



UNITED NATIONS

LANDMINE AND UXO SAFETY HANDBOOK

DANGER MINES!



CARE
INTERNATIONAL

ACKNOWLEDGEMENTS

This handbook is based on the “Land Mine Safety Handbook” developed and published by CARE in 1997. It also draws upon the “International Guidelines for Landmine and Unexploded Ordnance Awareness Education” published by the United Nations in 1999.

It has been produced with the technical support of various United Nations entities, International Organisations, and Non-Governmental Organisations, including the United Nations Mine Action Service (UNMAS), the Office of the UN Security Coordinator (UNSECOORD), the United Nations Children’s Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations High Commissioner for Refugees (UNHCR), the World Food Programme (WFP), the United Nations Office for Project Services (UNOPS), the International Committee of the Red Cross (ICRC), the Cooperative for Assistance and Relief Everywhere (CARE) and Handicap International (HI).

Funding for this project has been generously provided by the United Nations Foundation (through the United Nations Fund for International Partnerships), and by the Governments of Canada, Japan, the Netherlands, and Norway.

Any comments or questions concerning this handbook may be addressed to:

United Nations Mine Action Service
New York, NY 10017 USA
Tel.: (1 212) 963 1875
Fax: (1 212) 963 2498
E-mail: MineAction@un.org
Web site: www.mineaction.org

Copyright © United Nations 2000
All rights reserved



UNITED NATIONS

LANDMINE AND UXO SAFETY HANDBOOK

WARNING

The aim of this handbook is to provide general landmine and unexploded ordnance (UXO) awareness and safety information to organisations and individuals working in the vicinity of areas affected by these weapons, and to help them:

- Establish proper safety procedures;
- Avoid contact with mines and UXO;
- Take appropriate action in emergency situations involving mine/UXO incidents;
- Take appropriate action in case of accidental entry into a minefield.

This handbook is NOT an instruction manual for working with mines or UXO, for surveying mined areas, or for finding and removing mines. Proximity to mines and UXO is always dangerous and should be avoided. Only trained specialists should seek out or handle mines and UXO.

This handbook is general in nature, and some aspects of it may not be applicable in all situations. Therefore, it should be complemented by detailed country-specific information describing the mine/UXO threat and emergency procedures to be implemented. In addition, this handbook is not designed as a stand-alone document, but should instead be used in support of mine/UXO awareness training by qualified instructors. Whenever possible, users should seek the guidance and advice of trained specialists working in their area of operations.

The United Nations, CARE and the other contributing organisations shall not be responsible for deaths or injuries to personnel and/or damage to property that may be caused as a result of the use of this handbook.

TABLE OF CONTENTS

page

Section I	Basic safety principles in mine- and UXO-affected environments.....	6
	Safety advice for organisations.....	6
	Safety advice for individuals.....	7
	Be prepared.....	7
	Be informed and inform.....	7
	Be careful.....	8
Section II	Identifying landmines and UXO.....	10
	Landmines.....	10
	Anti-personnel (AP) landmines.....	10
	Blast effect AP mines.....	11
	Fragmentation AP mines.....	11
	Anti-tank (AT) landmines.....	12
	Unexploded Ordnance (UXO).....	13
	Booby traps.....	14
Section III	Recognising dangerous areas.....	14
	Areas likely to contain mines and UXO.....	15
	Recognising mine warning signs.....	15
	Mine signs.....	15
	Local warning signs.....	16
	Recognising mine warning clues.....	16
	Visible mines/UXO, tripwires and tilt rods.....	16
	Casualties, injured or dead animals.....	17
	Signs of fighting.....	17
	Disturbed soil and vegetation.....	17
	Local behaviour.....	18
Section IV	Emergency procedures in a minefield.....	18
	Emergency procedures on foot.....	19
	Emergency procedures in a vehicle.....	20
Section V	Assisting a mine/UXO victim.....	21

Appendices

1.	Use of route cards.....	23
2.	Measures to provide additional protection to a vehicle.....	25
3.	Emergency procedures to exit a minefield.....	26

SECTION I

BASIC SAFETY PRINCIPLES IN MINE- AND UXO-AFFECTED ENVIRONMENTS

The United Nations and aid agencies often operate in mine- and UXO-affected environments. By carefully following the basic safety principles included in this handbook, they and their staff can reduce the risk of accidents resulting from these weapons.

This first section focuses exclusively on PREVENTION. Indeed, once in a minefield, there is actually very little a non-specialist can do.

SAFETY ADVICE FOR ORGANISATIONS

It is essential for organisations operating in mine- and UXO-affected areas to take the threat of these weapons into consideration in the planning of their projects and programmes. This implies making sure that proper safety procedures are in place, proper training provided, and proper equipment and information available. Organisations should:

- Establish mine/UXO safety procedures adapted to their area of operations and in accordance with the information contained in this handbook. Establish, in particular, a vehicle and travel reporting system (see Appendix 1 on the use of route cards).
- Keep contact details of mine action centres and agencies, UN security officers, and medical facilities. Verify and update emergency contacts on a regular basis.
- Collect relevant and detailed information on the mine/UXO threat in their area of operations, and update this information regularly. Keep a visual brief available (a map locating dangerous areas).
- Provide appropriate mine- and UXO-related information to personnel, including information on safe routes and dangerous areas, and emergency contact information.
- Ensure that all international and local staff (including drivers, interpreters and guides) receive mine/UXO awareness training, and are familiar with mine/UXO safety procedures.
- Be aware that levels of alertness to the mine/UXO threat will decrease over time; therefore, frequent retraining on mine/UXO safety will be required.
- Ensure that all international and local staff receive first aid training.
- Provide appropriate equipment to personnel operating in mine- and UXO-affected areas, including radios, Global Positioning Systems (GPS), compasses, first aid kits, and maps. Ensure staff members know how to use them.
- Adapt and use vehicles appropriately (see Appendix 2 on measures to provide additional protection to a vehicle).

SAFETY ADVICE FOR INDIVIDUALS

In the context of the procedures established by their respective organisations, individual staff members must adhere at all times to the highest safety standards and adopt a team approach: unsafe behaviour on the part of one individual can endanger the lives of other team members.

BE PREPARED

- Ensure that you and your teammates have received appropriate mine/UXO awareness and first aid training, and are familiar with your organisation's safety procedures.
- Carry this handbook and the country-specific information corresponding to your area of operations with you at all times.
- Keep contact details of mine action centres and agencies, UN security officers, and medical facilities on hand. Verify and update emergency contacts on a regular basis.

**Make sure you know whom to contact for help
in case of a mine/UXO emergency**

- Do not travel without a radio, and know how to use it. Be informed of all the alternative frequencies that you may require (e.g. mine action agencies, UN security officers). The use of a GPS is also strongly recommended.
- Carry a travel pack with a first-aid kit in your vehicle at all times. Regularly check the expiry date and serviceability of all items, and know how to use them.

BE INFORMED AND INFORM

- Obtain relevant and detailed information on the mine/UXO situation prior to any movement into an area or region which may contain mines or UXO.
- When available, contact the following for reliable information:
 - Local Mine Action Centres (MACC) and mine action agencies;
 - UN Security Officers;
 - UN Military Observers or Liaison Officers;
 - NGOs and aid agencies working in the area.
- Also contact local authorities, hospitals, and members of the local population for additional information. Keep in mind, however, that returning populations may not be aware of the local mine/UXO threat.
- If in doubt, assume that the worst-case scenario applies. Even if only one source indicates that an area is dangerous, do not go.

Update your mine/UXO information on a regular basis

- Carry a map marked with the best available information about routes known to be free of mines. Update this information by checking with local populations as you travel, and pay attention to their warnings!
- Pass new information to your head office, the local Mine Action Center, mine action agencies, and UN Security Officers so that they can share it with other organisations and staff members.
- Inform your office of the dates, times and planned route of your journey by filling out a route card. An example of a route card is given in Appendix 1, together with a description of its use.
- If you change your route, inform your office. If you cannot communicate, do not deviate. “NO COMMS, NO TRAVEL”.
- Be aware that if you fail to meet a report line/time, your organisation will come looking for you.

BE CAREFUL

- Do not enter known or suspected risk areas, and use only cleared and approved routes.
- Maintain radio contact.
- Whenever possible, travel with a companion, preferably one who knows the area and the route you need to use.
- When starting a journey, allow sufficient time in the morning for local traffic to have travelled the roads before you.
- Do not travel at night. Plan your journey to end two hours before sunset. This allows you and your head office two hours of sunlight to react to an emergency. In addition, mine warning signs and clues cannot be seen at night.
- If travelling in a convoy, allow a space of 100 meters between vehicles whenever possible.

**Drive slowly:
speed is not a priority over safety!**

- Stick to well-travelled routes, and stay in the travelled zone of the road.
- Wherever possible, stay on hard-surfaced roads, even if the trip is longer. Paved roads are generally less likely to be mined than unpaved roads. However, potholes and the shoulders or verges of paved roads offer opportunities to conceal mines: avoid potholes and avoid driving off the road.

- On dirt roads, stay on the existing tracks.

Anti-tank mines are often laid along roadsides

- Never leave the road to allow a vehicle to pass, to overtake, pass an obstruction, or turn around. If necessary, reverse back until a safe area is available. Beware of pulling off the road into lay-bys as they may be mined.
- Never drive around roadblocks of former military positions. Never drive over anything on the road. A paper bag, a piece of cloth, or a wooden board can all conceal mines.
- Do not leave the road for any reason, even to relieve yourself.
- Always be extremely careful driving during or after heavy rains. Mines may be moved or exposed by rain.
- When travelling on foot, allow a local guide to lead the way, and allow a distance of around 25 meters between members of the group.
- Never walk through overgrown areas. Instead, stick to sidewalks and well-used paths.

**Don't take risks!
If you are in any doubt, turn back!**

- Carry a radio and a first aid kit at all times. Do not leave them in your vehicle. These items should be carried by a person walking in the middle of the team or towards the back, and not by the lead person.
- Do not move obstacles – they may be mined or booby-trapped.
- Do not enter abandoned buildings or visit deserted locations. Talk to the local population and observe local behaviour to find out about safe areas in communities.
- Resist offers to be shown a mine, as this is probably still in a mined area and therefore an area of extreme danger.
- Do not touch objects in mine/UXO contaminated areas, especially unexploded ordnance. Do not collect war souvenirs, and do not approach abandoned military vehicles or facilities.

SECTION II

IDENTIFYING LANDMINES AND UNEXPLODED ORDNANCE

To protect yourself against mines and UXO, be aware of the threat. This section aims to help identify mines and UXO and explain how they work.

LANDMINES

Definition: a mine is an explosive or other material, normally encased, designed to destroy or damage vehicles, boats, or aircraft, or designed to wound, kill, or otherwise incapacitate personnel. It may be detonated by the action of its target, the passage of time, or by controlled means.

Mines are used to cause casualties to the enemy, to hinder movement, and to provide protection for important positions. They are also used in civil conflicts to disrupt infrastructures by denying the civilian population access to agricultural land, water, roads, schools, health care facilities and other socio-economic targets.

Most mines are placed with the intention of being hidden, and are therefore seldom seen. They are generally buried within 15 cm of the earth's surface, or laid on or above the ground (for example, on stakes or fixed to trees).

Mines can be triggered by direct pressure, tripwires, tilt rods, command detonation, or by some combination of these methods. They can be booby-trapped by using, for example, anti-handling devices to make their removal more difficult.

Upon detonation, landmines are designed to incapacitate personnel or vehicles through damage caused by an explosive blast, fragments, or, in the case of some anti-tank mines, a jet of molten metal.

While landmines come in a variety of models (there are currently more than 600 different types), they can all be grouped into two broad categories: anti-personnel (AP) mines and anti-tank (AT) mines.

ANTI-PERSONNEL (AP) LANDMINES

Definition: an anti-personnel landmine is a mine designed to injure or kill one or more persons. Anti-personnel mines are usually detonated when they are stepped on or when a tripwire is disturbed, but they can also be set off by the passage of time or by controlled means.

AP mines can be located under ground, on the ground surface, or fixed above ground level.

Once triggered, they cause death or serious injury by an explosive blast and/or flying fragments. They are grouped according to the manner in which they inflict injury: blast effect mines and fragmentation mines.

BLAST EFFECT AP MINES

Blast effect mines are often very cheap, and are the most commonly found AP mines in the world.

These mines are generally cylindrical in shape, and range in size from 7 to 16 cm in diameter and 5 to 10 cm in height. However, some blast effect AP mines are rectangular, or “shoe box”-shaped. They then range in size from 10 cm x 18 cm to 15 cm x 30 cm, and look like a small wooden or plastic box.

While a few blast effect AP mines are still made of metal or wood, most modern ones are now manufactured of plastic and are difficult to detect with standard metal-sensing equipment. These mines can be water resistant or waterproof, and dangerous even when covered by water. Being airtight, many of these mines may also float. This means that following heavy rains, it is not uncommon for such mines to wash out of minefields into previously mine-free areas, or into waterways where they can be swept miles downstream before washing ashore.

Use extra caution when travelling in previously mine-free areas following heavy rains, or when walking along river banks, culverts along roads, and irrigation ditches

Blast AP mines are usually tan, olive, green, black, brown, grey, or a combination of colours.

A common type of blast effect AP mine is the air-delivered “butterfly” mine, commonly found in Afghanistan. These have a combination of odd shape and bright colour that makes them very attractive to children. They are typically found lying around in large numbers over a relatively limited area of ground.

Blast AP mines are designed to be triggered by the pressure caused by direct personal contact with the mine. They inflict injury through an explosive blast. Most of these types of landmines have a relatively small explosive charge, often less than 100 gr. of explosive.

FRAGMENTATION AP MINES

Fragmentation AP mines are designed to cause death or severe injury from fragments propelled by the mine’s explosive charge. Most of these mines have metal casings designed to shatter into fragments upon the detonation of the mine, or are armed with ball bearings or metal fragments that are turned into lethal projectiles by the detonation of the mine.

There are three basic types of fragmentation AP mines: stake mines, directional fragmentation mines, and bounding fragmentation mines.

STAKE AP MINES

The most commonly found standard fragmentation AP mines are stake mines, which are designed to fit on wooden or metal stakes hammered into the ground until the mine is resting about 21 cm above the surface.

One or more tripwires (most commonly made of fine steel wire) are then strung from the fuse of the mine to a solid object, or to another mine. As little as 0.8 kg pressure or traction on one of these wires can trigger a mine.

Once triggered, the blast of the explosive charge hurls metal fragments from the casing of the mine outward in a 360° arc. These fragments will probably cause lethal injury to anyone within an unobstructed radius of 4 meters of the mine when it detonates, and serious injury to people at much greater distances from the mine.

DIRECTIONAL FRAGMENTATION AP MINES

Directional (or “Claymore” type) fragmentation AP mines are designed to project a dense pattern of fragments within a specified arc. Most look like a curved rectangular box about the thickness of a paperback book. This box sits on two sets of legs and is generally coloured olive drab, black, or brown.

Directional fragmentation AP mines are usually command-detonated, but they can also be initiated by tripwire.

Most directional AP mines project their fragments within a 60° horizontal arc and a 2-meter vertical height, which can cause serious injury or death up to 50 meters from the mine.

Other versions of these mines are large and circular in shape, and project their shrapnel in a narrow cone, like a shotgun. They are capable of killing people, as well as destroying passenger vehicles, pickup trucks, utility vehicles, and jeeps.

BOUNDING FRAGMENTATION AP MINES

Most bounding fragmentation AP mines are cylindrical in shape, with a single tubular fuse or a number of prongs sticking out from the top. They are typically around 15 cm in diameter and 28 cm in height.

When these mines are laid it is common to see only the prongs sticking out above the soil. These mines are usually tan, olive, black, brown, and green, or are left unpainted. It is not uncommon for the spikes to be left as unpainted natural metal.

Bounding fragmentation AP mines are generally triggered by pressure on tripwires and/or direct pressure. When tripwires (usually of fine wire) are used, they can run as far as 30 meters from the mines.

Once triggered, an initial charge lifts the mine up to waist height before the main charge detonates. Upon detonation, the explosion shoots out metal fragments in a 360-degree horizontal arc. These fragments can inflict lethal injuries at distances of up to 35 meters or more from the landmine, and can cause severe injuries at more than 100 meters.

ANTI-TANK (AT) LANDMINES

Definition: an anti-tank mine is a mine designed to disable or destroy vehicles, including tanks. Like anti-personnel mines, anti-tank mines can be detonated by pressure (though normally much

greater weight is needed) or remote control, as well as by magnetic influence or through the disturbance of a tilt rod (a sort of vertical tripwire).

Because they need much greater power to achieve their objective, AT mines are much larger than AP mines and have a far heavier explosive charge. They may contain from 1.5 to 14 kg of explosive. They are generally round or square in shape, and range in size from 40 cm in diameter and 16 cm in height to 23 cm in diameter and 10 cm in height.

It normally takes more than 135 kg of pressure to detonate a standard AT mine. This does not necessarily mean that people weighing less than this can safely step on an AT mine. Fuse systems may deteriorate or be deliberately adjusted, resulting in a reduction in pressure required to detonate the mine.

In some cases AP mines have been laid on top of AT mines which, when initiated, will generally cause the AT mine to detonate as well. Be aware also that AP mines are often used to prevent AT mines from being lifted. The technique of laying AP mines and AT mines together in clusters is a common practice.

Wherever you see anti-tank mines, assume there are also anti-personnel mines in the area

The most common AT mines rely upon blast effect to disable or destroy vehicles. Their impact on vehicles such as pickup trucks, utility vehicles, passenger cars, and jeeps is usually catastrophic, resulting in the destruction of the vehicle and death or serious injuries to the passengers.

While much has been made of the threat of anti-personnel landmines to civilian populations, anti-tank mines may be responsible for much greater socio-economic dislocation and human suffering. AT mines prevent vehicles, including those carrying medical and relief supplies, from using the road and railway systems. They prevent villagers from bringing goods to markets, and impede the clearance of AP mines on roads. AT mines have caused most of the serious mine incidents, involving multiple casualties to humanitarian personnel.

UNEXPLODED ORDNANCE (UXO)

Definition: unexploded ordnance are explosive munitions which have not yet been set off. UXO may already have been fired, dropped, or launched, but it has failed to detonate as intended.

UXO include grenades, rockets, mortars, artillery shells, bombs, cluster munitions and fuses. They can function almost exactly as landmines, exploding when stepped on, moved or touched. Some UXO also contain motion-sensitive fusing or magnetic sensors; other UXO may have a timed self-destruct feature. Because UXO are very unstable and can be detonated easily, they are very dangerous.

Never attempt to handle or move unexploded ordnance!

Do not make radio transmissions within 15 meters of unexploded ordnance - when transmitting, radios send waves which may cause detonation.

UXO often outnumber landmines, and are frequently more lethal due to their explosive and fragmentation content.

UXO are found in areas where fighting has taken place or where artillery or aeroplanes have dropped bombs, shells and cluster munitions. This can also include areas where civilians are living, or places where refugees and displaced persons want to return. UXO can be discovered inside and outside of buildings. They can be hidden beneath rubble or collapsed walls. In addition, UXO can also be found lodged in trees or hanging from fences.

UXO are a serious danger to life and health and should always be considered in connection with the mine threat.

BOOBY TRAPS

Definition: a booby trap is a device or material which is designed to injure or kill, and which functions unexpectedly when a person or vehicle approaches or disturbs an apparently harmless object, or performs an apparently safe act.

Almost any object can be made into an innocent-looking booby trap, such as a packet of cigarettes, a watch, or a toy. Booby traps can be in any place and can look like anything. They are designed to catch the unwary and the curious.

The possibility of booby traps should be considered before any abandoned building is used or entered.

SECTION III RECOGNISING DANGEROUS AREAS

If mines have been properly laid and camouflaged, it will be extremely difficult - if not impossible - to spot a mined area. It is therefore essential to collect information on mines/UXO in your area before initiating any activity (see Section I).

Ask the local population the following questions to find out about the local mine/UXO problem:

- Has there been any fighting in this area?
- Have there been any soldiers living/working/passing through this area?
- Have there been mine/UXO accidents in this area?
- If yes, what types of injuries have occurred?
- Which areas are suspected or known to be mine/UXO contaminated?
- Are there roads/tracks/crossings/fields/wells/houses that the local population do not use?
- Have there been detonations in the area? If yes, in which locations?
- How does the local population mark mine/UXO-contaminated areas?
- What are considered to be safe roads/routes/paths/areas by the local population?

If it is not possible to obtain proper information, there are still things you can do to avoid entering a mine/UXO-affected area. This section helps you recognise some of the warning signs and clues for which you should be constantly on the outlook.

AREAS LIKELY TO CONTAIN MINES AND UNEXPLODED ORDNANCE

Mines/UXO can be found in various locations. In conflict areas, the following locations can be mine/UXO contaminated and should therefore be avoided:

- Military positions: Mines/UXO are often located in and around military positions and confrontation lines. Likewise, they can be found in civilian buildings that have been used as command or observation posts; in and around army rest areas; in and around ambush areas or areas that offer good concealment; near demolition sites and roadblocks.
- Military targets such as infrastructure, airports, bridges, factories, warehouses, etc. are likely to be mine/UXO-contaminated. Mine/UXO-suspected areas are also locations where there is a restriction on movement, especially where recovery of a damaged vehicle is difficult. Bridges, defiles and narrow roads are examples.
- Destroyed buildings/vehicles: Mines/UXO can be found in and around destroyed buildings, destroyed and abandoned vehicles, and equipment.
- Transportation routes: Mines/UXO can be found on paths, roads, tracks, crossings; around obstruction of a route that causes traffic to move onto a different surface; in rubble, debris or scrap on an otherwise clear route.
- Civilian locations: Mines/UXO can also be found in and around fields, river crossings, wells, water points, woods, farmland, vineyards, orchards, gardens, naturally shady areas, houses, offices, and cemeteries.

RECOGNISING MINE WARNING SIGNS

MINE SIGNS

A professional army will use barbed wire and mine signs to section off a properly laid minefield. Mine action agencies will also use mine signs to indicate dangerous areas. Learn which signs are used in the area to mark minefields.

Mine signs are normally bright red, square or triangular in shape, 25 cm x 25 cm in size, and have a skull and crossbones emblem with the words “DANGER MINES!” written in the local languages.

Never go into areas marked by mine warning signs, wires or tapes!

These signs may be broken down, rusted or covered in vegetation. Be alert and observant.

If you come across a mine sign, which you can see clearly but on which there is no writing, stop where you are and do not move: this most likely indicates that you are already in a minefield because when mine signs are placed, they are positioned facing outwards. If necessary, follow the emergency procedures described in section IV.

In addition to mine signs, plastic tapes of different colours are also often used to indicate mined areas. However, do not always expect to see mine marking tape or barbed wire around a minefield. In many countries, barbed wire is considered a useful item that can be used for other purposes. Often the local population will take it for use on their own land.

In many cases also, mine/UXO-affected communities know where the dangerous locations are and do not mark them anymore. To assume that in areas of conflict unmarked areas are safe can be misleading. Always check with the local Mine Action Center, UN Security Offices, UN Military Observers, local authorities and members of the local community to find out about mine/UXO-affected areas.

LOCAL WARNING SIGNS

In many cases, local people develop their own techniques and signs for marking mined areas. These may include, but are not limited to:

- A piece of cloth tied to a fence or tree;
- A can on a post;
- Small piles or circles of rocks;
- Rocks laid across a path;
- A clump of grass that has been tied in the middle;
- Sticks which have been tied to form a cross, which is then placed across a path or placed in the ground next to a path;
- Signs which have been cut into the bark of a tree;
- A shorn off branch.

RECOGNISING MINE WARNING CLUES

VISIBLE MINES/UXO, TRIPWIRES AND TILT RODS

Mines are generally difficult, if not impossible, to see. They have been purposely camouflaged, and could also be obscured by long grass or may have fallen over. Likewise, UXO can be difficult to spot.

However, certain landmines are laid above ground and may be visible after careful scrutiny of the area. Erosion or natural forces also sometimes uncover or partially uncover landmines. If you can see any portion of an object that appears to be made of plastic or metal and cannot be identified as safe, you should suspect the area to be mine/UXO contaminated.

**Remember mines, when properly laid, are
almost impossible to see!**

A tripwire is a thin, often non-reflective wire used as a mechanism to trigger an AP mine or a booby trap. It is normally made of metal, but vines, fence wire, and cord are also used.

Tripwires are usually stretched low above the ground so that any passer-by will “trip” over, thus setting off the explosion. They can be strung across paths, trails, roadways, fields and other areas in which foot traffic could be expected. Just because you do not see a tripwire does not mean there are not tripwires around.

Never touch, pull or cut a tripwire!

Tilt rods are usually steel rods from 16 cm to 1 meter in length. They are attached to the mechanical fuse of an AT mine, and are designed to detonate the mine when hit. Where you see tilt rods, there are generally AP mines as well, so be extremely cautious in any such situation and move away from the area.

Tilt rod fuses are very sensitive and must never be touched.

Use common sense. When in doubt, stay out!

Occasionally, forces lay mines in a hurry and leave the packaging, tripwire spools and safety pins for the mines. If you see military-looking wooden, plastic or metal containers lying around, always be suspicious of mines/UXO in the area. Also, any small metal rings with a metal pin attached should be viewed as a sign of possible mine activity in the area. Empty cluster bomb containers found in a conflict area also indicate danger.

CASUALTIES, INJURED OR DEAD ANIMALS

When a mine/UXO detonates and kills an animal or a person, there are often signs of this left in the area. The carcasses or skeletons of animals may sometimes be seen. In such cases, the animals often have characteristic injuries to their legs, or may be bleeding from multiple fragment wounds.

Bear in mind, however, that some animals have been known to move considerable distances after encountering mines/UXO. Injured animals or skeletons can therefore be taken as an indication of the presence of mines/UXO, but provide little or no information on their precise location.

SIGNS OF FIGHTING

Signs of fighting, including damaged or destroyed vehicles, equipment and facilities are also indicators that mines/UXO may be present. If vehicles appear to have been damaged from the bottom up or show wheel or track destruction, then there is a very good chance that they hit a mine/UXO. One might also encounter pieces of metal or debris that look like they are the results of an explosion. Landmines are seldom planted in isolation, so evidence of one mine would indicate the presence of others in the area.

DISTURBED SOIL AND VEGETATION

Often the placement of landmines/UXO causes disruptions in the natural environment that, as a result, look odd or out of place.

If a minefield has been in existence for some time, there might be a visible pattern of slight depressions over the mine where the soil has settled after a rain. If a mine has been laid recently, there might be patches of dead grass where the roots have been cut when the mines were buried. If a mine was laid very recently, the moist soil used to cover the landmine when it was buried may show up darker than the surrounding area. Also be aware that, over time, tripwires may become draped with grass, leaves, and other debris - or become a foundation for spiderwebs or cocoons that makes them more easily visible.

**Always be alert for things that look
“out of place”!**

LOCAL BEHAVIOUR

Never go anywhere where the local population refuses to go! They generally, though not always, know what areas are safe because they witnessed fighting, suffered casualties, saw mines being laid, and/or because they laid mines themselves. On the other hand, returning refugees may not always have the necessary mine/UXO information compared to those populations that have resided in the risk area during the conflict.

If an area is not cultivated, whereas all the other plots around it are being farmed, stay away from it. If you see an abandoned building with windows and roof tiles, although you are aware these are valuable building materials, stay away from the area. Never use a road that is beginning to become overgrown or on which there is no obvious traffic.

SECTION IV EMERGENCY PROCEDURES IN A MINEFIELD

If you stray into a minefield or happen to disturb UXO, a possible consequence can be death or severe injury. You need a good deal of experience even to be sure that you are no longer in a minefield, and the skills required to deal with specific devices and situations in a minefield cannot be taught and learned on a casual basis. This handbook is therefore primarily about prevention and how to avoid dangerous areas.

**The best and most certain way to avoid
becoming a victim of landmines/UXO is to avoid
mine/UXO contaminated areas altogether!**

If, however, some of the principles developed in the earlier sections of this handbook have not been applied and you happen to enter a minefield, this section aims to help you react safely.

EMERGENCY PROCEDURES ON FOOT

The two most likely ways you will discover that you are in a mined area are either that there is an explosion, or that you see a mine. If someone has been injured, you cannot rush in to help without endangering yourself and other members of the team.

**Never attempt to move, disturb or detonate
mines/UXO!
Never touch or cut a tripwire!**

In the event of a mine/UXO emergency, the following steps have to be observed:

STOP! MINED!

- **M** Movement stops immediately. Stop walking, stand still and remain calm.
- **I** Inform and warn people around you. If you can, contact your office for help.
- **N** Note the area. What else can you see?
- **E** Evaluate the situation. Be prepared to take control.
- **D** Do not move from your position. Wait for qualified help to come and assist you.

Immediately after stopping, having warned others and having called for help, you can assess the situation further:

- Examine the ground immediately around your feet to make sure your base is safe.
- Look around slowly and carefully, without moving, to see if you can spot mines, tripwires, etc.
- Crouch down without moving your feet and visually scan for tripwires or signs of mines.
- Visually locate the nearest safe ground. This may be where you last knew you were on a safe surface such as a hard surfaced road, well-used path, concrete or steel structure, such as an irrigation canal or a large pipeline, an expanse of bedrock or large boulders; etc.

If the procedures regarding route cards have been followed, it will only be a matter of time before qualified personnel come to assist you. The emergency exit procedures described in Appendix 3 should be used only as a last resort, when no external help can be expected, by individuals who have received proper training with practical exercises.

**Remember: it is better to spend two days in a
minefield than getting injured or killed!**

Once out of the mined area, make sure that you report the threat to your office and to the mine action organisations operating in the area.

Some organisations advise people to mark a mine, UXO or dangerous area, once identified, so as to warn others of the danger. It has been argued, however, that such a marking effort may be

dangerous, since one must find and place a suitable marker and therefore remain in the dangerous area. Moreover, it may not be clear to others where the danger is in relation to the marker. Check with your organisation what its marking policy is.

Do not attempt marking if you have not received proper training through practical exercises!

EMERGENCY PROCEDURES IN A VEHICLE

If you have any reason to suspect that you have driven into a mined area, or if your vehicle has hit a landmine, the following steps have to be observed:

STOP! MINED!

- **M** Movement stops immediately. Stop any further movement of the vehicle, do not attempt to reverse out of the area, and do not move the steering wheel. Be calm and, if possible, stay in the vehicle.
- **I** Inform and warn people around you. Contact your office for help. Use the car horn to summon help.
- **N** Note the area. What else can you see?
- **E** Evaluate the situation. Be prepared to take control.
- **D** Do not move from your position. Qualified help will come to assist you.

When a vehicle strikes a mine, the first instinct of survivors may be to rush out. However, unless the vehicle is on fire or has ended up in a life-threatening position, stay in the vehicle. It is very likely that there will be more mines, including AP mines, in the area. If you can, render first aid assistance to other passengers in the vehicle who require it.

If the procedures regarding route cards, etc. have been followed, it will only be a matter of time before qualified personnel come to assist you.

Remember: it is better to spend two days in a minefield than getting injured or killed!

Should you be obliged to leave the vehicle (if your vehicle is on fire, for example), exit in such a way that you do not have to touch the ground until you are in your wheel tracks facing back the way you came. Only go as far as necessary to be in a safe position. Then do not move from there until help arrives. If you are more than one, leave one at a time allowing 25 meters between each person.

Once out of the mined area, make sure that you report the threat to your office and to the mine action organisations operating in the area. If possible, get experts to retrieve the vehicle from the suspected minefield. Otherwise, leave it.

SECTION V

ASSISTING A MINE/UXO VICTIM

This section is not a substitute for emergency first aid training. It simply addresses the most basic actions to take if you witness an accident involving mines/UXO, and if no qualified medical assistance is immediately available.

Remember, a prerequisite for assisting a mine victim is the presence of a mine clearance team!

In case of a mine/UXO accident, you are advised to do the following:

- Remain calm. **DO NOT RUSH TO THE VICTIM** and do not attempt to rescue him/her in what may be a minefield.
- Note the time and exact location of the accident.
- Call for help. Arrange for both mine clearance assistance and Medevac.
- Warn the mine victim not to move, and advise him/her that help is on its way.
- If you do not have it with you, and if you can safely do so, collect your first aid kit from your vehicle.

Once the victim is brought to safe ground by a mine clearance team, and if there is no medical personnel available, you may administer emergency first aid, if appropriate, as per your formal training:

- Check the victim for breathing. If required and possible, clear the airways and give artificial respiration or cardio-pulmonary resuscitation.
- Stop the bleeding. Elevate the injured limb above the level of the heart. Use whatever bandages or material available to make pressure dressing for the wounds. If bleeding continues through the dressings, apply more material and apply firm manual pressure.
- If the wounded person is unconscious, put them in the recovery or “semi-prone” position.
- Protect the victim from the wind, rain, cold or bright sunlight. Keep him/her calm and warm, talk to him/her, and explain what you are planning to do.
- Let the person drink water or other non-alcoholic fluids.
- Once you get the patient to a vehicle, transport him/her at once to the nearest medical facility. Use the best transport immediately available, and leave instructions for any better (faster) transport to follow you when it arrives.

- During transportation, ensure that bandages are properly applied to all serious wounds, and that the patient is positioned so that the most seriously bleeding wounds are elevated above the level of his/her heart. Manual pressure on the dressings may have to be maintained during the journey to prevent bleeding.
- Never suture wounds or attempt other advanced medical aid unless you are physician or trained medical professional.

APPENDICES

APPENDIX 1 – USE OF ROUTE CARDS

1. The strict use of route cards effectively monitors the movements of staff members in order to facilitate appropriate action to be taken should they fail to reach their destination or meet a deadline. An example of route card is given below.
2. Route cards should be completed by all personnel travelling in potentially dangerous regions, and handed over to the responsible staff designated.
3. The person receiving the route card should sign it and place it in a prominent place – a notice board on the wall - where it can be checked daily. The staff responsible should have a notice board for this purpose.
4. The person receiving the card should be responsible for checking whether or not the staff travelling has returned or not, by the given Estimated Time of Arrival (ETA), and if not, should report the non-arrival of staff to responsible senior staff.
5. The person making the journey must report back when they arrive and, if delayed, every attempt must be made to report back the problem and new ETA.
6. After completion of the journey, the route card should be signed by the staff responsible for checking, and the card is removed from the notice board and filed. Relevant information from returned route cards should be forwarded to the local Mine Action Centre, UN Security Offices and local authorities.

ROUTE CARD

NAME				VEHICLE NO.			
VEHICLE TYPE				VEHICLE COLOUR			
CANOPY				CANOPY COLOUR			
VEHICLE REG.NO.				VEHICLE I.D. NO.			
Date	From (Start)	To (Finish)	Via (Route)	ETD	ETA	Time Arrival Confirmed	Confirmed by (Name)

NOTES

- 1: Ensure that this card is completed prior to departure and handed to:

- 2: Have you checked the following:
 - a. Water / fuel / oil / tyre pressure
 - b. Tools / jack
 - c. Emergency pack / food / water
 - d. Documents / identification
 - e. Radio / GPS / compass working
 - f. Radio channels and call signs
 - g. Emergency contacts and numbers
 - h. Medical pack
 - i. Maps with appropriate mine/UXO-related information

- 3: Remember: if you do not complete this card or report upon your arrival, you may not receive assistance and/or you may be liable for all search expenses.

CARD RECEIVED ON DEPARTURE BY:			
NAME _____	SIGNATURE _____	TIME _____	DATE _____
I ACKNOWLEDGE THAT I RETURNED FROM THE ABOVE JOURNEY			
NAME _____	SIGNATURE _____	TIME _____	DATE _____
NAME _____	SIGNATURE _____	TIME _____	DATE _____

APPENDIX 2 – MEASURES TO PROVIDE ADDITIONAL PROTECTION TO A VEHICLE

In general, normal vehicles cannot withstand the blast of an anti-tank mine. The best advice is therefore to stay away from mine/UXO-affected areas altogether. In particular, no travel should be undertaken on roads where the presence of AT mines is suspected.

This basic safety principle notwithstanding, there may be circumstances where it is both appropriate and practical to provide additional protection to vehicles. The advice of your head office and of trained personnel should be sought whenever possible.

Some of the measures that specialists may recommend include:

- Placing additional material on the floor of the vehicle, making sure that it is strongly attached. This will not protect against an explosion, but may reduce its impact. Suitable material may include Kevlar sheets, reinforced rubber, steel plates, etc.
- Fitting roll bars in the open back of a vehicle, should passengers have to sit there. The passengers should then be seated on benches and strapped in, and the bed of the vehicle should be covered by protective material as indicated above.
- Covering windows with blast-resistant film to prevent them from shattering in the event of an explosion.
- Equipping vehicles with fire extinguishers.

APPENDIX 3 – EMERGENCY PROCEDURES TO EXIT A MINEFIELD

Section IV describes the emergency procedures to be followed in a minefield. It recommends staying still, calling for help, and waiting until assistance arrives. **THIS SHOULD ALWAYS BE THE PREFERRED COURSE OF ACTION, WHERE POSSIBLE, FOR NON-SPECIALISTS.**

The following information on emergency procedures to exit a minefield is provided only to assist personnel caught in a minefield, when no external help can be expected. The activities involved are very hazardous, even for individuals who have received proper training with practical exercises. They should be used only as a last resort.

EXITING WHEN YOU CAN RETRACE YOUR STEPS

Visually identify the best route back to safe ground. You should always go back over ground you have already traversed and not attempt to escape in any other direction.

- If you are in soft or muddy ground, and your footsteps are easily visible, then slowly and carefully retrace your footsteps back to safe ground. STEP ONLY WHERE YOU HAVE STEPPED BEFORE!
- If in a group, you should designate one person to navigate you out of the minefield. He/She should direct everyone's efforts so that all arrive on safe ground.

Don't rush! Exiting a minefield is a time-consuming and dangerous process!

- Only one person should move at a time, and you should leave a distance of about 25 meters between each member of the group.
- Anyone not moving should clear a piece of ground large enough to lie down on, in accordance with the following procedures on "feeling for tripwires" and "prodding", and then remain prone while a safe route is created.

EXITING WHEN YOU CANNOT EXACTLY RETRACE YOUR STEPS

- Often on hard ground you will not be able to see your steps exactly. In such a case, you may want to decide to prod and feel your way to safe ground as outlined below. If you cannot clearly see your footsteps and exactly retrace your route, but you are on a well-travelled path or road that you feel confident is the most secure route to safe ground, you might choose to exit the minefield on this route.
- When moving along this route, examine each plot of ground carefully for tripwires and visible mines before placing your foot down.

FEELING FOR TRIPWIRES

In case there are no obvious safe exit routes, or you have reached a point where you simply cannot remember what path you have taken, or if you find a mine on what you thought was a safe exit route, then you will have to first feel for tripwires and prod for mines/UXO in order to exit. This is a slow, painstaking, and potentially very dangerous task. It cannot be rushed.

- You must first ensure that no tripwires cross the area in front of you.
- To feel for tripwires, it is best to have a long, thin, flexible rod approximately 1 to 1.3 meters long: a long blade of grass; a thin, flexible stalk or branch; a thin piece of wire; or any other long, thin object flexible enough to bend easily under a very small amount of pressure (30-60 gm). Do not move out of your safe area to obtain a feeler. If nothing is immediately available, carefully scan visually for tripwires from different angles.
- From a kneeling or crouched position on cleared ground, holding the feeler between your thumb and forefinger and horizontal to the ground, place it gently out in front of you just touching the ground.
- Gently raise the feeler, keeping it horizontal to the ground. Raise the feeler at least 1.5 meters, or to the height of the tallest member of your group. If you feel any obstruction on the feeler, stop the pressure immediately!
- Look carefully to see what caused the obstruction.
- If you locate a tripwire, mark the location and attempt to find a safe route in another direction, away from the tripwire.

Never touch, pull or cut a tripwire!

- Repeat this process at least three times to the left side, centre and right side of the route which you intend to clear, until you are confident that the area of your next step route is clear of tripwires.
- Once you are certain that the area is free of tripwires, you must commence prodding.

PRODDING

- **ONLY PROD GROUND THAT YOU HAVE FIRST DETERMINED TO BE CLEAR OF TRIPWIRES AS OUTLINED ABOVE!**
- Prod with a screwdriver, knife, pen or other sharp pointed object at least 11 cm in length. Do not leave your safe area to obtain a suitable prodder.
- Prodding should be undertaken in the prone (lying) position whenever possible. Remember to clear an area large enough to lie down, prior to actually doing so. If conditions do not allow you to adopt a prone position, prod from a kneeling position.

- Holding the prodder at one end, push it into the ground at a shallow angle (about 30 degrees). Apply the minimum pressure needed to penetrate the earth; remember, you are trying to feel for buried mines. Obstructions, such as small rocks, must be carefully moved aside to allow the prodder to enter the ground.
- Pierce the ground from left to right in intervals the width of two fingers (or 3 cm) until you have probed a line that is at least a half a meter in width.
- Once the first line is completed, move forward three finger widths (or 5 cm) and repeat the process.
- If the ground is hard, you can ease prodding by softening the ground with water, if it is easily available. If this is impractical, and the ground is too hard or rocky to allow a prodder to be inserted, then you must carefully clear it away to a depth of at least 5 cm. Use any available tool to dig or scrape at the ground, exerting as little downward pressure as possible.
- As you move forward, mark the probed area at both edges in a clearly recognisable way. Do not use anything that could be moved by the wind. You, and others with you, must be absolutely sure which areas have been cleared and which have not.
- If you feel an object with your prodder, stop and gently brush away earth from the side of the object, until you can figure out what it is. Do not dig directly on top of the object, and do not use your prodder to try to lever the object out of the ground.
- If you see metal or plastic, inform the others and mark it with any readily available items such as stones or twigs. Do not go in search of marking material.

Never attempt to move or detonate a mine/UXO!

- Continue prodding a path around the mine, as outlined above.
- It is vital to be methodical about prodding, and to efficiently check the entire area of the escape path.
- Continue prodding until you reach the limit of the area you have determined to be free from tripwires.
- Once you have reached that limit, stop prodding, and again use the tripwire feeler to ensure that the area for your next steps is free from tripwires. Once you are sure of this, commence prodding again.

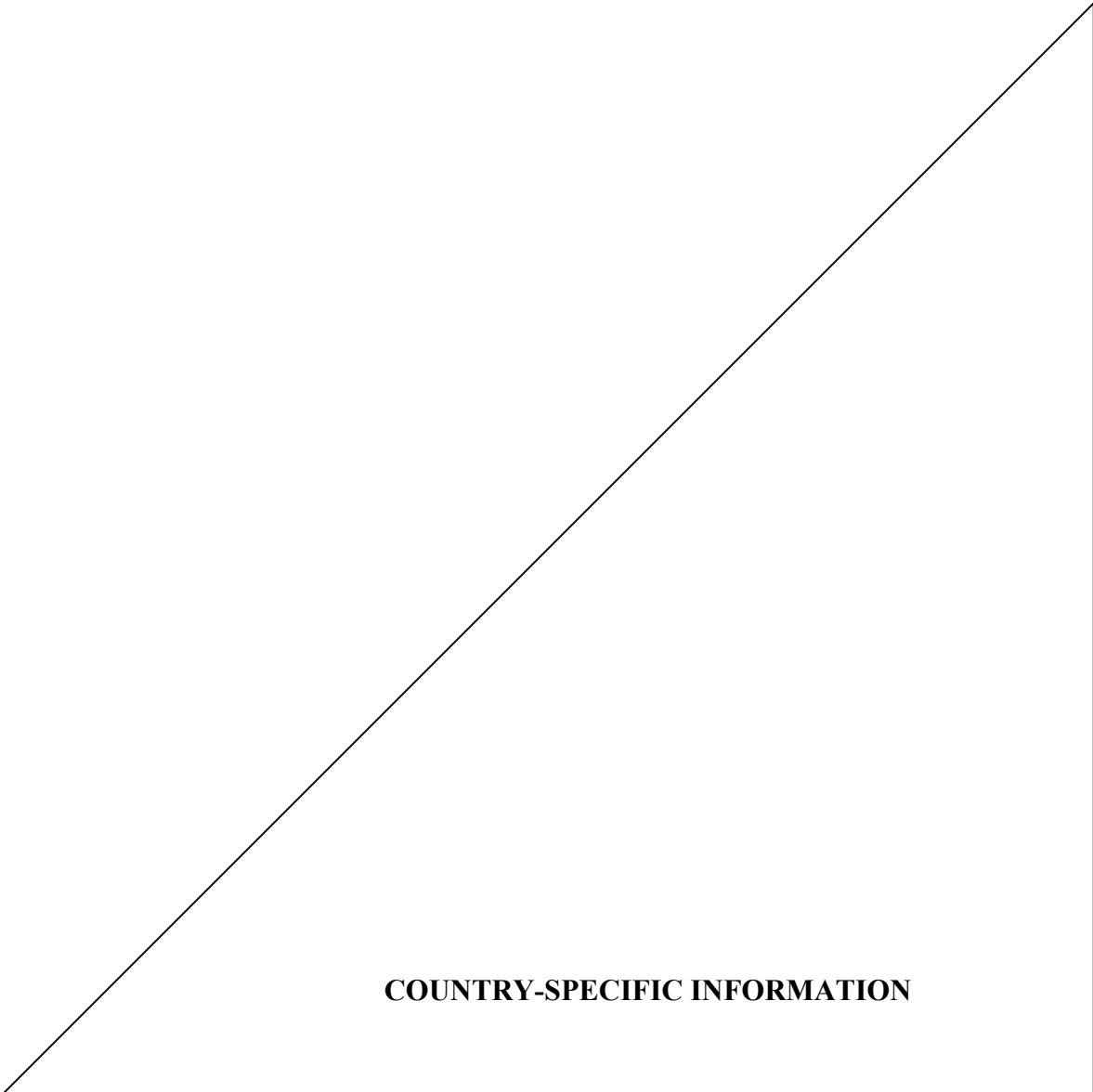
Remember that escape from a minefield may take several hours of prodding. Don't rush!

- If darkness falls, stop activity and rest in a safe spot until it is light enough to resume your efforts. Work only as long as you have light.

- As you move or prod forward, constantly repeat this process until you reach safe ground.
- Report the location of the minefield to the local Mine Action Center, UN Security Office and local authorities.

NOTES

EMERGENCY CONTACTS



COUNTRY-SPECIFIC INFORMATION