the requirement and formally document both the area and depth of the intended clearance;
- establish and apply a system of monitoring the clearance activities and post-clearance inspections of cleared land; and
- assist the host nation, during the establishment of a national mine action authority, in framing national standards for clearance quality.

STANDARD 09.20

Inspection of cleared land: guidelines for the use of sampling procedures

General principles and procedures for inspection and **sampling** have been developed by the **International Organization for Standardization (ISO)**. The ISO inspection and sampling procedures provide rules which enable decisions to be taken on the quality of a product — in the case of demining the “product” is **cleared land**.

The results of sampling are greatly influenced by the way in which a sample is selected. Rigorous procedures for sampling are therefore required. **Standard 09.20** provides one method of inspecting cleared land, through selecting random samples. Other methods are possible, and may be developed to meet national and local needs and preferences.

General requirements and principles

The inspection of cleared land should be done by inspection bodies, acting on behalf of a **national mine action authority**. This inspection forms part of a management process which aims to verify the quality of clearance and to establish sufficient confidence that the **demining organisation** has removed and/or destroyed all **mine** and **ERW hazards** from the **specified area** to the **specified depth**.

Sampling plan: there are a number of alternative sampling methodologies that may be employed. For the purpose of this **IMAS**, a statistically valid system has been developed. This standard provides one method of selecting random samples, but other methods may be developed to meet national and local needs and preferences.

Method of inspection: the procedures and equipment used by the inspection body to inspect the samples of cleared land should be approved by the national mine action authority, and should be agreed with the clearance organisation as part of the contract or agreement.

The national mine action authority and the demining organisation should agree a mutually acceptable time limit within which the sampling inspection must take place.

Acceptance criteria: a “lot” of land should be considered as “cleared” only if all the samples in the lot are found to be free of mines or ERW down to the

depth specified in the contract. Where any sample in the lot is found to contain one or more mines or ERW, the lot containing that sample should be declared to have failed the inspection.

Cleared land may contain residual metal fragments following detection by metal mine detectors, or residual traces of explosives following detection by explosives detectors. Such cases could indicate a potential critical failure of the demining process (equipment, people or procedures).

Corrective action: the national mine action authority should determine the corrective action to be taken on lots that are rejected. Guidance on corrective action should be provided in advance, should be based on national standards and guidelines, and should form part of the demining organisation's contract or agreement.

Re-inspection: lots should not be offered for re-inspection until the demining organisation has taken corrective action as agreed with the inspection body in accordance with national standards.

Record of inspections and results: the sample plan, the methods used for inspection, and the results should be recorded by the inspection body, including the location, depth, types of hazard and other non-conformities specified in the contract such as metal fragments or explosive residue. Details of all corrective action shall also be recorded. All records shall be passed to the national mine action authority.

STANDARD 09.30

Explosive ordnance disposal

Under the **IMAS**, the term **explosive remnants of war (ERW)** applies to **munitions** other than landmines which present a significant **risk** to human life. ERW may be cleared as part of a **demining** contract, or a contractor specialising in **explosive ordnance disposal (EOD)** may clear them under separate arrangements. For the purposes of this **standard** both activities are included as EOD operations.

Standard 09.30 provides guidance for the management of EOD as part of **mine action**. It does not provide specific technical guidance for the disposal of particular **explosive ordnance**.

EOD procedures and operations

EOD operations involve the detection, identification, field evaluation, render **safe**, recovery and disposal of ERW.

EOD may be undertaken as a routine part of mine clearance operations following the discovery of ERW in or near mined areas. EOD operations may also be undertaken to dispose of ERW discovered outside mined areas. Such operations may involve a single item of UXO, or a number of UXO at a specified location such as a mortar or artillery gun position. It may also involve a **stockpile** of **ammunition** left in a bunker or an ammunition point.

The effective management of mine action programmes includes where necessary the establishment and maintenance of a capability to conduct EOD in a **safe** and effective manner. This involves a formal risk assessment of the ERW threat and the development of a safe and effective EOD capability. Such a capability shall include the preparation of appropriate procedures for neutralisation and disarming, the use of well trained and qualified **deminers** and EOD specialists, and the use of effective and safe equipment, stores and supplies.

EOD can be carried out at many levels from the neutralisation of large bombs and missiles to the destruction of grenades and **submunitions**. Submunitions are particularly hazardous to deal with and should only be dealt with by appropriately trained and qualified personnel.

EOD qualifications should be appropriate to the ERW threat, and the

munitions most likely to be found. The qualifications of all staff shall satisfy the requirements and regulations of the **national mine action authority**.

Neutralisation and disarming procedures: UXO should normally be **destroyed in situ** by **detonation**. If it is not possible or suitable to destroy UXO *in situ* for reasons of safety or for local environmental considerations, such as the proximity of buildings or facilities, demining organisations shall render the munition safe by neutralisation and/or disarming, prior to moving it to a suitable location for disposal.

Demining organisations, with an integral EOD capability, shall prepare **standing operating procedures (SOPs)** for neutralisation and disarming procedures which are appropriate to the UXO threat and are consistent with accepted international EOD practice.

Should a demining organisation not have a suitable integral EOD capability, then they shall mark, identify and report the UXO to the national mine action authority. It shall then be the responsibility of the national mine action authority to provide an appropriate EOD response.

Destruction procedures: demining organisations shall prepare SOPs for the effective and safe destruction of UXO. This includes UXO destroyed *in situ*, and those UXO or recovered ammunition destroyed in bulk. Special attention shall be given to ensuring the containment of blast and fragmentation effects resulting from the destruction of UXO.

Sites chosen for bulk destruction shall be located sufficiently far away from populated areas so as to represent no **risk**.

Transportation, handling and storage of mines and UXO: when UXO or other ammunition (which has been rendered safe) is moved, either for storage or to a site for bulk destruction, demining organisations shall apply national standards for the transportation, handling and storage of explosives.

If national standards do not exist or are inappropriate, demining organisations shall apply the international standards given in IMAS 10.50.

STANDARD 09.40

Guide for the use of mine detection dogs

From 1990, an increased number of international organisations have become involved in **humanitarian demining** and there has been an increasing use of dogs for **mine** and **ERW** detection. Mine dog detection has proved efficient and cost effective, and has also provided a solution to the problem of detecting mines that are undetectable with normal metal detectors.

The increased use of dogs has also created new challenges since there are many contradictory views about mine dog detection capabilities. Some **donors** and contractors have raised concern about the quality and credibility of mine dog organisations.

The **IMAS 09.4** series concerns the use of **mine detection dogs**. There are five **standards** in this series:

- *IMAS - 09.40 Guide for the use of mine detection dogs;*
- *IMAS - 09.41 Operational procedures for mine dog detection;*
- *IMAS - 09.42 Operational accreditation of mine dogs;*
- *IMAS - 09.43 Remote Explosive Scent Tracing — REST; and*
- *IMAS - 09.44 Guide on medical and general health care of dogs.*

Why dogs are used for mine and UXO detection

Dogs can detect extremely low concentrations of many substances. In fact dogs are capable of detecting concentrations that are several magnitudes lower than the detection threshold of the best technological “sniffers”.

Dogs can also discriminate between a variety of substances: the vapour emanating from mines contains many different substances, which dogs can be trained to recognise. Dogs can therefore be extremely useful for mine detection.

For that reason, mine dog detection has rapidly become the second most common mine clearance approach after manual demining. There are two major reasons for this:

- Mine dog detection can be faster and more cost effective than manual demining if implemented correctly. Dogs can also detect mines with a

low metal content and mines buried in areas with a high metal contamination or background, such as on railway lines.

- Many mine clearance organisations are using a demining approach in which many demining “tools”, such as mechanical pre-clearance, manual clearance and dog detection are used together in a complementary role, and the dog component is an important part of this mix.

While dogs cannot replace manual mine clearance, they are a powerful tool when used in combination with manual and mechanical clearance, and often have a large potential within humanitarian demining operations.

How dogs can be used

Mine dog detection can be applied in many different roles. Dogs are at their best when indicating individual mines, rather than concentrations of mines.

The use of dogs for **area reduction** and mine verification shows possibly their greatest potential. One of the main challenges in many mine-affected countries is the accurate establishment of minefield boundaries as part of clearance operations, or during **technical surveys** to determine the scope of the mine problem.

Dogs can work fast in areas with a low density of mines and are thus extremely suitable in the boundary detection role. Manual demining teams can then be deployed to deal with a much reduced minefield area.

Dogs are extremely suitable for establishing that there are no mines in an area, for use in initial surveys. It is often possible to eliminate wide areas much faster than by manual mine clearance.

A road may be difficult to demine manually due to the hard soil surface. A road is also typically free from tripwires and vegetation although this may not always be the case, if the road has been out of use for some while. Roads typically have a low density of mines, which often makes the use of dogs suitable and cost effective compared to manual mine clearance.

Many of the above areas of use are described in more detail in IMAS 09.41.

Operating systems also exist where the explosive vapour can be collected by suction probes with special filters, carried either by men or vehicles. In this case the explosive scent is brought to the dog, rather than the dog to the scent. This method of dog detection, known as **Remote Explosive Scent Tracing (REST)** is currently only used for road and road verge clearance, but could have a wider potential. REST is described in more detail below, in IMAS 09.43.

Unknown factors in the use of dogs

Many factors are still not known about the way in which dogs detect explosive and other scents. For instance, it is not known exactly which

substance the dog detects. It appears logical that dogs should be trained to detect the explosives in the mine. A majority of the landmines and **ammunition** currently deployed have either been filled with **TNT** or a composition of explosives where TNT is a component.

But when dogs detect mines or ERW, they may detect the explosives, the casing material or a bouquet of several odours. Many mine dog organisations currently train their dogs to detect a combination of casing material and the explosive content.

Limitations to mine dog detection

Experience has shown that mine detection dogs cannot be used successfully under all circumstances. For instance, in areas of dense vegetation, dogs are impeded and their search pattern may be disturbed giving rise to un-searched areas. In addition the handler may be prevented from controlling the search and observing the dog's signals.

Dense minefields are also confusing to dogs, and their work is severely curtailed in winter, during periods of heavy rain or in excessive heat. The presence of tripwires may also present a special hazard, unless the dogs have been specifically trained to detect them.

Dogs can also show random periods of unreliability, missing out some mines during detection. This may be blamed on faults in the training, or handler errors. It may also be a result of certain unfortunate environmental conditions that prohibit the dog from detecting certain mines or mines under specific conditions.

Until it has been established why dogs sometimes have lapses in reliability and miss out mines, it is necessary to use a minimum of two different dogs over the same area in order to gain confidence in the detection. Much fundamental work needs to be done on training and environmental factors to establish the causes of random unreliability.

Operational accreditation of mine dogs

The operational **accreditation** of mine dogs and their handlers is one of the best ways to ensure that international standards are being met. Details of operational accreditation can be found in IMAS 09.42.

Occupational health and general dog care

A successful mine dog programme is totally reliant on well-fed, well-trained and well-treated dogs, and IMAS 09.44 is a standard on the occupational health of dogs and general dog care.

Roles and responsibilities

The **national mine action authority** has the ultimate responsibility for

establishing an objective and unambiguous national policy on mine dog detection. This policy should impose equal requirements on both national and international mine dog organisations.

Other important responsibilities of the national mine action authority are to establish an unambiguous test and operational accreditation system including suitable test sites and a professional and objective test regime. The authority should also assist the demining organisations in the location and establishment of suitable training fields, and by the provision of regulations for mine dog detection and testing/operational accreditation procedures.

Mine dog detection is a relatively new activity and it is therefore important that demining organisations share experiences relating to problems with the environment, certain demining scenarios or certain mine/ERW types with other demining organisations and the national **mine action centre**. This will assist further improvement of mine dog detection and facilitate increased **safety**, efficiency and credibility.

STANDARD 09.41

Operational procedures for mine detection dogs

Dogs play many different roles within a **mine action** programme. Due to the different ways of using dogs, and the variety of **demining** scenarios in which they are used, it is not possible to establish uniform **standards** which can be applied under all circumstances.

There are, however, many common denominators for all **mine detection dog** operations that can be applied to operational procedures. Standard 09.41 provides guidance about general and specific principles which shall be considered when establishing operational procedures for mine dog detection.

Health and capability check prior to work

A dog's capabilities may vary on a weekly or even daily basis. The ability of a dog to search well depends on its health and well-being. It is therefore necessary for a demining organisation to assess its dogs on a daily basis, before the dogs are allowed to start searching for live **mines** and/or **ERW**.

The aim of the daily test is to determine whether the dog is capable of detecting the target substance, and is sufficiently cheerful, lively, motivated and focused to work on mine/ERW detection.

Reporting

The **demining organisation** shall ensure that a logbook is prepared for each dog, or group of dogs. The aim of the logbook is to provide the demining organisation and **monitoring** teams with a continuous written evaluation of the dog's health condition and search ability.

Planning and preparation for clearance (area clearance)

Before a new demining task can be undertaken it is necessary to plan where to establish **safe** lanes, access lanes and the location of the **boxes** and/or search lanes.

Safe lanes are prepared to provide access for the dog and handler to a box or an area. They also provide safe start lines for the dogs and handlers, and may be used for casualty evacuation.

Safe lanes should ideally be two metres wide to allow a safe passage for the handler and the dog, and to allow casualty evacuation by stretcher team. A minimum width requirement, however, is 1 metre.

Boxing an area: currently the most common way of clearing an area with mine dogs is to divide the area into square boxes and let the dogs clear these one by one. This clearance principle is commonly called the boxing system.

IMAS 10.20 provides guidelines for the safety distance to be kept between manual deminers. The same principles shall apply for the minimum distance between dogs and handlers in a mine-suspected area.

Search requirements

All areas searched and declared mine free by at least two different dogs may be considered cleared. Both dogs shall have passed the necessary operational accreditation.

Wind direction

Wind plays an important role when using mine dogs. Strong wind disturbs the overall scent picture.

- If the dog searches in a following wind, it will typically mark the mine/ ERW after it has passed the object and thus risks stepping or sitting on the mine itself.
- If the dog searches with a headwind, it will typically mark the mine/ ERW in front of the actual location.
- If the dog searches with a cross wind, it will typically mark the mine/ ERW to the side of the actual location.

A well-trained dog, however, may be able to indicate the exact location of a mine when the search is undertaken with head or side wind.

The search

Several search patterns have proved useful when using dogs to detect landmines. The two most common search patterns currently in use for humanitarian mine clearance are:

- *the figure eight pattern:* the dog searches in a figure of eight pattern in widths of 6-8 metres; and
- *the search-lane system:* the dog searches in a series of straight lanes that are between 0.3 metres and 1 metre wide. Typically the search lane length is 6-10 metres. The dog may search with or without a leash.

The search-lane system has been widely accepted by the international mine dog community as the most practical system.

Mine and ERW indication. When a dog has found a mine or ERW it shall be trained to indicate as described in the demining organisation's **standing operating procedure (SOP)**. This may be by sitting or lying down next to the mine. If a dog

sits or lies down on the top of the mine/ERW during operations, training or tests, it shall be taken out of service and re-trained until it has stopped doing so.

The dog shall indicate a find without physically being in direct contact with the object. If a dog scratches on target objects during operations, training or tests, it shall be taken out of service and re-trained until it has stopped doing so.

When the dog has indicated a mine correctly, it may be rewarded as described in the demining organisation's SOP. Rewarding is typically undertaken with a ball but other forms of reward may be preferred.

Rest and rotation of dogs. Dogs have highly individual qualities. While some dogs are capable of working for several hours at a stretch, others need frequent breaks between each search period. The demining organisation shall establish a policy for the length of search periods for their dogs, and lay down the criteria for rotation. They shall also evaluate for each dog how frequently it is to be rested or rotated.

The length of each search period is subject to individual evaluation by the dog handler. Some organisations give the dog a break after 30 minutes as part of their rotation scheme. This has proven to be practical and workable in some instances.

Responsibilities and obligations

National mine action authority: the national mine action authority is responsible for the testing and operational accreditation of the dogs/handlers (IMAS 09.42) as well as the accreditation of demining organisations (IMAS 07.30). The national mine action authority should establish a country- or area-specific standard for the use of mine detection dogs and provide rules and regulations for internal **quality assurance** and external **quality control**.

In practice, it has proved difficult to evaluate the search capability of a dog team through visual assessments. The national mine action authority should therefore consider employing specially trained experts, with skills in assessing and evaluating dogs and handlers.

Dog handler: the dog handler is responsible for all aspects relating to his/her own dog. He/she may sometimes have several dogs to look after. The dog handler shall ensure that the dog is treated well and according to the prevailing SOP, national and international standards. The dog handler shall hold the necessary skills to train, re-train and operate the dog satisfactorily during demining.

The dog handler shall also have the necessary skills related to general dog care, medical assessment and basic treatment of the dog. He/she will be responsible for assisting the Team Leader in maintaining the dog's performance logbooks.

The dog handler has the ultimate responsibility in regard to making decisions about the dog's suitability for work, rest and rotation requirements, how to approach the search, and whether to stop the search due to unfavourable wind and weather conditions.

STANDARD 09.42

Operational accreditation of mine dogs

Mine dog detection differs from other **demining** methods in that each individual dog has its own distinct set of qualities, which often varies significantly from day to day. The main concern in independent testing of dogs is to design a test that checks the dog's real capabilities in the field. A test will always be slightly artificial.

It is unlikely that the dog recognises a mine based on detection of a single substance. It is more likely that it detects a mixture of scents, or "bouquet" formed by several substances. The human factor also plays a significant role. Mine dog detection is highly dependent on good dog/handler communication and collaboration. The extra mental pressure to which the dog handler is exposed during an operational accreditation test may cause crucial misreadings of the dog's signals.

Unfortunately there are no obvious ways of eliminating all these problems. The objective, however, remains to establish ways of testing dogs which are fair, unambiguous and easily conducted and managed.

Types of operational accreditation test

There are three basic types of operational **accreditation** test:

- operational accreditation test 1 applies to dogs detecting mines on roads or open land;
- operational accreditation test 2 applies to the detection of tripwires; and
- operational accreditation test 3 applies to conditions where dogs will be following mechanical ground preparation or clearance machinery.

Each operational accreditation requires slightly different conditions and attributes from the search test area.

Test 1: detecting landmines, primary clearance of land/roads. Two principal test layouts appear suitable for testing dogs' ability to be the main form of detection of mines on land and on roads:

- testing against buried test items in lanes that are oriented diagonally or in parallel with a base lane; and

- testing against buried test items in **boxes** of various sizes.

While the two test principles may be equally suitable, a majority of the international community has adapted the box system.

Test 2: tripwire test. Dogs are sometimes trained to detect tripwires. Scent detection plays a major role in tripwire detection but there may also be yet unknown ways for a dog to recognise a tripwire. If dogs are to be used in areas where tripwires may exist, they should be tested against tripwires as part of the operational accreditation process and provided with a separate accreditation for this activity.

A tripwire test can be designed in many ways. The following basic principles should, however, apply:

- the tripwire test should be undertaken separately and not as part of operational accreditation test 1; and
- although tripwires may be found in different states, only camouflaged tripwires should be used for the purpose of the operational accreditation test. By camouflage is meant that the tripwire is covered with leaves, grass, soil or other natural material at the ground surface.

Test 3: landmine test, clearance behind machines. The aim of the test is to determine the dog's capability to detect target objects in machine-processed ground with a minimum of false indications. Typically machine-processed minefields will have some scattered target scent contamination as a result of detonations and scattering of mine fragments.

The test site differs from that of operational accreditation tests 1 and 2 in that the site and the test boxes need not be permanently laid and that they cannot be physically marked prior to the test due to the ground processing. It is, however, essential to determine the exact location of planned test target spots before the area is processed mechanically.

Responsibilities and obligations

The **national mine action authority** shall be responsible for defining national **standards** for dog detection operations, and for identifying and preparing and using suitable test sites according to and principles described in this standard. The national mine action authority shall appoint a well-qualified test manager, who should be given the overall responsibility for the planning and preparation of the test site and the management of the test field and the tests.

STANDARD 09.43

Remote Explosive Scent Tracing (REST)

The use of vapour **sampling** and filter analysis for explosive detection has seen limited acceptance by the international **mine action** community. Only a few organisations are currently using the system, but it has the potential to be an extremely fast and cost-effective way of checking suspected stretches of road or sectors of land for **mines** or **ERW**.

The system is named **Remote Explosive Scent Tracing (REST)**. It involves the sampling of air and/or dust containing explosive traces near the ground surface, typically undertaken using vehicle-mounted or portable sampling machines capable of sucking air through filter cartridges fitted to the end of plastic tubes.

The aim of **IMAS 09.43** is to provide specifications and guidance for the planning, implementation, accomplishment and management of REST operations. It covers the general principles of the different elements of REST.

The REST system

The REST system can be described as a process of collecting target substances (usually traces of explosive vapour) from the surface of a mine/UXO suspected area, using filters that are subsequently analysed by specially trained sniffer dogs.

The REST system should not be considered as a **demining** method but rather as a system for eliminating sectors that do not contain traces of explosives or target scent. Although the system has been applied in the field for a considerable period of time, its accuracy is poorly understood and described.

Sweeping technique

The collection of vapour is normally done through a process of sweeping a vapour collector over a suspect piece of ground. The following aspects should be considered during sweeping:

- the sweeping shall be undertaken at a steady and constant speed. The sweeping drill, the walking speed and the frequency between each

change of cartridge shall be monitored by the scent trapping team leader during the search;

- the filter cartridge should be kept close to the surface during sampling, to ensure a maximum contamination. If air is filtrated near the surface, dust and soil particles will inevitably be sucked into the filter material.

The analysis process

Upon completion of the sampling process, the used filter cartridges are usually brought to a central location for investigation by means of specially trained sniffer dogs capable of detecting traces of target substance emanating from the filter cartridge. The dogs will sniff on the filter cartridges and indicate if a filter contains traces of **TNT** or other target substance.

STANDARD 09.44

Guide to medical and general health care of dogs

Like machines and other technology, dogs need to be well looked after and maintained. A lack of attention will result in a limited output, reduced cost efficiency and questions raised about credibility and reliability of dog detection as a whole.

Dogs need to be well fed and well treated in order to perform successfully. A well balanced diet facilitates increased resistance against potential diseases. It also makes the dog stronger, increases its perseverance and its interest during training and live clearance.

IMAS 09.44 is a guide to occupational health and general dog care. It addresses all the basic health and dog care requirements applicable to **mine detection dogs** worldwide.

General health care

Good physical and mental health is a prerequisite for all types of working dogs. It is therefore essential that a **demining organisation** develops adequate mechanisms for canine health care when establishing the programme requirements.

An initial screening and evaluation of potentially suitable mine dogs should be given high priority. The screening should involve a medical examination and a test for desirable and undesirable individual qualities.

Dogs need to be exercised regularly to remain in top physical and mental condition. This is particularly important in hot climates. Repetitive exercises should be avoided, to prevent boredom.

Kennel requirements

Dogs living in a kennel environment have essential needs and requirements, which can be satisfied in a number of ways. Dogs need a healthy and hazard-free environment, a certain comfort, freedom of movement and access to natural light during daylight. Other important requirements are the company of other dogs or humans and stress avoidance. The kennel should be adequately sized for current and future needs.

Quarantine requirements

A period of quarantine is often required for newly arrived dogs that need to be medically assessed for potential diseases and parasites. The purpose of quarantine is to prevent transmission of diseases, parasites and worms to the main kennel facilities and consequently to the other dogs.

Prevention against diseases and illness

Vaccination requirements: proper vaccination provides immunity against many potentially dangerous viruses and bacteria.

Skin diseases and parasites: skin disease is a common problem for dogs in all parts of the world. The most common causes of skin disease are parasites, bacterial sores, allergic reactions, malfunctions in the hair growth cycle or faults in the diet. A veterinarian should always be consulted if the treatment of a skin disease does not improve within 24 hours after the completion of the treatment.

Zoonos: zoonos is a generic term for a few canine diseases that can also be transmitted to human handlers. The most prevalent forms of zoonos are: rabies, ringworm, roundworm and fleas. These diseases can often be avoided by giving worming preparations and anti-parasitic baths on a regularly basis. Personnel working with dogs should always wash their hands after handling a dog which is thought to be suffering from parasite or skin problems.

Other health and illness threats: a mine detection dog is typically exposed to a whole range of injuries and illnesses that are not caused by bacteriological or viral infections. The most common ones are:

- poisoning;
- tick and flea dip poisoning;
- Rattex poisoning (Rattex is commonly used as a rat and mice poison, especially in Africa);
- explosive poisoning;
- foot injuries;
- fatigue;
- gastric dilation or torsion (a condition where the stomach is inflated with gas);
- heat stroke; and
- high humidity, which is one of the arch enemies of the dog's skin both under cold and hot weather conditions. It is therefore essential always to keep the dog as dry and clean as possible.

In all cases of poisoning or suspected poisoning, the dog should quickly be treated by an experienced veterinarian. Before doing so, the dog handler should try to determine what type of poison the dog has ingested.

Epidemic diseases: the most common epidemic diseases are viruses or bacteria affecting the digestive tract, causing diarrhoea and vomiting. Epidemic

diseases may spread very quickly and affect the whole stock of dogs in a few days. The best preventive protection is proper hygiene and vaccination.

Accidents and emergencies

A demining organisation shall be prepared to respond to accidents and medical emergency situations that involve their mine dogs. The principles of first aid for dogs are similar to those for humans. It is important that dog handlers, team leaders and other members of a dog team are adequately trained to undertake basic first aid on dogs.

During emergency situations it is often important to ensure an immediate treatment by a veterinary specialist. A vehicle should therefore be available for emergency transportation of dogs as well as humans. Before and during transportation the dog should be moved as gently as possible. It is often necessary to treat the dog against shock prior to and during transportation.

Feeding principles

Mine dogs need a comprehensive diet containing all nutrients, minerals and vitamins, to maintain full health and vigour. All dogs need certain nutritional components in the right proportions. There are many different varieties of proprietary pre-packed dog food on the market. Most of the commercially prepared dog food types are well-balanced and generally of adequate quality.

Health control

A dog should always be examined prior to and after the working day. It is normally sufficient that the dog handler undertakes these daily checks. A more thorough clinical examination of the dogs should be done on monthly basis, to assure that the dog is fit and healthy. The examination should be done by an experienced para-vet, a specially trained dog supervisor or a veterinarian.

Series 10.

Mine action safety and occupational health

There are currently six **standards** in Series 10 on **mine action safety** and occupational health:

- *10.10 – Safety and occupational health: general requirements;*
- *10.20 – Safety and occupational health: demining worksite safety;*
- *10.30 – Personal protective equipment;*
- *10.40 – Medical support to demining operations;*
- *10.50 – Storage, transportation and handling of explosives; and*
- *10.60 – Reporting and investigation of demining incidents.*

The need to reduce **risk** and to provide a **safe** working environment is a fundamental principle of mine action management.

The International Labour Organization (ILO) has established minimum norms and basic standards which regulate conditions of work and safety in the workplace. These standards apply to all branches of economic activity and categories of employment, including mine action, unless specifically excluded by national legislation. In addition to the legal requirements, mine action imposes a moral imperative and duty of care by managers at all levels.

Managers of mine action programmes and projects are to achieve a safe working environment by providing effective management and supervision, by developing work practices that contribute to **risk reduction**, by selecting equipment with inherently safe design, by providing appropriate training, and by making available effective **personal protective equipment** and protective clothing.

Series 10 of the **IMAS** provides guidance on a number of key aspects to overall safety in mine action.

STANDARD 10.10

Safety and occupational health: general requirements

Mine action organisations should develop and maintain management procedures and processes that will enable **safety** and occupational health **risks** to be identified, evaluated and reduced in a systematic and timely manner.

Standard 10.10 provides guidance on the development and implementation of safety and occupational health management systems for use in mine action.

National mine action authorities and employers (governments, NGOs and commercial entities) should establish and maintain safety and occupational health management systems.

National responsibilities

National mine action authorities should establish a system to issue or approve regulations, codes of practice, **standing operating procedures** or other suitable guidance on safety and occupational health in the working environment in order to:

- provide information and advice to employers with a view to eliminating **hazards** or reducing them as far as practicable;
- coordinate activities concerned with safety and occupational health which are exercised nationally, regionally or locally by public authorities, by employers and their organisations and representatives, and by other persons or bodies concerned;
- undertake or promote studies and research to identify hazards to safety and health, and find means of overcoming them; and
- from time to time, review legislation concerning safety and occupational health and the working environment in the light of experience and advances in technology.

National mine action authorities should develop, implement and maintain safety and occupational health management systems in accordance with national standards and guidelines.

STANDARD 10.20

Safety and occupational health – demining worksite safety

The need to reduce risk and to provide a **safe** working environment is a fundamental principle of **mine action** management. **Standard 10.20** provides **national mine action authorities** and **demining organisations** with guidance on the development and implementation of policy and documented procedures for establishing and managing a safe worksite.

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 and demining organisations to develop and maintain appropriate policy and procedures.

Design of the demining worksite

The demining worksite shall be designed to:

- provide a clearly visible separation of hazardous areas including fragmentation zones, **cleared areas**, useable areas and unknown areas in and around the worksite;
- control the movement of deminers and visitors (including members of the public) at the worksite;
- limit the number of deminers and visitors allowed into the blast and fragmentation **hazard** zones;
- during the controlled **destruction** of **mines** and **unexploded ordnance**, take all reasonable precautions to exclude deminers, 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
- include measures to prevent structural and environmental damage.

Effective control of the worksite will be achieved by establishing and clearly marking a number of areas for **safety** and administration. Such areas shall be outside the relevant safety distances from all contaminated areas, clearance activity and explosive storage.

Demining incident

Procedures for the response to a **demining incident** shall be established and formally documented as **standing operating procedures**. These should include:

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

STANDARD 10.30

Personal protective equipment

The risk to **deminers** comes principally from **anti-personnel mines** (blast and fragmentation), anti-tank mines and **unexploded ordnance (UXO)**. Anti-personnel blast mines are the most abundant mines encountered in **humanitarian demining** and cause the greatest number of injuries. At close quarters, anti-personnel fragmentation mines and anti-tank mines exceed the capability of currently available **personal protective equipment (PPE)**.

As a minimum, all employees involved in **demining** should be provided with comfortable and serviceable clothing and footwear appropriate to the task and local conditions. Personal protective equipment should be regarded as a last resort to protect against the effects of mines and UXO after all planning, training and procedural efforts to reduce **risk** have been taken.

Personal protective equipment requirements

The levels of personal protective equipment provided for use in hazardous areas shall be based on a number of factors including local risk, operational procedures and practices, and local environmental conditions.

Training shall 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 shall be examined on a regular basis to ensure that it is suitable for use.

Blast protection: PPE should be capable of protecting against the blast effects of 240 grams of TNT at stand-off distances. Equipment provided to reduce the risk from such a hazard shall include, as a minimum:

- frontal protection, appropriate to the activity, capable of protecting against the blast effects of 240 grams of TNT at 30 centimetres from the closest part of the body; and
- eye protection capable of retaining integrity against the blast effects of 240 grams of TNT at 60 centimetres, providing full frontal coverage of face and throat.

Explosive ordnance disposal (EOD) clearance sites: When engaged in the clearance of unexploded or other hazardous ordnance, an enhanced level of protection may be necessary.

Responsibilities: **National mine action authorities** and employers (governments, NGOs and commercial entities) shall establish and maintain policy, **standards** and guidelines on the minimum requirements of PPE for use in national **mine action** programmes. This should distinguish between the obligations and responsibilities at the national level, and those of the employer and employee.

STANDARD 10.40

Medical support to demining operations

Demining organisations and employees shall be properly trained and equipped to respond to **demining accidents**. In addition, since **demining** is often conducted in an environment degraded by conflict and other humanitarian challenges, diseases such as malaria, tuberculosis, triptosomiasis and cholera, previously kept in check by national medical control measures, can again become widespread.

Developing a capacity to provide an appropriate response to a demining accident requires good planning, well-trained staff and the availability of medical services able to provide effective emergency treatment. In mine-affected countries suffering from post-conflict trauma, medical facilities will be limited, and overstretched. In these circumstances, **mine action** authorities and demining organisations should not place unrealistic demands on the host nation's medical infrastructure, in particular during the initial stages of a demining programme, but should plan to be as medically self-sufficient as possible.

Standard 10.40 provides guidance on the provision of appropriate medical support to demining operations in the field.

General requirements

A demining accident response plan shall be developed and maintained by the demining organisation for each demining workplace. An occupational health plan shall also be developed.

Demining accident response capability

Each demining workplace shall include demining teams with resources to:

- provide immediate first aid to a victim of a demining accident;
- remove victim(s) from the hazardous area;
- transport the victim(s) to an appropriate medical treatment or surgical facility;

- provide en-route medical care for the victim(s); and
- communicate with the medical facilities responsible for assisting the demining organisation in providing an appropriate response to a demining accident.

Each demining workplace shall also include staff trained and equipped to clean and dress wounds correctly, stabilise fractures, give analgesia, and give antibiotics and anti-tetanus prophylaxis if the victim is not otherwise likely to receive them within six hours of the demining accident.

Training

All people working at or visiting demining workplaces shall receive appropriate training on the precautions to reduce the **risk** of a demining accident, and the action to be taken in the event of a demining accident.

STANDARD 10.50

Storage, transportation and handling of explosives

The provision of a **safe** working environment includes the safe storage, transportation and handling of explosives and explosive materials. This requires appropriate storage facilities, equipment and vehicles to be made available — and for **national mine action authorities** and **demining organisations** to develop and maintain appropriate policy and procedures. Where existing national government regulations differ from those contained in **IMAS**, the more stringent requirement should be met.

Standard 10.50 provides national mine action authorities and demining organisations with guidance on the safe storage, transportation and handling of explosives.

General requirements

Modern explosives are safe if they are stored, transported and handled in accordance with the manufacturers' instructions. Demining organisations should not use explosives of uncertain origin or age, or when the environmental storage conditions have not met the manufacturers' requirements.

There are no specific international regulations or codes of practice that relate directly to the safe storage of **ammunition** and explosives. This is a national responsibility, although the IMAS refers to the UN Ammunition and Explosive Regulations as a default guide.

Environmental requirements

The environmental requirements (temperature, humidity and vibration) of ammunition and explosives vary, and are dependent on their intended storage conditions (including shelf life), transportation, handling and use. The performance of explosives will be unpredictable and the safety will be reduced if the manufacturers' environmental conditions are not met.

In general, explosives should be:

- kept dry and well ventilated;
- kept as cool as possible and free from excessive or frequent changes of temperature;

- protected from direct sunlight; and
- kept free from excessive and constant vibration.

Physical security

Demining organisations shall provide for appropriate levels of physical security for explosives in their possession during storage, transportation and use. Consideration should be given not only to the immediate physical security provided by the storage facility but also to accounting procedures and control of access. There may be occasions when additional measures such as appropriately equipped guards are necessary. The national standard should be the minimum level provided.

Responsibilities and obligations

The national mine action authority shall develop documented procedures for the storage, transportation and handling of explosives, which include:

- standards for storage of explosives, including storage on mine clearance sites;
- standards for the carriage of explosives, including warning signs and symbols to be used on vehicles; and
- safety distances for the storage and handling of explosives.

STANDARD 10.60

Reporting and investigation of demining incidents

The need to report and investigate **demining incidents** in a clear, comprehensive and timely manner is an essential part of **mine action** management. **Standard 10.60** provides guidance on the minimum requirements for the reporting and investigation of demining incidents.

Incident reporting

The following incidents shall be reported to the **national mine action authority**:

- an accident in which a **mine** or item of **unexploded ordnance (UXO)** harms a **demining** employee, visitor or member of the local population at a demining workplace;
- an incident in which a mine or UXO damages equipment or property at a demining workplace;
- the discovery of a mine or UXO located in an area previously cleared or recorded as cleared, regardless of whether **harm** has resulted from the missed mine or UXO;
- any unplanned **detonation** of mine or UXO on a demining worksite irrespective of the cause or outcome.

Authorities receiving reports of incidents that highlight inadequacies of equipment, standards or approved **standing operating procedures (SOPs)**, or that indicate the presence of new types of **hazard**, shall disseminate a general warning to all **demining organisations** applying the same equipment, standard or SOP, or likely to meet the same new hazards. In the absence of a **national mine action authority** the **demining organisations** themselves shall assume this responsibility.

Investigations

The following incidents should be subject to investigation by an appropriately qualified and experienced third party:

- demining incidents resulting from the application of approved standards or procedures;

- a mine or ERW hazard missed during the clearance process;
- demining accidents resulting in injury or death;
- damage to property; or
- damage that may result in a major claim for compensation from a member of the local population.

Investigation procedures

The aim of the demining incident investigation is to identify problems or opportunities to improve the **safety** and quality of the demining process. It is neither a criminal investigation nor an investigation to assist in the assessment of a current or possible future insurance claim.

For investigation of accidents, an investigation team of three individuals is recommended. It should be made up of a **mine action centre** representative, an independent person and a representative of the organisation suffering the accident, but not a member of the immediate site workforce or its chain of command.

Reporting and dissemination

The following information should be widely distributed:

- the circumstances contributing to and harm resulting from the incident;
- an analysis of the information collected during the investigation; and
- the findings of the investigation.

The national mine action authority, or an organisation acting on its behalf, shall disseminate information on demining incidents. In the absence of a national mine action authority, demining organisations should make this information available to other demining organisations through the **United Nations Mine Action Service (UNMAS)**. In the event of the identification of new hazards, the dissemination of information should be immediate.

Series 11.

Stockpile destruction

There are currently three **standards** in Series 11 on **stockpile destruction**:

- **11.10** – *Guide for the destruction of stockpiled anti-personnel mines*;
- **11.20** – *Principles and procedures for open burning and open detonation (OBOD) operations*; and
- **11.30** – *National planning guidelines for stockpile destruction*.

Article 4 of the **Anti-Personnel Mine Ban Convention** requires that States undertake to destroy or ensure the **destruction** of all stockpiled **anti-personnel mines** they own or possess, or that are under their jurisdiction or control, as soon as possible but not later than four years after they become Parties to the Convention.

Stockpiled anti-personnel mines rarely pose an immediate threat to human life, but they do provide the capability for the deployment of new minefields. The removal of this capability is therefore an important factor for the continuing success of the Anti-Personnel Mine Ban Convention, and the reduction of the threat from landmines worldwide.

Stockpiles tend to be large in quantity, but relatively small in terms of weight and net explosive content; however, the destruction of these stockpiles can be a complex logistic operation.

Series 11 of the **IMAS** provides guidance on the destruction of anti-personnel mine stockpiles.

STANDARD 11.10

Guide for the destruction of stockpiled anti-personnel mines

Physical destruction techniques for stockpiled **anti-personnel mines** range from relatively simple **open burning and open detonation (OBOD)** techniques to highly sophisticated industrial processes. **Standard 11.10** seeks to inform national authorities only of the technical and logistic issues involved in **stockpile destruction**. It is not possible to provide template solutions.

General principles

The selection of the most suitable technique or technology by a national authority will depend primarily on the resources available, the physical condition and quantity of the **stockpile**, the national capacity and the applicable environmental and explosives legislation.

In terms of stockpile destruction, anti-personnel mines are no different to other types of **munitions**. They all contain fuzing systems and high explosives, so the inherent dangers present during transport, storage, processing and **destruction** are the same.

The most influential factor is likely to be economies of scale, in that the more anti-personnel mines that are requiring destruction, the larger the economies of scale — and therefore the wider range of available technology (for example, making industrial demilitarisation a more realistic option for some States). National authorities may wish to consider stockpile destruction on a regional basis in order to achieve the large economies of scale.

For this reason, it is recommended that the stockpile destruction of anti-personnel mines should not be looked at in isolation. Where appropriate, consideration should be given to the destruction of other munitions in parallel to the anti-personnel mines.

Destruction techniques

There are many differing techniques and technologies available for anti-personnel mine destruction. The selection of the most suitable technique/technology will depend primarily on available finance, condition of the stockpile, in-country capacity and the environmental legislation of the State concerned.

Open burning and open detonation: in Europe, many nations have banned OBOD of all munitions, unless there is no alternative and it can only be justified on safety grounds. This has necessitated the construction of expensive demilitarisation facilities, hence the requirement for the disposal of ammunition types other than anti-personnel mines and the necessity for economies of scale if pursuing this option.

The argument as to the environmental effect of OBOD is still ongoing, and sound scientific evidence has been developed to support a case that OBOD of certain anti-personnel mine types may not be all that damaging to the environment. This means that OBOD still remains a viable destruction option for anti-personnel mines and may well be the most suitable option for areas of the world with virtually no industrialised demilitarisation capacities.

Industrial demilitarisation: industrial-scale demilitarisation has many advantages; mechanical disassembly, incineration in environmentally controlled systems and the ability to operate 24 hours a day, 365 days a year. Its major disadvantage is the high capital set-up costs of design, project management, construction and commissioning.

Traditional disposal options for ammunition: traditionally there were five options for the logistic disposal of ammunition and explosives but, in the case of anti-personnel mines, four of these options are banned by international treaty. The **Anti-Personnel Mine Ban Convention** itself precludes sale, gift or increased use in training of anti-personnel mines, while the Oslo Convention now bans deep sea dumping. Therefore, the international community is left with destruction as the only available option for the disposal of anti-personnel mines.

STANDARD 11.20

Principles and procedures for open burning and open detonation operations

In many cases, **open burning and open detonation (OBOD)** will be the only practical, viable or affordable technique available. **Standard 11.20** establishes the principles and procedures for the **safe** conduct of large-scale **destruction** operations using OBOD techniques.

Priorities and principles

The destruction of **ammunition** and explosives is a potentially hazardous task. The **risks** are minimised if the correct procedures are followed. If they are not, the possibility of serious accident becomes very high.

There are many different detailed disposal procedures but certain rules apply to all disposal tasks:

- Know the ammunition!
- Plan the task carefully!
- Create a safe working environment!
- Give and obey directions precisely!
- Observe all the **safety** precautions and use only the approved methods!
- Do not take short cuts, they kill!
- Clear the disposal area prior to departure!

Almost all known accidents would not have happened had these rules been obeyed. After any accident the Officer in Charge of Disposals concerned shall be called upon to explain why it was not prevented.

Methods of local disposal

There are three methods of local destruction:

- **detonation**;
- burning; or
- incineration.

The method used with a particular **mine** will depend upon its type of explosive filling and design.

STANDARD 11.30

National planning guidelines for stockpile destruction

Stockpile destruction can be carried out by different types of organisations, such as commercial companies, national **mine action** teams or military units.

Standard 11.30 explains systems and procedures that can be used at the national level to plan the **destruction** of a nation's **stockpile** of **anti-personnel mines**.

Management process

The management process for stockpile destruction has four stages: planning, preparation, destruction and verification.

Planning for stockpile destruction requires accurate and timely information on the quantity, storage location, type and technical design of anti-personnel mines, together with knowledge of the available destruction technology.

For new stockpile destruction programmes, the planning process should ideally start with a formal assessment of the country situation. This assessment will draw heavily on existing information provided by the military, research agencies and, if applicable, commercial companies. Technical expertise is essential during the planning process, and countries can request the support of the **UN Mine Action Service (UNMAS)** to assist in the planning process.

Preparation includes all enabling activities that help to clarify the destruction requirement — and to develop the capacity of a **national mine action authority** and destruction organisation to carry out a destruction task.

The accuracy of the national **ammunition** account is very important so that future monitoring and verification do not identify accounting errors once the stockpile destruction process has started.

Destruction is the process of final conversion of ammunition and explosives into an inert state that can no longer function as designed.

The need for effective and **safe** operational procedures is essential. **Standing operating procedures (SOPs)** should be prepared for all operational procedures, practices and drills. These are instructions that define the preferred method of conducting an operational task or activity. Standing

operating procedures should reflect local requirements and circumstances.

Verification: the national mine action authority and destruction organisation shall design and implement a verification system as a security and confidence-building measure.

Series 12.

Mine risk education

There are currently two **standards** in Series 12 on **mine risk education (MRE)**:

- *12.10 – Planning for mine risk education programmes and projects; and*
- *12.20 – Implementation of mine risk education programmes and projects.*

In total, seven standards deal with MRE, namely:

- *07.11 - Guide for the management of MRE;*
- *07.31 - Accreditation of MRE organisations and operations;*
- *07.41 - Monitoring of MRE programmes and projects;*
- *08.50 - Data collection and needs assessment for MRE;*
- *12.10 - Planning for MRE programmes and projects;*
- *12.20 - Implementation of MRE programmes and projects; and*
- *14.20 - Evaluation of MRE programmes and projects.*

Standard 07.11 should be read prior to reading the other six MRE standards and guides.

STANDARD 12.10

Planning for mine risk education programmes and projects

Planning is the way in which organisations wishing to conduct **mine risk education (MRE)** programmes and projects identify the most effective way to reduce the **risk** of injury from **mines** and **ERW** of target populations through raising awareness and by promoting behavioural change. The organisational **accreditation** of an MRE organisation will usually depend on its demonstrated ability to plan effectively.

General principles

Planning is essential to effective implementation and should be based upon careful and ongoing assessment of the needs of the affected communities. Planning should determine how **monitoring** and **evaluation** of the programme or project will be conducted.

Planning for MRE should be carried out in support of the national **mine action** programme and annual plan, or be linked to its development where a programme and plans have yet to be developed. Planning should also be linked to community development initiatives.

The planning process

Any planning process involves setting the overall objective of the programme or project, and then setting a series of enabling objectives and activities to achieve them. Each activity should contribute to achieving a specific objective; and for each activity planned, it should be clearly stated what inputs (resources) are required and the expected outputs. Measurable indicators and sources for verification should be established for assessing the achievement of each enabling objective.

One way of conducting such a planning approach is through the use of logical framework analysis. This approach allows the presentation of planned activities to be clearly presented (in a framework format) to relevant stakeholders.

Planning for public information dissemination

Public information dissemination involves the use of mass media to convey messages to the general public. The level of media usage and type of media predominantly used will vary between and within countries, however the plan should consider the target audience and the selection of the most appropriate media to reach that audience.

To do this, the audience viewing or listening figures of different TV and radio stations, and newspaper or magazine circulation figures should be known and, where possible broken down geographically and demographically. The timing, frequency and intensity of the messages should also be considered in order to have maximum impact.

Planning for education and training

There are two categories of education and training activities:

- a) direct education and training by the MRE organisation; and
- b) training of trainers.

The two approaches are not mutually exclusive and often organisations will start off conducting direct training and progress towards training of trainers. An important part of planning is to consider whether the training will be conducted directly or through partners, and then to select the most appropriate partners for communicating the message effectively to the target groups. The plan shall then consider the time and resources required to train and provide support to the trainers.

Planning for community mine action liaison

Community mine action liaison refers to the system and processes used to exchange information between national authorities, mine action organisations and communities on the presence of mines and ERW and their impact and mine action activities. Community mine action liaison aims to ensure that mine action projects address community needs and priorities.

Community mine action liaison with the affected populations may start far in advance of **demining** activities and may help the development of a capacity at the community level to assess the risk, manage the information and develop local risk reduction strategies. Liaison may also assist communities gather the information necessary to lobby relevant stakeholders and advocate for mine action and other assistance intervention.

The requirement that community mine action liaison be conducted prior to any demining operation means that MRE and **demining organisations** working in a similar geographical area should coordinate fully with each other.

STANDARD 12.20

Implementation of mine risk education programmes and projects

The effective implementation of an **MRE** programme or project should be guided by the **standards** for data collection and needs assessment (see **IMAS 08.50**) and planning (see **IMAS 12.10**), and should be responsive to the feedback from **monitoring** and **evaluation**.

Effective implementation should work with existing community structures and local authorities — accessing influential members of communities to facilitate project implementation. One of the key factors to ensure effective implementation is the establishment of a coordination framework with other key stakeholders.

The methods adopted to implement MRE will vary according to the type of activity. Some specific requirements for the three main components of MRE are discussed below.

Public information dissemination

Public information dissemination as part of MRE is a one-way form of communication transmitted through mass media to reduce the **risk** of injury from **mines** and **ERW** by raising awareness of the risk to individuals and communities and by promoting behavioural change.

Public information dissemination projects may be “stand alone” MRE projects that are implemented independently and often in advance of other **mine action** activities. In an emergency post-conflict situation, due to time constraints and lack of accurate data, public information dissemination is often the most practical means of communicating **safety** information to reduce risk. Equally they may form part of a more comprehensive **risk reduction** strategy within a **mine action** programme, supporting community based MRE, **demining** or advocacy activities.

In addition to using the mass media, public information may also be disseminated via “small media”, such as posters and leaflets. Such media may be disseminated to areas with reduced access to mass media or as a support to mass media approaches. Posters and leaflets have limited value alone and should always be used in support of a wider MRE project.

Education and training

Education and training is a two-way process, which involves the imparting and acquiring of knowledge, attitudes and practices through teaching and learning.

MRE education and training activities may be conducted in formal and non-formal environments. For example, this may include teacher to child education in schools, parent to children and children to parent education in the home, child to child education, peer to peer education in work and recreational environments, landmine safety training for humanitarian aid workers and the incorporation of landmine safety messages in regular occupational health and safety practices.

The implementation of education and training activities will differ according to the type of activity planned. Some organisations will conduct the training directly to affected communities, and others will work with implementing partners to conduct the education and training to the target groups. The implementation of a train-the-trainer programme will require more time to be spent working with partners, training, supporting and monitoring activities.

Community mine action liaison

Community mine action liaison refers to the system and processes used to exchange information between national authorities, mine action organisations and communities on the presence of mines and UXO and their impact and mine action activities. Community mine action liaison aims to ensure that mine action projects address community needs and priorities.

Community mine action liaison with the affected populations may start far in advance of demining activities and may help the development of community-level capacity to assess the risk, manage the information and develop local risk reduction strategies. Liaison may assist communities gather the information necessary to lobby relevant stakeholders and advocate for mine action and other assistance intervention.

The requirement for community mine action liaison to be conducted prior to any demining operation means that MRE and **demining organisations** working in a similar geographical area should coordinate fully with each other.

Series 14.

Evaluation of mine action programmes

There is currently only one **standard** in Series 14 on evaluation of **mine action** programmes, which deals with the evaluation of **mine risk education (MRE)**:

- *14.20 – Evaluation of mine risk education programmes and projects.*

A standard for general mine action evaluation is being drafted.

The purpose of **evaluation** in mine action is to assess the value of programmes and to confirm whether projects have been conducted as planned. Evaluations provide feedback and information on programme strategies and project outputs, and confirm whether they have satisfied the needs and priorities of the affected populations. Evaluations provide important recommendations which may be used to improve future programmes and projects.

Evaluation usually takes place at the end of a project or on completion of a significant phase of the project; **monitoring** is an ongoing activity conducted throughout the project.

Evaluation and monitoring are complementary activities, closely linked but with separate and distinct functions. In MRE, monitoring is the process by which the MRE activities and the outputs of the project are quality assured in accordance with the plan, whereas evaluation focuses on the achievement of objectives, the impact of the project, accountability and lessons learned.

Evaluations may be carried out by MRE organisations themselves or by an external body or agency.

STANDARD 14.20

Evaluation of mine risk education programmes and projects

The purposes of **evaluation** may include:

- a) improvement of the programme or project being evaluated;
- b) generating knowledge and learning for wider application (lessons learned and missed opportunities); and
- c) making project results transparent and accountable.

More specifically, in the case of **mine risk education (MRE)**, evaluation of MRE programmes and projects should be measured against the objectives stated in the original MRE project document and may include:

- a) reflecting on the rate of accidents;
- b) measuring the acquisition of knowledge, attitudes, practices, behavioural change, **reduction in risk** and reduction of accidents in the target communities which have resulted from MRE activities;
- c) assessing the impact of using specific MRE methods and tools; and
- d) identifying the extent to which the target communities' MRE needs and expectations have been addressed by the project.

Five specific evaluation criteria should be used: relevance, effectiveness, efficiency, impact and sustainability.

An evaluation will normally review and revisit the needs and information gathered during data collection and needs assessment, review the objectives and indicators defined during planning and assess MRE outputs confirmed through monitoring.

Issues to be evaluated

Stakeholder involvement: an evaluation should assess the degree to which the programme stakeholders (mine-affected communities, **mine action** organisations, governments and public institutions, aid agencies and community groups) were engaged in it.

Coordination: an evaluation should assess the degree to which the MRE project was coordinated. Similarly, the presentation and outreach of the findings and recommendations of the project evaluation should be well coordinated.

Integration: MRE activities should be fully integrated with the other **mine action**, humanitarian and development activities to achieve a synergistic effect. An evaluation should assess the degree to which the MRE project was integrated with other activities.

Community participation and empowerment: the affected communities should be actively involved in the evaluation and communities that have been involved in the evaluation process should be given feedback on the results of the evaluation.

Information management and exchange: an evaluation should assess the quality of the information gathered, the way it has been analysed and its use and appropriateness for project planning and impact measurement in different phases of the project. It should also assess whether the exchange of information between affected communities and mine action organisations has been efficient and effective in the **community mine action liaison** process.

Appropriate targeting: an evaluation should assess whether appropriate targeting has been achieved and maintained by the MRE project, and it should assess the impact of the project on the target groups. In particular, the evaluation should include the views and recommendations of the target groups and should assess the selection of target groups and the process of selection.

Education: where applicable, the evaluation should consider the quality of educational methodology and materials. This may include examining messages, training and curricula components.

Training: the competency of MRE staff and the effectiveness of the staff training programme may be assessed as part of the evaluation. In addition, evaluation staff who are likely to be exposed to **mine** and **ERW hazards** shall undergo landmine **safety** training.

Appendix 1.

Glossary of acronyms

APM	anti-personnel mine
AXO	abandoned explosive ordnance
BOI	Board of Inquiry
COTS	commercial off-the-shelf
EOD	explosive ordnance disposal
ERW	explosive remnants of war
FS	feasibility study
GICHD	Geneva International Centre for Humanitarian Demining
GIS	geographical information system
GMAA	General Mine Action Assessment
GPS	global positioning system
HLS	helicopter landing site
ILO	International Labour Organisation
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
ISO	International Organization for Standardization
ITEP	International Test and Evaluation Programme for Humanitarian Demining
JRC	Joint Research Centre (European Union)
MAC	mine action centre
MDD	mine detection dog(s)
MOU	Memorandum of Understanding
MRE	mine risk education
NGO	non-governmental organisation
NMAA	national mine action authority
OA	operational analysis
OBOD	open burning and open detonation
OTS	off-the-shelf
PD	preliminary development
PPE	personal protective equipment
PPR	post-project review
QA	quality assurance
QC	quality control
QM	quality management

REST	Remote Explosive Scent Tracing
S&OH	safety and occupational health
SON	statement of operational need
SOP	standing (or standard) operating procedure
SOR	statement of requirement
STO	statement of tasks and output
T&E	test and evaluation
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNMAS	United Nations Mine Action Service
UNOPS	United Nations Office for Project Services
US	United States
UXO	unexploded ordnance

Appendix 2.

Terms, definitions and abbreviations

abandoned explosive ordnance (AXO)

explosive ordnance that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fuzed, armed or otherwise prepared for use. (CCW protocol V)

access lane

a marked passage leading through a **mined area** that has been cleared to provide **safe** movement to a required point or area.

accident

an undesired event which results in **harm**.

accreditation

the procedure by which a **demining organisation** is formally recognised as competent and able to plan, manage and operationally conduct mine action activities safely, effectively and efficiently.

Note: For most mine action programmes, the **NMAA** will be the body which provides accreditation. International organisations such as the United Nations or regional bodies may also introduce accreditation schemes.

Note: ISO 9000 usage is that an “**accreditation**” **body** accredits the ‘Certification or Registration’ bodies that award ISO 9000 certificates to organisations. The usage in IMAS is completely different to this, and is based on the main definition above, which is well understood in the mine action community.

accreditation body

an organisation, normally an element of the **NMAA**, responsible for the management and implementation of the national **accreditation** system.

advocacy

in the context of mine action, the term refers to ... public support, recommendation or positive publicity with the aim of removing, or at least reducing, the **threat** from, and the **impact** of, **mines** and **UXO**.

Amended Protocol II (APII)

Amended Protocol II (APII) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May be Deemed to be Excessively Injurious or to have Indiscriminate Effects (CCW).

Note: It prohibits the use of all undetectable **anti-personnel mines** and regulates the use of wider categories of **mines**, **booby-traps** and other devices. For the purposes of the IMAS, Article 5 lays down requirements for the **marking** and **monitoring** of **mined areas**. Article 9 provides for the recording and use of information on **minefields** and mined areas. The Technical Annex provides guidelines on, inter alia, the recording of information and international signs for minefields and mined areas.

ammunition

see **munition**

anti-handling device

a device intended to protect a **mine** and which is part of, linked to, attached or placed under the mine and which activates when an attempt is made to tamper with or otherwise intentionally disturb the mine. [MBT]

Anti-Personnel Mine Ban Convention (APMBC)

Ottawa Convention

Mine Ban Treaty (MBT)

Note: Provides for a complete ban on the use, stockpiling, production and transfer of anti-personnel mines (**APMs**) and on their destruction. For the purposes of **IMAS** documents, Article 5 of the APMBC lays down requirements for the destruction of **APMs** in mined areas. Article 6 details transparency measures required under the Treaty including information on the location of mined or suspected **mined areas** and measures taken to warn the local population.

anti-personnel mine (APM)

a **mine** designed to be exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons.

Note: Mines designed to be detonated by the presence, proximity or contact of a vehicle as opposed to a person that are equipped with anti-handling devices, are not considered **APM** as a result of being so equipped. [MBT]

applied research

research focused at clearly defined problems and market opportunities.

Note: Its principal purpose is to establish the feasibility of applying technology to solve a clearly defined problem, within defined parameters such as cost, time and **risk**.

area reduction

the process through which the initial area indicated as contaminated (during any information gathering activities or surveys which form part of the **GMAA** process) is reduced to a smaller area.

Note: Area reduction may involve some limited **clearance**, such as the opening of access routes and the **destruction** of **mines** and **UXO** which represent an immediate and unacceptable **risk**, but it will mainly be as a consequence of collecting more reliable information on the extent of the **hazardous area**. Usually it will be appropriate to mark the remaining hazardous area(s) with **permanent** or **temporary marking systems**.

Note: Likewise, area reduction is sometimes done as part of the clearance operation.

battle area clearance (BAC)

the systematic and controlled clearance of hazardous areas where the **threat** is known not to contain **mines**.

bench mark

*in the context of humanitarian demining, the term refers to ... a fixed point of reference used to locate a marked and recorded **hazard** or **hazardous area**. It should normally be located a short distance outside the hazardous area.*

Note: A bench mark may not be necessary if the **reference point** is sufficiently close to the perimeter of the **hazardous area**.

bomblet

see **submunition**.

booby trap

an **explosive** or non-explosive device, or other material, deliberately placed to cause casualties when an apparently harmless object is disturbed or a normally safe act is performed. [AAP-6]

boundary lane

a **cleared lane** around the perimeter of a **hazardous area**.

box

a squared area that is developed for the purpose of being searched by **MDDs**.

Note: A box normally measures 10m x 10m, but other sizes may be preferred.

cancelled area

an area previously recorded as a **hazardous area** which subsequently is considered, as a result of actions other than **clearance**, not to represent a **risk from mines** and **UXO**.

Note: This change in status will be the result of more accurate and reliable information, for example from technical survey, and will normally only be authorised by the **NMAA**, in accordance with national **policy**. The documentation of all **cancelled areas** shall be retained together with a detailed explanation of the reasons for the change in status.

CEN (Comité Européen de Normalisation)

CEN is the European Committee for Standardization.

Note: The mission of CEN is to promote voluntary technical harmonisation in Europe in conjunction with worldwide bodies and its European partners. European standards (referred to as EN [Europe Normalization]) form a collection which ensures its own continuity for the benefit of users.

certification committee

a committee appointed by UNMAS to regularly review compliance of the **impact** component of the **GMAA** process with the UN certification guidelines based on the reports of the UN **quality assurance** monitor from the field.

Note: Acceptance of the findings of the impact component of the GMAA of a specific country by the international community is dependent on its certification by the UN certification committee.

clearance

(explosive ordnance clearance [EOC])

tasks or actions to reduce or eliminate the **explosive ordnance (EO)** hazards from a **specified area**. [NATO Study 2187]

cleared area

cleared land

an area that has been physically and systematically processed by a **demining**

organisation to ensure the removal and/or **destruction** of all **mine** and **UXO hazards** to a **specified depth**.

Note: IMAS 09.10 specifies the **quality system** (i.e. the organisation, procedures and responsibilities) necessary to determine that land has been cleared by the demining organisation in accordance with its contractual obligations.

Note: Cleared areas may include land cleared during the **technical survey** process, including **boundary lanes** and **cleared lanes**.

cleared lane

safety lane

the generic term for any lane, other than a **boundary lane**, cleared by a survey or clearance team to the international standard for **cleared land**. This may include **access lanes** outside the **hazardous area** or cross/verification lanes inside a hazardous area.

cluster bomb unit (CBU)

an expendable aircraft store composed of a dispenser and **sub-munitions**. [AAP-6]

a bomb containing and dispensing sub-munitions which may be **mines** (anti-personnel or anti-tank), penetration (runway cratering) bomblets, fragmentation bomblets etc.

commercial-off-the-shelf (COTS)

*in the context of **mine action equipment procurement**, the term refers to an **equipment** that is available direct from the manufacturer and requires no further development prior to introduction into service apart from minor modifications.*

community liaison

community mine action liaison

liaison with **mine/UXO** affected communities to exchange information on the presence and **impact** of mines and UXO, create a reporting link with the **mine action** programme and develop **risk reduction** strategies. Community mine action liaison aims to ensure community needs and priorities are central to the planning, implementation and **monitoring** of mine action operations.

Note: Community liaison is based on an exchange of information and involves communities in the decision making process, (before, during and after **demining**), in order to establish priorities for mine action. In this way mine action programmes aim to be inclusive, community focused and ensure the maximum involvement of all sections of the community. This involvement includes joint planning, implementation, monitoring and **evaluation** of projects.

Note: Community liaison also works with communities to develop specific interim safety strategies promoting individual and community behavioural change. This is designed to reduce the impact of mines/UXO on individuals and communities until such time as the **threat** is removed.

contractor

any organisation (governmental, non-government or commercial entity) contracted to undertake a mine action activity. The organisation responsible for the conduct of the overall contract is referred to as the 'prime contractor'.

Other organisations or parties the prime contractor engages to undertake components of the larger contract are referred to as 'sub-contractors'. Sub-contractors are responsible to the prime contractor and not to the principal.

cost-effectiveness

an assessment of the balance between a system's performance and its whole life costs.

critical non-conformity

the failure of a 1.0m² unit of land during **inspection** to meet the stated **clearance** requirements. IMAS identifies two types of critical non-conformities:

- the discovery of a mine or UXO; and
- other critical non conformities as defined by NMAAs.

demilitarisation

the process that renders **munitions** unfit for their originally intended purpose.

Note: Definition from NATO Maintenance and Supply Agency (NAMSA), Peter Courtney-Green, May 2000.

deminer

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

demining

humanitarian demining

activities which lead to the removal of **mine and UXO hazards**, including **technical survey**, mapping, **clearance**, **marking**, post-clearance documentation, **community mine action liaison** and the **handover** of **cleared land**. Demining may be carried out by different types of organisations, such as NGOs, commercial companies, national **mine action** teams or military units. Demining may be emergency-based or developmental.

Note: in IMAS standards and guides, **mine and UXO clearance** is considered to be just one part of the demining process.

Note: in IMAS standards and guides, demining is considered to be one component of mine action.

Note: in IMAS standards and guides, the terms demining and humanitarian demining are interchangeable.

demining accident

an **accident** at a **demining workplace** involving a **mine or UXO hazard** (c.f. mine accident).

demining incident

an **incident** at a **demining workplace** involving a **mine or UXO hazard** (c.f. mine incident).

demining organisation

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

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.

demolition (dml)

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

demolition ground

an area authorised for the **destruction** of **munitions** and **explosives** by **detonation**.

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.

destruction

the process of final conversion of **munitions** and **explosives** into an **inert** state whereby they can no longer function as designed.

detection

in the context of humanitarian demining, the term refers to the discovery by any means of the presence of **mines** or **UXO**.

detonation

the rapid conversion of **explosives** into gaseous products by means of a shock wave passing through the explosive (c.f. deflagration). Typically, the velocity of such a shock wave is more than two orders of magnitude higher than a fast deflagration.

detonator

a device containing a sensitive **explosive** intended to produce a **detonation** wave. [AAP-6]

development

the stage of the project (and its associated costs) prior to production concerned with developing a design sufficiently for production to begin.

disarm

the act of making a **mine** safe by removing the **fuze** or igniter. The procedure normally removes one or more links from the firing chain.

disposal site

an area authorised for the destruction of **munitions** and **explosives** by **detonation** and burning.

DNT (Dinitrotolulene)

a residual product of **TNT** manufacture, and a breakdown product of **TNT** decay. Is normally present in varying amounts in any explosive device

containing TNT. The vapour pressure of DNT is much higher than that of TNT, and under some conditions it may be easier to detect DNT than TNT.

donor

all sources of funding, including the government of mine affected states.

education

the imparting and acquiring over time of knowledge (awareness or possession of facts, ideas, truths or principles), attitude and practices through teaching and learning. [Oxford Concise English Dictionary]

environmental factors

factors relating to the environment and that influence the transportation of odour from the **mine**, the **detection** of the target odour or the ability of people and dogs to work safely and effectively. (i.e. Wind, rain, temperature, humidity, altitude, sun and vegetation). (Definition for **MDD** use only).

equipment

a physical, mechanical, electrical and/or electronic system which is used to enhance human activities, procedures and practices.

European Normalization (EN)

See **CEN (Comité Européen de Normalisation)**

evaluation

the analysis of a result or a series of results to establish the quantitative and qualitative effectiveness and worth of software, a component, **equipment** or system, within the environment in which it will operate.

Note: Definition when used in context of equipment test and evaluation.

a process that attempts to determine as systematically and objectively as possible the merit or value of an intervention.

Note: The word 'objectively' indicates the need to achieve a balanced analysis, recognising bias and reconciling perspectives of different stakeholders (all those interested in, and affected by programmes, including beneficiaries as primary stakeholders) through use of different sources and methods.

Note: Evaluation is considered to be a strategic exercise.

Note: Definition when used in relation to programmes. (*UNICEF Policy and Programming Manual*)

explosive materials

components or ancillary items used by **demining organisations** which contain some **explosives**, or behave in an explosive manner, such as **detonators** and **primers**.

explosive ordnance (EO)

all munitions containing **explosives**, nuclear fission or fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms **ammunition**; all **mines**, torpedoes and depth charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature. [AAP-6]

explosive ordnance disposal (EOD)

the **detection**, identification, evaluation, **render safe**, recovery and **disposal** of EO. EOD may be undertaken:

as a routine part of **mine clearance** operations, upon discovery of the **UXO**. to dispose of **UXO** discovered outside **mined areas**, (this may be a single **UXO**, or a larger number inside a specific area).

to dispose of **EO** which has become **hazardous** by deterioration, damage or attempted **destruction**.

explosive remnants of war (ERW)

unexploded ordnance (**UXO**) and abandoned explosive ordnance (**AXO**). (CCW protocol V).

explosives

a substance or mixture of substances which, under external influences, is capable of rapidly releasing energy in the form of gases and heat. [AAP-6] failure

an event in which any system, **equipment**, components or sub-components does not perform as previously specified.

Note: Failures may be classified as to cause, degree, relevance, dependence and responsibility.

field editor

an individual whose main responsibility is to ensure accuracy, consistency, readability and clarity of the information gathered by enumerators in the field.

Note: The field editor must work closely with the survey teams in order to ensure that the review process is done shortly after the survey has been completed and while the teams are in the same general vicinity as the community being reviewed.

fixed price contract

a contract in which a **contractor** is paid a fixed price to undertake a specific scope of work or to provide a specific number of assets (demining teams, **MDD** teams or mechanical equipment) over an agreed time-frame. The fixed price covers the whole of the works, supplies and services to be provided by the contractor.

force majeure

unforeseeable circumstances that prevent a party from completing a task required by a contract.

fuze

a device which initiates an **explosive** train. [AAP-6]

General Mine Action Assessment (GMAA)

the continuous process by which a comprehensive inventory can be obtained of all reported and/or suspected locations of **mine** or **UXO** contamination, the quantities and types of **explosive hazards**, and information on local soil characteristics, vegetation and climate; and assessment of the scale and **impact** of the landmine problem on the individual, community and country.

georeferencing

a process whereby graphic coordinates or other indirect referencing codes are added to tabular data in order to allow simple comparison, compilation and analysis of disparate datasets based on common locations.

GIS

geographical (or geospatial) information system

an organised collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information.

Note: GIS allows a user to graphically view multiple layers of data based on their geographic distribution and association. GIS incorporates powerful tools to analyse the relationships between various layers of information.

ground preparation

preparing of ground in a **minefield** or **hazardous area** by mechanical means by removing or reducing obstacles to clearance e.g. tripwires, vegetation, hard soil and metal contamination to make subsequent **clearance** operations quicker and safer.

ground processing

the practice of applying a mechanical tool or system to a **minefield** or **hazardous area** with the aim of clearing all of the **mines** or **UXO** within the mechanical tool or system's capabilities.

group interview

the conduct of a formal interview with a group of **key informants** in an impacted community on what to survey within that community.

guide

an IMAS guide provides general rules, principles, advice and information.

handover

the process by which the beneficiary (for example, the **NMAA** on behalf of the local community or land user) accepts responsibility for the **cleared area**. The term '**alienation**' is sometimes used to describe a change of ownership of the land which accompanies the handover of a cleared area.

handover certificate

documentation used to record the **handover** of **cleared land**.

harm

physical injury or damage to the **health** of people, or damage to property or the environment. [ISO Guide 51:1999(E)]

harmful event

occurrence in which a **hazardous situation** results in **harm**. [ISO Guide 51:1999(E)].

hazard

potential source of **harm**. [ISO Guide 51:1999(E)]

hazard (ous) area

contaminated area

a generic term for an area not in productive use due to the perceived or

actual presence of **mines**, **UXO** or other **explosive** devices.

hazard marker

object(s), other than **hazard signs**, used to identify the limits of a **mine** and **UXO hazard area**. Hazard markers shall conform to the specification established by the **NMAA**.

hazard marking system

a combination of measures (signs and barriers) designed to provide the public with warning and protection from **mine** and **UXO hazards**. The system may include the use of signs or markers, or the erection of physical barriers.

hazard sign

a permanent, manufactured sign which, when placed as part of a marking system, is designed to provide warning to the public of the presence of **mines**.

hazardous situation

circumstance in which people, property or the environment are exposed to one or more **hazards**. [ISO Guide 51:1999(E)].

health

in relation to work, indicates not merely the absence of disease or infirmity, it also includes the physical and mental elements affecting health, which are directly related to safety and hygiene at work. [ILO C155]

humanitarian demining

see **demining**. (In IMAS standards and guides, the terms demining and humanitarian demining are interchangeable.)

impact

the level of social and economic suffering experienced by the community resulting from the **harm** or **risk** of harm caused by **mine** and **UXO hazards** and **hazardous areas**.

Note: **Impact** is a product of:

- a) the presence of mine/UXO hazards in the community;
- b) **intolerable risk** associated with the use of infrastructure such as roads, markets etc;
- c) intolerable risk associated with livelihood activities such as use of agricultural land, water sources etc; and
- d) number of victims of **mine** and **UXO incidents** within the last two years.

impact free

a term applied to countries that may still have **mines** but where the **mined areas** are not having a negative socio-economic **impact** on communities, e.g. the mines may be in remote, marked and unpopulated areas.

impact survey

see **Landmine Impact Survey (LIS)**

IMSMA

the Information Management System for Mine Action (IMSMA)

Note: This is the United Nation's preferred information system for the management of critical data in UN-supported field programmes. The Field Module (FM) provides for data collection, information analysis and project management. It

is used by the staffs of **MACs** at national and regional level, and by the implementers of **mine action** projects - such as **demining organisations**.

incident

an event that gives rise to an **accident** or has the potential to lead to an accident.

inert

a **munition** that contains no **explosive**, pyrotechnic, **lachrymatory**, radioactive, chemical, biological or other toxic components or substances.

Note: An **inert munition** differs from a **drill** munition in that it has not necessarily been specifically manufactured for instructional purposes. The inert state of the munition may have resulted from a **render safe procedure** or other process to remove all **hazardous** components and substances. It also refers to the state of the munition during manufacture prior to the filling or fitting of explosive or hazardous components and substances.

inspection

the observation, measurement, examination, testing, **evaluation** or gauging of one or more components of a product or service and comparing these with specified requirements to determine conformity.

inspection body

an organisation which conducts post-clearance **QC** on behalf of the **NMAA** by applying random **sampling** procedures, or other appropriate and agreed methods of **inspection**.

insurance

an arrangement for compensation in the event of damage to or loss of (property, life of a person).

Note: Insurance should include appropriate medical, death and disability coverage for all personnel as well as third party liability coverage.

Note: Such insurance need not necessarily have to be arranged through an insurance broker or company, unless otherwise required by contractual arrangements. Self insurance (under-writing) schemes, provided they are formally constituted on accepted actuarial principles and provide adequate cover, may be an acceptable alternative.

intended use (land)

use of land following **demining** operations.

Note: Intended use: use of a product, process or service in accordance with information provided by the supplier. [ISO Guide 51:1999(E)]

Note: Intended land use should be included in the **clearance** task specification and clearance task **handover** documentation.

International Mine Action Standards (IMAS)

documents developed by the UN on behalf of the international community, which aim to improve safety and efficiency in **mine action** by providing guidance, by establishing principles and, in some cases, by defining international requirements and specifications.

Note: They provide a frame of reference which encourages, and in some cases requires, the sponsors and managers of mine action programmes and projects to achieve and demonstrate agreed levels of effectiveness and **safety**.

Note: They provide a common language, and recommend the formats and rules for

handling data which enable the free exchange of important information; this information exchange benefits other programmes and projects, and assists the mobilisation, prioritisation and management of resources.

International Organisation for Standardization (ISO)

Note: A worldwide federation of national bodies from over 130 countries. Its work results in international agreements which are published as ISO **standards** and **guides**. ISO is an NGO and the standards it develops are voluntary, although some (mainly those concerned with **health**, **safety** and environmental aspects) have been adopted by many countries as part of their regulatory framework. ISO deals with the full spectrum of human activities and many of the tasks and processes which contribute to **mine action** have a relevant standard. A list of ISO standards and guides is given in the ISO Catalogue [www.iso.ch/infoecatinfo/html].

Note: The revised mine action standards have been developed to be compatible with ISO standards and guides. Adopting the ISO format and language provides some significant advantages including consistency of layout, use of internationally recognised terminology, and a greater acceptance by international, national and regional organisations who are accustomed to the ISO series of standards and guides.

key informants

individuals who have relatively good knowledge on the **hazardous areas** in and around their community.

Note: Key informants may include, but are not limited to, community leaders, mine-affected individuals, schoolteachers, religious leaders etc.

Landmine Impact Survey (LIS)

impact survey

an assessment of the socio-economic **impact** caused by the actual or perceived presence of **mines** and **UXO**, in order to assist the planning and prioritisation of **mine action** programmes and projects.

level 2 survey

the term previously used for a **technical survey**.

licence

in the context of mine action, the term refers to a certificate issued by a **NMAA** in relation to the capacity or capability of a facility, for example a demolition site may be licensed for certain explosive limits and explosive storage areas may be licensed for certain types and quantities of munitions.

Demining organisations receive organisational or operational **accreditation** from an accreditation body authorised by a **NMAA**.

local requirement

the performance and characteristics of the proposed **equipment** which reflect local environmental conditions, operating procedures and operational requirements.

marking

emplacement of a measure or combination of measures to identify the position of a **hazard** or the boundary of a **hazardous area**. This may include the use of signs, paint marks etc, or the erection of physical barriers.

marking system

an agreed convention for the **marking** of **hazards** or **hazardous areas**.

mechanical application

the generic term to describe the use of machines in the conduct of **mine clearance** operations.

Memorandum of Understanding (MOU)

a document used to facilitate a situation or operation when it is not the intention to create formal rights and obligations in international law but to express commitments of importance in a non-binding form.

mine

munition designed to be placed under, on or near the ground or other surface area and to be exploded by the presence, proximity or contact of a person or a vehicle. [MBT]

mine accident

an accident away from the **demining workplace** involving a **mine** or **UXO** hazard (c.f. **demining accident**).

mine action

activities which aim to reduce the social, economic and environmental **impact** of **mines** and **UXO**.

Note: Mine action is not just about demining; it is also about people and societies, and how they are affected by landmine contamination. The objective of mine action is to reduce the risk from landmines to a level where people can live safely; in which economic, social and health development can occur free from the constraints imposed by landmine contamination, and in which the victims' needs can be addressed. Mine action comprises five complementary groups of activities:

- a) MRE;
- b) humanitarian demining, i.e. mine and UXO survey, mapping, marking and clearance;
- c) victim assistance, including rehabilitation and reintegration;
- d) stockpile destruction; and
- e) advocacy against the use of APM.

Note: A number of other enabling activities are required to support these five components of mine action, including: assessment and planning, the mobilisation and prioritisation of resources, information management, human skills development and management training, **QM** and the application of effective, appropriate and safe equipment.

mine action centre (MAC)

mine action coordination centre (MACC)

an organisation that carries out **MRE** training, conducts reconnaissance of **mined areas**, collection and centralisation of mine data and coordinates local (**mine action**) plans with the activities of external agencies, of (mine action) NGOs and of local **deminers**. [UN Terminology Bulletin No. 349] For national mine action programmes, the MAC/MACC usually acts as the operational office of the **NMAA**.

Mine Action Coordination Centre (MACC)

see **Mine Action Centre (MAC)**

mine action organisation

refers to any organisation (government, NGO, military or commercial entity) responsible for implementing mine action projects or tasks. The mine action organisation may be a prime **contractor**, subcontractor, consultant or agent.

mine awareness

see **mine risk education (MRE)**.

mine clearance

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

mine detection dog(s) (MDD)

a dog trained and employed to detect **mines**, **UXO** and other **explosive** devices.

mine free

a term applied to an area that has been certified as clear of mines to a specified depth. Also applied to a country or an area that has not had a mine contamination problem.

mine incident

an incident away from the demining workplace involving a **mine** or **UXO** hazard (c.f. **demining incident**).

mine risk

the probability and severity of physical injury to people, property or the environment caused by the unintentional **detonation** of a mine or **UXO**. [Adapted from ISO Guide 51:1999(E)]

mine risk education (MRE)

activities which seek to reduce the risk of injury from mines/UXO by raising awareness and promoting behavioural change including **public information dissemination**, **education** and training, and **community mine action liaison**.

mine risk reduction

those actions which lessen the probability and/or severity of physical injury to people, property or the environment. [Adapted from ISO Guide 51:1999(E)] Mine risk reduction can be achieved by physical measures such as **clearance**, fencing or marking, or through behavioural changes brought about by **MRE**.

mine sign

a sign which, when placed as part of a **marking system**, is designed to provide warning to the public of the presence of **mines**.

mine threat

mine and **UXO** threat

an indication of the potential **harm** from the number, nature, disposition and detectability of **mines** and **UXO** in a given area.

mined area

an area which is dangerous due to the presence or suspected presence of **mines**. [MBT]

minefield

an area of ground containing **mines** laid with or without a pattern. [AAP-6]

monitoring

in the context of mine action, the term refers to the authorised observation, inspection or assessment by qualified personnel of worksites, facilities, equipment, activities, processes, procedures and documentation without taking responsibility for what is being monitored. Monitoring is usually carried out to check conformity with undertakings, procedures or standard practice and often includes recording and reporting elements.

*in the context of MRE, the term refers to ...*the process of measuring or tracking what is happening. This includes:

measuring progress in relation to an implementation plan for an intervention – programmes/projects/activities, strategies, policies and specific objectives.

measuring change in a condition or set of conditions or lack thereof (e.g., changes in the situation of children and women or changes in the broader country context).

definition from UNICEF *Policy and Programming Manual*.

monitoring body

an organisation, normally an element of the NMAA, responsible for management and implementation of the national monitoring system.

MRE organisation

any organisation, including governmental, non-governmental, civil society organisations (e.g. women’s union, youth union, red cross and red crescent societies), commercial entities and military personnel (including peace-keeping forces), which is responsible for implementing MRE projects or tasks. The MRE organisation may be a prime contractor, subcontractor, consultant or agent. The term ‘MRE sub-unit’ refers to an element of an organisation, however named, that is accredited to conduct one or more prescribed MRE activities such as a public information project, a schools based education project or a community mine action liaison project evaluation.

MRE partner

an institution or agent within the mine-affected community who is able to work with an MRE organisation to facilitate, establish and implement an MRE project.

munition

a complete device charged with **explosives**, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material for use in military operations, including **demolitions**. [AAP 6]

Note: In common usage, “munitions” (plural) can be military weapons, ammunition and equipment.

national authority

in the context of stockpile destruction the term refers to the government department(s), organisation(s) or institution(s) in each country charged with the regulation, management and coordination of stockpile destruction.

national mine action authority (NMAA)

the government department(s), **organisation(s)** or institution(s) in each mine-affected country charged with the regulation, management and coordination of **mine action**.

Note: In most cases the national **MAC** or its equivalent will act as, or on behalf of, the NMAA.

Note: In certain situations and at certain times it may be necessary and appropriate for the UN, or some other recognised international body, to assume some or all of the responsibilities, and fulfil some or all the functions, of a NMAA.

neutralise

the act of replacing safety devices such as pins or rods into an **explosive** item to prevent the **fuze** or igniter from functioning.

Note: It does not make an item completely safe as removal of the safety devices will immediately make the item active again (c.f. **disarm**).

Note: A **mine** is said to be neutralised when it has been rendered, by external means, incapable of firing on passage of a target, although it may remain dangerous to handle. [AAP-6]

permanent marking system

a **marking system** having an indefinite period of use, usually requiring maintenance (c.f. **temporary marking system**).

personal protective equipment (PPE)

all equipment and clothing designed to provide protection, which is intended to be worn or held by an employee at work and which protects him/her against one or more **risks** to his/her **safety** or **health**.

pilot test

a process ahead of the commencement of wide range data collection to ensure that all survey project elements, such as team deployment, data collection, reporting and administration, are functioning as planned.

policy

defines the purpose and goals of an organisation, and it articulates the rules, standards and principles of action which govern the way in which the organisation aims to achieve these goals.

Note: Policy evolves in response to strategic direction and field experience. In turn, it influences the way in which plans are developed, and how resources are mobilised and applied. Policy is prescriptive and compliance is assumed, or at least is encouraged.

post clearance inspection

*in the context of humanitarian demining, the term refers to ...the process of measuring, examining, testing or otherwise comparing a sample of **cleared land** against the **clearance** requirements.*

preliminary study

a study to give an indication of the practicability of the idea in terms of technological possibilities and cost.

pre-test

a process at the start of a survey to validate clarity and appropriateness of the selected survey instrument.

primer

a self-contained **munition** which is fitted into a cartridge case or firing mechanism and provides the means of igniting the propellant charge.

procurement

the process of research, development and production or purchase which leads to an **equipment** being accepted as suitable for use, and continues with the provision of spares and **post-design services** (PDS) throughout the life of the equipment.

prodding

a procedure employed in the process of **demining** whereby ground is probed to detect the presence of sub-surface **mines** and/or **UXO** (c.f. **sapping**).

programme

a group of projects or activities which are managed in a co-ordinated way, to deliver benefits that would not be possible were the projects and/or contracts managed independently.

project

an endeavour in which human, material and financial resources are organised to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives.

project management

the process by which a project is brought to a successful conclusion.

public education

the process aimed at raising general awareness of the **mine** and **UXO** threat; through public information, formal and non-formal education systems.

Note: Public education is a mass mobilisation approach that delivers information on the mine/UXO threat. It may take the form of formal or non-formal education and may use mass media techniques.

Note: In an emergency situation, due to time constraints and the lack of available data, it is the most practical means of communicating safety information. In other situations it can support **community liaison**.

public information dissemination

information concerning the **mine** and **UXO** situation, used to inform or update populations. Such information may focus on particular issues, such as complying with mine ban legislation, or may be used to raise public support for the mine action programme. Such projects usually include risk reduction messages, but may also be used to reflect national mine action policy.

quality assurance (QA)

part of **QM** focused on providing confidence that quality requirements will be fulfilled. [ISO 9000:2000]

Note: The purpose of QA in **humanitarian demining** is to confirm that management practices and operational procedures for demining are appropriate, are being applied, and will achieve the stated requirement in a safe, effective and efficient manner. Internal QA will be conducted by **demining organisations** themselves, but external inspections by an external **monitoring body** should also be conducted.

quality control (QC)

part of QM focused on fulfilling quality requirements. [ISO 9000:2000]

Note: QC relates to the *inspection* of a finished product. In the case of **humanitarian demining**, the 'product' is **safe cleared land**.

quality management (QM)

coordinated activities to direct and control an organisation with regard to **quality**. [ISO 9000:2000]

random sampling

selection of **samples** by a process involving equal chances of selection of each item. Used as an objective or impartial means of selecting areas for **test** purposes.

raster data

the use of an imaginary grid of cells to represent the landscape. Point features are stored as individual column/row entries in a grid; lines are identified as a set of connected cells; and areas are distinguished as all of the cells comprising a feature.

RDX (1, 3, 5-triazacyclohexane)

RDX is another military explosive which is used extensively as an **explosive** in many **munitions** formulations. RDX is relatively insensitive; it has a high chemical stability, although lower than that of **TNT**. RDX is never handled pure and dry because of the danger of accidental **explosion**. It is used as a component in explosive mixtures, especially plastic explosives.

reduced area

see **area reduction**

the area of **hazardous** land remaining after the process of area reduction. It is still referred to as a **hazardous area**.

reference point

landmark

a fixed point of reference some distance outside the **hazard(ous) area**. It should be an easily recognised feature (such as a cross-roads or a bridge) which can be used to assist in navigating to one or more **benchmarks**.

Note: Internationally these are often also referred to as Geodetic Points when they refer to a pre-surveyed location such as a trig point.

render safe procedure (RSP)

the application of special **EOD** methods and tools to provide for the interruption of functions or separation of essential components to prevent an unacceptable **detonation**.

research

the systematic inquiry, examination and experimentation to establish facts and principles.

residual risk

*in the context of humanitarian demining, the term refers to the risk remaining following the application of all reasonable efforts to remove and/or destroy all **mine** or **UXO hazards** from a **specified area** to a **specified depth**. [Modified from ISO Guide 51:1999]*

risk

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

risk analysis

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

risk assessment

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

risk evaluation

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

risk reduction

actions taken to lessen the probability, negative consequences or both, associated with a particular **risk**.

safe

the absence of risk. Normally the term **tolerable risk** is more appropriate and accurate.

safety

the reduction of risk to a tolerable level. [ISO Guide 51:1999(E)]

sample

in the context of humanitarian demining, the term refers to one or more 1.0m² units of land drawn at random from a lot.

sample size

in the context of humanitarian demining, the term refers to the number of 1.0m² units of land in the sample.

sampling

*in the context of humanitarian demining, the term refers to a defined procedure whereby part or parts of an area of **cleared land** are taken, for testing, as a representation of the whole area.*

sampling plan

*in the context of humanitarian demining, the term refers to a specific plan that indicates the number of 1.0m² units of land from each lot which are to inspected (**sample** size or series of sample sizes) and the associated criteria for determining the acceptability of the lot (acceptance and rejection numbers).*

sapping

*in the context of humanitarian demining, the term refers to a procedure employed in the process of demining whereby, in conjunction with other procedures, ground is cleared by digging forward to a **specified depth** from a **safe** start point.*

self-neutralisation

action generated by means of a device integral to a **mine**, which renders the mine inoperative, but not necessarily **safe** to handle. In landmines, this process may be reversible. [AAP-6]

specified area

in the context of humanitarian demining, the term refers to that area for which mine clearance activity has been contracted or agreed, as determined by the NMAA or an organisation acting on its behalf.

specified depth

in the context of humanitarian demining, the term refers to the depth to which a specified area is contracted or agreed to be cleared of mine and UXO hazards, as determined by the NMAA or an organisation acting on its behalf.

standard

a standard is a documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose.

Note: **Mine action standards** aim to improve safety and efficiency in mine action by promoting the preferred procedures and practices at both headquarters and field level. To be effective, the standards should be definable, measurable, achievable and verifiable.

standard operating procedures (SOPs)

standing operating procedures (SOPs)

instructions which define the preferred or currently established method of conducting an operational task or activity.

Note: Their purpose is to promote recognisable and measurable degrees of discipline, uniformity, consistency and commonality within an organisation, with the aim of improving operational effectiveness and safety. SOPs should reflect local requirements and circumstances.

standards

requirements, specifications or other precise criteria, to be used consistently to ensure that materials, products, processes and services are fit for their purpose.

Note: **Mine action standards** aim to improve safety and efficiency in mine action by promoting the preferred procedures and practices at both headquarters and field level.

standing operating procedures (SOPs)

see **standard operating procedures (SOPs)**.

statement of operational need (SON)

the document that describes the **user's** operational needs.

Note: The SON should be prepared by the User who has identified the need, or by a **sponsor** acting on a user's behalf.

statement of requirement (SOR)

the document that provides a detailed statement of the characteristics and performance expected of the equipment, based on the preferred solution.

statement of tasks and outputs (STO)

the document that articulates the **user's** needs in broad terms, giving the tasks of the equipment and the key characteristics, with the emphasis on the output required rather than the means of achieving it, so as to enable full consideration of alternative solutions.

stockpile

in the context of mine action, the term refers to a large accumulated stock of EO.

stockpile destruction

the physical destructive procedure towards a continual reduction of the national **stockpile**.

submunition

any **munition** that, to perform its task, separates from a parent munition. [AAP-6]

mines or munitions that form part of a **CBU**, artillery shell or missile payload.

survey marker

a durable and long lasting marker used to assist in the management of marked and **cleared land** during **demining** operations.

survivor (landmine/UXO)

persons either individually or collectively who have suffered physical, emotional and psychological injury, economic loss or substantial impairment of their fundamental rights through acts or omissions related to the use of mines and UXO. Mine survivors or victims include directly impacted individuals, their families, and communities affected by landmines and UXO.

survivor assistance

see **victim assistance**

technical survey

previously referred to as a Level 2 survey

the detailed topographical and technical investigation of known or suspected **mined areas** identified during the planning phase. Such areas would have been identified during any information gathering activities or surveys which form part of the **GMAA process** or have been otherwise reported.

temporary marking system

a marking system having a stated finite period of use (c.f. **permanent marking system**).

tender

to present to another entity an unconditional offer to enter into a contract.

tender process

the process of calling for and evaluating tenders to select a preferred contractor.

test

determination of one or more characteristics according to a procedure. [ISO 9000:2000]

test and evaluation (T&E)

activities associated with the testing of hardware and software.

Note: Activities include the formation and use of procedures and standards, the reduction and processing of data and the assessment and evaluation of **test** results and processed data against criteria such as defined **standards** and specifications.

test site

the site at which a series of test boxes or lanes are prepared for the purpose of operational accreditation testing of MDD.

threat

see **mine threat**

TNT (2, 4, 6 Trinitrotoluene)

one of the most widely used military high **explosives**. TNT is very stable, non-hygroscopic and relatively insensitive to impact, friction, shock and electrostatic energy. TNT is the most widespread type of explosive used in **mines** and **munitions**.

tolerable risk

risk which is accepted in a given context based on current values of society. [ISO Guide 51:1999(E)]

trial

a series of **tests** organised in a systematic manner, the individual results of which lead to an overall evaluation of a component, **equipment** or system.

turning point

a fixed point on the ground which indicates a change in direction of the perimeter of the **hazardous area**. It shall be clearly marked and recorded. Buried metal objects should be used to mark all turning points for permanent future reference.

unexploded ordnance (UXO)

EO that has been primed, fuzed, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other reason.

United Nations Mine Action Service (UNMAS)

the focal point within the UN system for all mine-related activities.

Note: UNMAS is the office within the UN Secretariat responsible to the international community for the development and maintenance of **IMAS**.

Note: UNICEF is the focal point for **MRE**, within the guidelines of UNMAS overall coordination.

user

the individual or organisation that will operate the equipment.

Note: For the purpose of **mine action**, the user could also be defined as 'a composite body of informed and authoritative opinions on the needs of national commercial and NGO users, today and in the future'.

validation

the act of ratification that takes place after a process of verification.

verification

confirmation, through the provision of objective evidence that specified requirements have been fulfilled. [ISO 9000:2000]

victim

an individual who has suffered harm as a result of a **mine** or **UXO accident**.

Note: In the context of **victim assistance**, the term victim may include dependants of a mine casualty, hence having a broader meaning than survivor.

victim assistance

survivor assistance

refers to all aid, relief, comfort and support provided to victims (including survivors) with the purpose of reducing the immediate and long-term medical and psychological implications of their trauma.

village demining

self-supporting **mine** and/or **UXO clearance** and **hazardous area** marking, normally undertaken by local inhabitants, on their own behalf or the behalf of their immediate community. Often described as a *self-help initiative or spontaneous demining*, village demining usually sits outside or in parallel with formal mine action structures, such as *demining* undertaken by militaries or *humanitarian demining* such as is supported by the UN, international and national non-governmental organisations, private enterprise and governments, among others.

wite phosphorous (WP)

a chemical smoke screening agent which burns in contact with air, (with serious anti-personnel affect if the phosphorous comes in direct contact with people).

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]



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