



NMAS 10.70
Safety & Occupational Health -
Protection of the Environment

March 2020

Edition 2.1

Lebanon Mine Action Center-LMAC

Chekri Ghanem Casern–Fayadieh

Tel: +961 5 956143, Fax: +961 5 956192

Email: info@lebmac.org

Website: <http://www.lebmac.org/>

Warning

This document has been released on the date shown on the cover page. The National Mine Action Standards (NMAS) of Lebanon are subject to regular review and update, so users are advised to consult the most recent version. To ensure that you have access to the current version, contact the Lebanon Mine Action Center (LMAC) through the www.lebmac.org website or by sending an email to info@lebmac.org.

Copyright Notice

This is a national document generated and owned by Lebanon. It must not be copied or altered without the written consent of the LMAC.

Tel: +961 5 956143,

Fax: +961 5 956192

Email: info@lebmac.org

The LMAC gratefully acknowledges UNDP support during the preparation of this NMAS.

© LMAC 2020 – All Rights Reserved.

Table of Contents

Foreword.....	iv
Acronyms	v
Introduction	vi
1. Scope	1
2. References	1
3. Key Terms and Definitions.....	1
4. General Requirements.....	2
4.1 Life Cycle Assessment (LCA).....	2
4.2 Servicing of Mechanical Operations, Vehicles, and Equipment	3
4.3 Fuel, Oil, and Lubricant (FOL) Storage and Handling	4
5. Environmental Considerations Prior to Demining Operations	4
5.1 Work Site Preparation	5
5.2 Worksite Toilets	5
5.3 Worksite Water Management	6
5.3.1 Potable Water	6
5.3.2 Waste Water.....	6
5.4 Burning of Vegetation.....	6
6. Environmental Considerations During Demining Operations	7
6.1 Equipment Operation in Environmentally Sensitive Areas.....	7
6.2 Preservation of Watercourses	7
6.3 Preservation of Air Quality.....	7
6.4 Preservation of Heritage.....	7
6.4.1 Artifacts	8
6.4.2 Small artifacts	8
6.4.3 Large artifacts.....	9
7. Environmentally Acceptable EOD.....	9
7.1 Transporting Explosive Hazards.....	10
7.2 Disposal of Explosive Hazards	10
7.3 Restoring Worksites.....	10
7.4 Disposal of Toxic and Hazardous Waste	10
7.5 Disposal of Debris, Rubble, and Wire	11
7.6 Disposal of Solid and Non-Toxic Waste	11
8. Roles and Responsibilities	12
8.1 Role of the LMAC	12
8.2 Role of IAs	12
ANNEX A: Normative and Informative References.....	13
ANNEX B: Example Environmental Protection Monitoring Form	14
ANNEX C: Example Environmental Incidents Report Form.....	15
NMAS 10.70, Edition 2.1: Amendment Record.....	16

Foreword

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

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

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

Acronyms

EO	Explosive Ordnance (of all kinds)
EOD	Explosive Ordnance Disposal
ERW	Explosive Remnants of War
FOL	Fuel, Oil & Lubricant
IA	Implementing Agency
IMAS	International Mine Action Standards
LA	Local Authority
LCA	Life Cycle Assessment
LMAA	Lebanon Mine Action Authority
LMAC	Lebanon Mine Action Center
LMAP	Lebanon Mine Action Program
MA	Mine Action
MDD	Mine Detection Dogs
MoA	Ministry of Agriculture
MoC	Ministry of Culture
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
NMAS	National Mine Action Standards
S&OH	Safety and Occupational Health
SOPs	Standard Operating Procedures

Introduction

In many instances, demining operations may have an impact on the environment in which they are conducted. Temporary or more permanent impacts on soil, water, natural habitats, historical sites, or cultural areas may occur. Environmental impacts may occur during preparation for demining activities, during demining or during the disposal of EO. Common examples are the removal of vegetation by hand or burning so that search can be conducted or the use of mechanical demining procedures that process the ground surface, destroying root systems and encouraging soil erosion. To minimize environmental impact, the LMAC and Implementing Agencies (IAs) shall ensure that they operate in conformity with this NMAS at all times.

The LMAC recognizes its responsibility to ensure that demining operations are conducted responsibly and efficiently, whilst taking measures to minimize deleterious effects on the environment. While recognizing that the safety of demining staff and the civil populace is an overriding priority, demining activities (including all EOD activities) shall be conducted in ways that do not cause unnecessary environmental pollution or degradation.

This NMAS lays out key environmental standards designed to ensure that all reasonable effort is made to ensure that demining operations are conducted with minimal environmental impact. An additional purpose of this NMAS is to increase awareness of the potentially damaging impact that irresponsible demining activity may have on the environment.

Safety and Occupational Health Protection of the Environment

1. Scope

This NMAS provides standards for environmental management prior to, during, and following demining operations. Compliance with the environmental protection measures detailed herein ensures that operations result in minimal damage to the environment. Adherence to the requirements of this NMAS helps to ensure that demining worksites are released to the end-users in a condition similar to or, when practicable, better than before the demining activities were conducted.

Implementing Agencies (IAs) intending to engage in humanitarian mine action (HMA) interventions shall abide by the standards provided in NMAS 10.10-10.70 and shall present detailed Standing Operating Procedures (SOPs) covering environmental conservation to the LMAC for assessment and approval before engaging in their intended HMA activities.

2. References

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

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

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

3. Key Terms and Definitions

The following terms and definitions relate to environmental protection and are used in this NMAS:

- **Environment:** the context in which IAs operate, including natural resources, humans, and their interrelation.
- **Environmental factors:** features of the environment that can have an impact on the demining procedures and assets used.
- **Environmentally acceptable:** demining procedures or assets that have a reduced or minimally detrimental impact on the environment.
- **Environmentally sensitive:** demining procedures or approaches that pro-actively take environmental welfare into account.
- **Hazardous areas, (dangerous areas):** all areas within Lebanon that are known to contain an EO hazard are marked and recorded as Dangerous Areas (DAs) in the Information

Management System for Mine Action (IMSMA) that is used by the LMAC. DAs are frequently referred to as Hazardous areas, Contaminated Areas, Suspected Hazardous Areas (SHA), or Confirmed Hazardous areas (CHA).

- Life Cycle Assessment (LCA): a technique used to assess the actual and potential environmental impact of a product or process.
- Protective works: constructed barriers, channels, or stacks designed to reduce the effects of ground shock, noise, blast, or fragmentation in order to protect personnel, property, infrastructure or the environment.

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

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

4. General Requirements

At all times, preparatory, demining, and disposal activities shall be carried out in an environmentally conscious and sensitive manner while ensuring the safety of staff and minimizing risk to property or infrastructure. Depending on the foreseen impact, the LMAC and IAs should coordinate with the Local Authorities (LAs) and landowners before starting operations. When appropriate, LAs shall include the Ministry of Environment (MoE), the Ministry of Agriculture (MoA), the Ministry of Culture (MoC), the Ministry of Energy and Water (MoEW), and local municipalities.

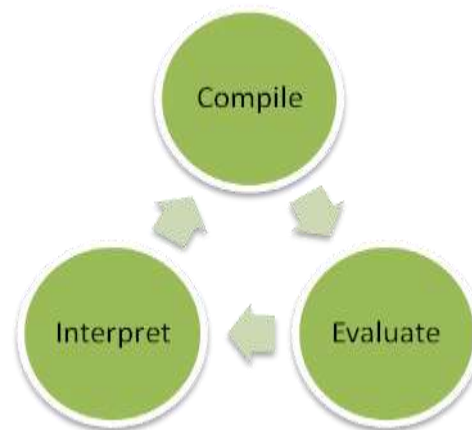
Upon completion of demining operations, the LMAC and IAs shall ensure that all land used during the demining activities, including areas such as temporary accommodation facilities and administration/support areas, are left in a state similar to or, where practicable, better than before the demining operations began.

The environmental impact of operations shall be considered before, during, and after demining operations. At all times, the actual and potential impact of demining activities on the environment shall be assessed utilizing the principles of the Life Cycle Assessment (LCA).

4.1 Life Cycle Assessment (LCA)

The LMAC and IAs should use Life Cycle Assessment (LCA) principles to ensure a more comprehensive understanding of the impact of demining operations on the environment. When the impact of some factors has not yet been determined and when appropriate action is not outlined in this NMAS, the LMAC and IA shall:

- compile a list of factors related to their activities that may result in environmental releases or affect environmental sustainability;
- evaluate the potential threat and impact of each factor;
- interpret the results of the evaluation to make an informed decision over how to manage each factor. This stage should include improvement analysis to evaluate opportunities through which harmful environmental impact may be controlled or reduced.



On-Going Environmental Considerations and Responsibilities

Considerations outlined under section 4.2 of this NMAS represent on-going concerns that should be monitored by the LMAC and IAs at all times.

4.2 Servicing of Mechanical Operations, Vehicles, and Equipment

When mechanical demining is conducted, one or more marked areas shall be designated for washing, maintaining, repairing, and servicing the machinery used for this purpose. Wherever possible, these areas should be located at permanent facilities set up and operated for such purposes and not at temporary field sites. When the servicing, maintenance, or repair of machinery, vehicles, or equipment must unavoidably take place in the field, activities shall be carried out in an environmentally sensitive manner and in accordance with the standards outlined below.

The IAs shall ensure that:

- waste water, oil, or other hazardous materials are not dumped on the ground or released into watercourses;
- leakage is avoided and any residual Fuel, Oil, or Lubricants (FOL) is responsibly handled and disposed off;
- fuelling and oiling of machinery, vehicles, and equipment takes place over a hard surface or drip pans that can be disposed off in an environmentally acceptable manner;

- the generated waste (air and oil filters, hydraulic fluids, petroleum products, used batteries, etc) are collected and disposed off in an 'environmentally acceptable' location and manner; and
- used parts and by-products that are not contaminated by FOL are disposed off in a similar way as domestic rubbish.

Where the establishment of facilities for machinery, vehicle, and equipment maintenance involves the removal of vegetation, or takes place on ground that may be subject to erosion, the IAs shall take active measures to control erosion and ensure the restoration of vegetation when the work has been completed. Such measures may include re-seeding and re-planting, the returning of processed soils to the affected site, constructing wind barriers, preparing drainage systems, performing the mechanical operation in a period when the soil and vegetation is less vulnerable, and avoiding deep tracks by using appropriate equipment.

4.3 Fuel, Oil, and Lubricant (FOL) Storage and Handling

At all times, fuel, oil, and lubricants shall be stored and handled in an environmentally sensitive manner. To this end, the IAs shall abide by the following requirements:

- avoid establishing and operating temporary fuel storage facilities in the field whenever possible;
- in cases where temporary fuel storage in the field is unavoidable, avoid locating storage facilities within 30 meters of a watercourse, within a watercourse flood plain, or where there is potential for any spilled fuel to infiltrate a watercourse or groundwater;
- conduct regular maintenance of all storage tanks, containers, and related equipment to ensure the safe storage and dispensing of fuel and prevention of leaks. Any spills of FOL shall be contained and cleaned up immediately. Defective hoses, valves, and containment equipment shall be promptly repaired; and
- collect and properly dispose of any materials contaminated with spilled FOL.

FOL storage and handling in compliance with the above should be detailed in the IA's mechanical SOPs that are presented to the LMAC for assessment and must be approved before any mechanical assets are used.

5. Environmental Considerations Prior to Demining Operations

Before starting demining activities at a worksite, the IAs shall take precautionary measures to ensure that their activities have a minimized impact on the environment. Measures undertaken should include appropriate preparation of the worksite and support facilities, the environmentally sensitive provision of toilets and latrines, and the appropriate management of potable and wastewater. Worksite preparations should avoid the burning of

vegetation whenever practicable and, when unavoidable, ensure that burning vegetation does not result in irreparable damage.

5.1 Work Site Preparation

LMAC assigns tasks and worksites to the demining teams of IAs depending on the teams' availability and based on the LMAC's priority list. Before work begins, IAs shall consider the environmental impact of the demining procedures and assets available to them and produce a task Clearance Plan that minimizes environmental impact. The IA shall also ensure that the layout of the worksite and any temporary support facilities are designed in an environmentally sensitive manner which minimizes potential contamination of land or water systems, including groundwater systems, and results in minimal impact on cultural sites and natural habitats. Vegetation and trees should be preserved whenever possible.

When temporary accommodation facilities are required they should be located in agreement with the relevant LAs and the local community to ensure that they do not adversely affect the local context and way of life. Temporary utilities should be designed in a way that ensures the safe provision of potable water; safe disposal of human waste, wastewater, and garbage; control of insects and rodents; and adequate drainage of the site.

5.2 Worksite Toilets

When a worksite is located in a remote area requiring considerable commute by the working teams, temporary toilets should be provided. Worksite toilets should be designed and placed to avoid any potential discharge of human waste into the surrounding water supply, watercourses, or the soil surface. At all times, the following standards shall be maintained:

- gender segregated facilities should be made available when appropriate;
- sufficient toilets should be made available for the number of people present at the worksite;
- toilets should be located at a safe distance from any catering services and at least 15 meters away from water supply, watercourses, and wells;
- temporary portable toilets should be equipped with holding reservoirs that can be pumped to sewage trucks for disposal; and
- temporary toilet latrines should be at least 1.5 meters deep and covered when not in use, and the contents should be limed at regular intervals.

5.3 Worksite Water Management

5.3.1 Potable Water

The IA shall ensure that their workers at a demining worksite have adequate access to potable water. The IA shall ensure that domestic water supply to the local community is not impacted by their provision of potable water to the worksite. The IA should coordinate with landowners and relevant LAs to gain agreed access to potable water.

5.3.2 Waste Water

Care shall be taken to ensure that wastewater does not contaminate potable water. Adequate disposal means shall be made available to ensure that wastewater is never released into watercourses or onto the ground surface. Wastewater from washing and bathing shall be disposed off appropriately and drained into soak pits that are at least a meter deep.

5.4 Burning of Vegetation

Burning of vegetation should be avoided. However, when vegetation burning is necessary to prepare the worksite for demining activity, the IA should ensure that the following controls are adhered to:

- IAs should prepare a burn plan and negotiate the agreement of relevant landowner(s) and LAs before implementing the burn plan;
- IAs should ensure that perimeter vegetation is wetted down before starting a fire to limit the spread of fire;
- IAs should ensure that sufficient trained staff and fire extinguishing equipment are available at the worksite to enable the proper monitoring, control, and if needed, suppression of fire;
- IAs should ensure that the burn area is properly isolated and accessible by safe ground, safe lanes, or safe roads to be able to safely undertake fire monitoring, control, and, if necessary, suppression;
- IAs should ensure that burns are extinguished before nightfall, and not started again until daybreak; and
- IAs should consider environmental factors such as wind direction and moisture conditions when determining the direction of the burn to ensure that burns can be controlled and to minimize smoke impact on the local communities.

6. Environmental Considerations During Demining Operations

Demining operations shall be conducted in a manner that ensures the preservation of natural and man-made resources, including water, air, and cultural and historical sites.

6.1 Equipment Operation in Environmentally Sensitive Areas

The use of any mechanical equipment at a worksite shall be subject to the prior approval of the LMAC. LMAC authorized machines shall only be operated within the designated worksite assigned to the IA by the LMAC. IAs that want to use any machine outside the perimeters of the worksite shall obtain prior approval from the LMAC.

6.2 Preservation of Watercourses

Demining activities shall be undertaken in a manner that avoids or minimizes the diversion or obstruction of any watercourse.

During demining operations conducted by their employees, all IAs should ensure that:

- no hazardous materials or waste material are dumped or disposed off in a manner that might pollute groundwater or any watercourse;
- no debris or obstructions are placed in any watercourse during operations, unless it is necessary to temporarily divert or block the watercourse to allow demining operations to be conducted; and
- demining operations inside wet perimeters of watercourses are restricted to times that fall outside environmentally sensitive periods (such as fish migration).

6.3 Preservation of Air Quality

At times, some authorized demining activities may cause smoke, dust, or toxic fumes. When any such activity is to take place near inhabited areas or in areas where the wildlife or livestock may be affected, the IA shall establish and maintain coordination with local communities and LAs (including the Ministry of Agriculture) to achieve a minimized impact. The demining team conducting the operation shall make all reasonable effort to limit and/or contain emissions smoke, dust, or toxic fumes in an environmentally sensitive manner and so preserve the quality of the air.

6.4 Preservation of Heritage

Many demining activities are conducted in little used areas and involve removing parts of the ground surface. This can lead to the exposure of items of historical significance that were not apparent before the activity began.

Before starting work at any worksite, the IA shall liaise with the people and authorities in the locality and identify any areas of cultural or historical significance that are not already mentioned in the LMAC's task order. When areas of known cultural or historical/heritage

significance are in the vicinity or a worksite, the IA shall take all reasonable steps to prevent damage to these sites.

When any demining activity uncovers large heritage or archaeological artifacts, they should be immediately reported to the LMAC, including accurate GPS coordinates and photographs. The LMAC shall then inform the relevant national authorities. Depending on the apparent significance of the find, the LMAC may suspend demining activities at all or part of the worksite until the relevant authorities have authorized its resumption.

When portable ancient artifacts are discovered during demining activities, those artifacts may be collected as described below. No artifact, no matter its age or origin, may be kept by the IA or its staff without the permission of the relevant authorities. When a landowner lays claim to artifacts discovered on their land, the validity of any such claim should be decided by the Ministry of Culture (MoC) and other relevant authorities including, when appropriate, the police.

Debris that is not of heritage or historical interest is defined as any article with no apparent historical or cultural value. Typically, this may include modern consumer goods and parts thereof or modern garbage/trash. Modern artifacts include the remains of vehicles, and non hazardous equipment dating from recent conflict. Modern debris should be collected and disposed of responsibly by agreement with the landowner as a service to the community whenever possible.

6.4.1 Artifacts

Artifacts are man-made items of any kind. For the purpose of this standard, they have been divided into artifacts of large or small size. Artifacts may be on or beneath the ground surface.

Artifacts that have been factory produced using modern materials may be presumed to be relatively modern and of no historical or cultural significance, so treated as debris/garbage.

When artifacts that may be of cultural or heritage significance are found, an Artifact Report including photographs, the position of the artifact, and any EO found around it should be submitted to the LMAC, who will liaise with the appropriate authorities to decide the appropriate actions to take.

All artifacts of cultural or historical significance discovered during demining activities are the property of the Government of Lebanon and their unauthorized removal from the country by any IA or staff member without the written permission of the relevant authorities shall constitute theft.

6.4.2 Small artifacts

All artifacts that are small enough to be moved by a single person are classed as 'small artifacts'. All small modern artifacts which may have any value that are discovered during

demining activities are the property of the landowner or LA, and should be placed in a safe place for the owners to collect after demining work has been completed and the land has been released.

All small ancient artifacts discovered during demining activities are the property of the Government of Lebanon. Typical small ancient artifacts found during demining operations may include arrow-heads, coins and pottery.

When a portable ancient artifact is discovered, it may be moved to allow work to continue. An ancient artifact report including photographs, date of discovery and accurate GPS coordinates of the place it was found shall be forwarded to the LMAC which will liaise with the Ministry of Culture (MoC) and other appropriate authorities to decide the appropriate action to take. The IA that discovered the artifact shall hold it securely and deliver it safely when instructed to do so.

6.4.3 Large artifacts

Typically, large artifacts that may be discovered during demining operations are the remains of ancient settlements, abandoned wells or graveyards. When these are not already known and referenced in the worksite task order, they shall be photographed and immediately reported to the LMAC which will liaise with the Ministry of Culture (MoC) and the relevant national authorities to determine what should be done in the area.

Large artifacts should remain undisturbed. No mechanical demining operations or other demining procedures that could damage the artifact shall be permitted in its vicinity. When appropriate, the LMAC may task the LA to use non-destructive demining procedures to search and clear the area of the artifact so that it can be further investigated by the appropriate authorities.

When graves or human remains are discovered during demining operations, the IA shall immediately stop work in the vicinity of the discovery (within a 10 meter radius) and notify the LMAC, including a photograph of the discovery whenever possible. Depending on the apparent age of the remains or graves, the LMAC will then contact the appropriate authorities to arrange a response. Demining operations in the vicinity of the human remains or graves shall not resume until formal permission to do so has been given by the LMAC.

7. Environmentally Acceptable EOD

Depending on the situation, the explosive disposal of EO will involve either moving hazardous material for disposal elsewhere or destroying hazardous material in-situ. Irrespective of the course chosen, EOD shall be conducted in an environmentally sensitive manner that also minimizes damage to property and/or infrastructure.

When, even with protective measures in place, damage to property and/or infrastructure is a likely outcome of EOD activity, the IA should liaise with the local/national authorities and

local communities and explain the possible consequences before conducting the disposal work. National authorities may include the Ministry of Environment (MoE), the Ministry of Agriculture (MoA), the Ministry of Culture (MoC), and the Ministry of Energy and Water (MoEW) as well as the LMAC.

7.1 Transporting Explosive Hazards

The requirements for transporting explosive hazards including all EO and demolition consumable as covered in NMAS 10.50 Storage, Transportation, Handling of Explosives. IA's should not move EO from worksites except as part of a disposal activity authorized by the LMAC.

7.2 Disposal of Explosive Hazards

IAs shall conduct explosive ordnance disposal activities in compliance with NMAS 09.30 Explosive Ordnance Disposal and the IA's EOD SOPs that the LMAC has approved for use.

In terms of protecting the environment, the IA shall:

- conduct EOD tasks in a way that limits the spread of fragmentation and/or explosive/toxic residues as much as is practicable;
- use measures to limit the effects of ground shock and noise; and
- avoid or limit disposal activities at times when meteorological conditions may increase the noise disturbance to people nearby.

7.3 Restoring Worksites

After demining and EOD operations have been completed at a worksite and before the formal release of the area, the IA should remove and appropriately dispose of all trash and large fragments of EO, and fill any holes in the ground to stabilize the surface to allow for natural regeneration, using water to consolidate the soil when appropriate.

After the land has been formally released by the LMAC, remove all temporary stakes, posts, marking tape and signs that were used during the demining activity, drive in permanent markers level with the ground surface and do all that is reasonable to leave the area in a condition that is similar to, or better than, its condition before demining activities were conducted.

7.4 Disposal of Toxic and Hazardous Waste

Although the NMAS do not cover the clearance of nuclear, chemical, biological or radiological weapons, some less toxic but still hazardous waste can be generated during demining activities. Some EO contain asbestos, chemicals, oxidizers, liquid propellants, fuel, and other residues that, when released, may contaminate soil and water. The demining process itself may use FOL, batteries, and other chemicals that can harm the environment. During work, the IA's medical provision may also generate hazardous medical waste.

To support preservation of the environment, demining teams shall ensure:

- that no toxic or hazardous materials are buried at the worksite: they shall be collected, transported, and disposed off in an environmentally acceptable manner;
- that no spills or leakages occur during transportation;
- that contingency plans for the disposal of toxic or hazardous wastes and cleaning any spills are included in their SOPs and that a sufficient store of clean-up materials is available at all times;
- that any soil or vegetation that gets accidentally contaminated is bagged, removed and disposed of in an environmentally acceptable manner; and
- that recyclable materials, such as batteries, are bagged and taken for recycling.

7.5 Disposal of Debris, Rubble, and Wire

Demining operations may generate debris, rubble, and wire which, though not hazardous, may pose a risk to the surrounding community. To minimize this risk, IAs shall:

- consult the local community and relevant LAs, where possible, about the disposal of waste including debris, rubble, and wire and adhere to local waste management regulations at all times;
- confirm that all debris, rubble, and wire is free from any hazardous components before being placed in the disposal area; and
- when possible, recycle the debris, rubble, and wire.

7.6 Disposal of Solid and Non-Toxic Waste

Demining operations will produce solid and non-toxic waste that shall be disposed off appropriately. When possible, relevant authorities should be contacted to facilitate waste recycling.

Solid non-toxic waste may, with the approval of the appropriate LAs, be buried at pits located well away from groundwater and watercourses.

Containers for solid and non-toxic waste shall only be located at the worksite at a safe distance from groundwater and watercourses. Such containers should be large enough to accommodate all waste generated between collection periods and deep enough to prevent spillage. Waste containers should be securely covered to prevent access by wildlife.

Separate waste containers should be made available to allow for the segregation of combustible and non-combustible wastes. Combustible waste may be burnt and the residual ashes disposed of appropriately. Fire precautions shall be taken during waste burning.

8. Roles and Responsibilities

8.1 Role of the LMAC


The LMAC shall:

- assess the IA's SOPs for compliance with the requirements of this NMAS and, when appropriate, approve their use;
- monitor compliance with the requirements this NMAS by during visits implemented by LMAC officers or assigned representatives at which time the form presented in Annex B shall be completed;
- assist in coordination between the IA and relevant authorities as appropriate to support environmentally sensitive and acceptable operations;
- keep detailed records of reported incidents of failure to do all that is reasonable to protect the environment, and where appropriate, investigate such incidents;
- disseminate information about significant environmental incidents to the local communities, LAs, and IAs as appropriate;
- report environmental incidents and discoveries to the Ministry of Environment (MoE), the Ministry of Agriculture (MoA), the Ministry of Culture (MoC), the Ministry of Energy and Water (MoEW), and local municipalities as appropriate; and
- encourage, promote, and facilitate the recycling of waste and the adoption of other environmentally friendly methods.

8.2 Role of IAs

In their role as demining organizations the IAs shall:

- submit appropriate and effective SOPs that include appropriate measures to protect the environment to the LMAC for assessment and, when appropriate, approval;
- comply with the standards and guidelines laid out in this NMAS;
- train their staff to be aware of environmental conservation issues and be proactive in their protection of the environment; and
- report any significant environmental incidents or discoveries to the LMAC using the form presented in Annex C and maintain appropriate internal records.


	LEBANON NATIONAL MINE ACTION STANDARDS	Edition 2.1	NMAS 10.70
	ANNEX A: Normative and Informative References		
			March 2020

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

- Current LMAC and IMSMA reporting formats (request copies from the LMAC);
- NMAS 09.30 Explosive Ordnance Disposal;
- NMAS 09.31 Guide for the demolition of mines and ERW;
- NMAS 09.32 Guide for large scale demolitions and burning;
- NMAS 10.10 General Guidelines for the Development of Safety and Occupational Health Systems;
- NMAS 10.50 Storage, Transportation, and Handling of Explosives; and
- NMAS 04.10 Glossary of Mine Action Terms, Definitions, & Abbreviations used in the Second Edition of the NMAS.


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

- Lebanon National Mine Action Policy; and
- ISO 14000 Series on Environmental Management System (including ISO 14040).

	LEBANON NATIONAL MINE ACTION STANDARDS	Edition 2.1	NMAS 10.70
	ANNEX B: Example Environmental Protection Monitoring Form		
March 2020			

The form below is an example of a form used to record monitoring of appropriate environmental protection at a demining worksite. The IA should ensure that the latest version of this form is used.

GENERAL INFORMATION				
Name of Monitor	:			
Position of Monitor	:			
Name of IA Visited	:			
Date of Visit	:			
Location	:			
ASSESSMENT				
<i>For the factors that follow, tick the appropriate box where "AD" indicates Adequate, "NI" indicates Needs Improvement, "IA" indicates Inadequate, and NA indicates Not Applicable.</i>				
Servicing of Mechanical Operations, Vehicles, and Equipment		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Fuel, Oil, and Lubricant (FOL) Storage and Handling		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Management of toilets and latrines		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken for worksite potable water management		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken for worksite waste water management		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Standards adopted in burning vegetation		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Equipment operation in environmentally sensitive areas		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions to preserve watercourses		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions to preserve air quality		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken to preserve cultural and historical sites		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Transporting mines/ERW		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
In-situ destruction		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken to restore worksites		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken to dispose of toxic and hazardous waste		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken to dispose of debris, rubble, and wire		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA
Actions taken to dispose of solid and non-toxic waste		<input type="checkbox"/> AD	<input type="checkbox"/> NI	<input type="checkbox"/> IA <input type="checkbox"/> NA

	LEBANON NATIONAL MINE ACTION STANDARDS	Edition 2.1	NMAS 10.70
	ANNEX C: Example Environmental Incidents Report Form		
March 2020			

The form below is an example of a form used to record environmental incidents at a demining worksite. The IA should ensure that the latest version of this form is used.

REPORT DETAILS	
Name of IA	:
Reporter	:
Report Date	:
Influenced Factor	: <input type="checkbox"/> Soil <input type="checkbox"/>Wildlife and livestock <input type="checkbox"/> Water <input type="checkbox"/>Vegetation <input type="checkbox"/> Energy <input type="checkbox"/>Cultural <input type="checkbox"/> Air <input type="checkbox"/>Historical
Explanation	:
LMAA ACTION	
Name of Officer	:
Date	:
Referred to	: <input type="checkbox"/> Ministry of Culture <input type="checkbox"/> Ministry of Environment <input type="checkbox"/> Ministry of Water and Energy <input type="checkbox"/> Ministry of Agriculture <input type="checkbox"/> None <input type="checkbox"/> Other: _____
Action	:

NMAS 10.70, Edition 2.1: Amendment Record

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

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

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

Number	Date	Amendment Details
1	March 2020	Minor revisions throughout.