

Edited by James Bevan

# CONVENTIONAL AMMUNITION IN SURPLUS

A REFERENCE GUIDE



A Small Arms Survey publication in cooperation with partners

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## About the Project Partners

**BICC** is an independent non-profit organization dedicated to promoting peace and development through the efficient and effective transformation of military-related structures, assets, functions, and processes. Having expanded its span of activities beyond the classical areas of conversion that focus on the reuse of military resources (such as the reallocation of military expenditures, restructuring of the defence industry, closure of military bases, and demobilization), BICC is now organizing its work around three main topics: arms, peacebuilding, and conflict. The Bonn International Center for Conversion was established in 1994 with support from the State of North Rhine-Westphalia (NRW). The Center's Trustees include the two German states of North Rhine-Westphalia and Brandenburg as well as the NRW.BANK, and the Landesentwicklungsgesellschaft NRW (LEG).

**GRIP** (Groupe de recherche et d'information sur la paix et la sécurité), located in Brussels, is an independent Belgian research centre focusing on the study and dissemination of information and training on problems of peace, defence, and disarmament. GRIP works with the aim to contribute to improving international security in Europe and throughout the world by assisting in political decision-making processes. Its current work on small arms, light weapons, and related ammunition focuses on the thematic issues of transparency and restraint in arms transfers, controls on arms brokering, and tracing illicit arms. [www.grip.org](http://www.grip.org)

**The Federation of American Scientists** ([www.fas.org](http://www.fas.org)) was formed in 1945 by atomic scientists from the Manhattan Project. Endorsed by 68 Nobel Laureates in biology, chemistry, economics, medicine, and physics as sponsors, the Federation has addressed a broad spectrum of national security issues in carrying out its mission to promote humanitarian uses of science and technology. Today, FAS projects study nuclear arms control and global security; conventional arms transfers; proliferation of weapons of mass destruction;

information technology for human health; and government information policy. FAS has also expanded to include programmes in innovative learning technologies and energy-efficient building technology.

The **Small Arms Survey** is an independent research project located at the Graduate Institute of International Studies in Geneva, Switzerland. It serves as the principal source of public information on all aspects of small arms and as a resource centre for governments, policy-makers, researchers, and activists. The Survey sponsors field research and information-gathering efforts, especially in affected states and regions. Established in 1999, the project is supported by the Swiss Federal Department of Foreign Affairs, and by sustained contributions from the governments of Belgium, Canada, Finland, France, the Netherlands, Norway, Sweden, and the United Kingdom. The project has an international staff with expertise in security studies, political science, law, economics, development studies, and sociology. It collaborates with a worldwide network of researchers, partner institutions, non-governmental organizations, and governments. [www.smallarmssurvey.org](http://www.smallarmssurvey.org)

Since 1993, **Viva Rio** ([www.vivario.org.br](http://www.vivario.org.br)), an NGO based in Rio de Janeiro, has worked to combat a growing wave of urban violence—a problem that affects mainly young people—in Brazilian cities. Campaigns for peace and against the proliferation of small arms, as well as projects aiming to reduce criminal behavior and armed violence, are the hallmarks of the organization's work. Activities to confront problems associated with the proliferation and misuse of firearms are carried out at the local, national, and international levels. Viva Rio has three main objectives: to reduce the demand for guns (actions to sensitize civil society to the risks involved with using or carrying firearms and to respond to the gun industry lobby); to reduce the supply of guns (curb illicit arms trafficking and control the production, sales, exports, and imports of small arms and ammunition); and to improve stockpile controls (destruction of excess guns and improvement of secure storage facilities).

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## Foreword

Germany has long been committed to raising the international profile of safe and secure ammunition management. Poorly managed and insecure stocks of conventional ammunition are a problem of global concern. They pose an imminent risk to public safety and a security threat to societies. Hundreds of people die each year because of the failure to manage and maintain dangerous stocks of ammunition. Many more people lose their lives because ammunition diversion from national stockpiles keeps fueling violent conflict, armed crime, and terrorism. Accidents are not confined to specific regions of the world, and diversion to the illicit market obeys no international borders. The mismanagement of ammunition has the potential to affect all states and a host of stakeholders, ranging from state security forces to the populations that reside close to ammunition stockpiles.

Germany is committed to supporting the United Nations Group of Governmental Experts (GGE) that will convene in 2008 to consider steps to enhance cooperation with regard to the issue of conventional ammunition stockpiles in surplus. The decision to convene the GGE is based on UN General Assembly Resolution 61/72 entitled *Problems Arising from the Accumulation of Conventional Ammunition Stockpiles in Surplus*, which was first presented by France and Germany in 2005, thereby formally putting the issue on the international agenda.

As part of its support for the 2008 GGE, the Federal Foreign Office requested that the Small Arms Survey produce a reference guide that would provide information on the full spectrum of issues related to conventional ammunition in surplus. This guide, entitled *Conventional Ammunition in Surplus*, is designed to be a one-stop reference for all those involved in the process, from governments to international organizations and advocacy groups. Designed to be easily accessible, the guide provides a concise re-

view of key issues, progress, and new policy priorities in the field of ammunition management. *Conventional Ammunition in Surplus* is a companion for all stakeholders with an interest in ammunition.

**Frank-Walter Steinmeier**

Federal Minister for Foreign Affairs

Federal Republic of Germany

# About This Reference Guide

James Bevan

This is a reference guide designed to quickly impart to its readers the most important information pertaining to the management of conventional ammunition.

First and foremost, it is a book for policy-makers and for people closely involved in policy-making processes. Its small size and spiral binding ensure mobility and ease of use.

The book responds to the requirement for a single source of easily accessible, reliable, and authoritative information. As a result, some of the book's chapters restate and update existing information, with the aim of providing readers with the most authoritative, publicly available information within a single, easy-to-read volume. Other chapters break new ground by presenting unexplored, or under-explored, issues related to arms and ammunition management.

Due to the cross-cutting nature of the field, many of the chapters cover closely linked themes. This is because effective arms and ammunition management is a system rather than a series of isolated activities.

The book's chapters note these issue linkages and have been carefully cross-referenced so that readers can easily navigate between related issues within the book. These cross references appear in the text and indicate the relevant chapter in upper case. For example, reference to Chapter 15 appears as (CHAPTER 15).

Chapters also feature 'Further reading' lists. The book is designed to be the first port of call for information on conventional ammunition, but also a gateway to the best available information on particular issue areas, should readers want to explore a subject in greater detail.

## Acknowledgements

On behalf of the authors, I would like to express my thanks to the following people for their contributions to this book. First and foremost, we are grateful to the staff of the German Federal Foreign Office and, in particular, Michael Hasenau for making this project a reality, and for their continued support for the Small Arms Survey's ammunition projects. In addition to co-authoring two chapters in this volume, Ian Biddle and Holger Anders provided expertise, advice, and reviews of the other sections. Jasna Lazarevic provided research assistance throughout the process and deserves a special acknowledgement for her hard work and diligence. Thanks go to Glenn McDonald and Eric Berman for their insight and for intervening when it mattered most. We also thank Alex Potter for his copy-editing skills, Janine Vigus for the layout, Donald Strachan for proofreading, and Tania Inowlocki and Susan Lee for planning and directing the publication process. Members of the Small Arms Survey staff—especially Silvia Cattaneo, Jennifer Hazen, Stéphanie Pézard, and Chris Stevenson—also provided critical assistance.

**James Bevan**

# Abbreviations and Acronyms

AAM	air-to-air missile
AAP	Allied Administrative Publication (NATO)
AASTP	Allied Ammunition Storage and Transport Publication (NATO)
ADF	ammunition demilitarization facility
AGM	air-to-ground missile
AH	anti-helicopter
ALARP	as low as reasonably practicable
AMPS	Ammunition Management Policy Statements (SEESAC)
AP	anti-personnel
APB	ammunition-process building
APE	ammunition-peculiar equipment
ASS	ammunition storage site
AT	anti-tank/ammunition technician
ATGM	anti-tank guided missile
ATGW	anti-tank guided weapon
ATO	ammunition technical officer
AUW	all up weight
AV	anti-vehicle
CBC	Companhia Brasileira de Cartuchos
CMD	conventional munition disposal
COTS	commercial off-the-shelf
CSBM	confidence- and security-building measures
CWIED	command wire IED
DAER	daily ammunition expenditure rate
DCSR	daily combat supply rate
DDR	disarmament, demobilization, and reintegration
DTRA	Defence Threat Reduction Agency (United States)
ECA	explosion consequence analysis
EFP	explosively formed projectile

EOD	explosive ordnance disposal
ELL	explosive limit licence
ERW	explosive remnant of war
ESA	explosive storage area
ESH	explosive storehouse
EWI	explosive waste incinerator
FFR	free-flight rocket
GGE	Group of Governmental Experts
HCC	hazard compatibility code
HD	hazard division (United Nations)
HE	high explosive (noun); high-explosive (adjective)
HEAT	high-explosive anti-tank
HME	home-made explosives
HPLC	high performance liquid chromatography
HSEOEL	health and safety executive occupational exposure limits
IED	improvised explosive device
IQD	inside quantity distances
IRFNA	inhibited red fuming nitric acid
ISFE	igniter safety fuse electric
JACIG	Joint Arms Control Implementation Group (United Kingdom)
LVBIED	large vehicle-borne IED
MANPADS	man-portable air defence system(s)
MHE	mechanical handling equipment
MLRS	multiple launch rocket system
MMH	monomethyl hydrazine
MoD	ministry of defence
NATO	North Atlantic Treaty Organization
NEC	net explosive content
NEQ	net explosive quantity
OBOD	open burning and open detonation
OEM	original equipment manufacturer
OQD	outside quantity distances
OSCE	Organization for Security and Co-operation in Europe
PBIED	person-borne IED

PCIED	projectile-controlled IED
PCS	pollution control system
PES	potential explosion site
PETN	penta-eurythyl tetranitrate
PfP	Partnership for Peace (NATO)
RCIED	radio-controlled IED
RDX	Research Department Explosive (Octagen)
RFNA	red fuming nitric acid
SAA	small arms ammunition
SAADS	small arms ammunition disposal system (commercial)
SALW	small arms and light weapons
SAM	surface-to-air missile
SEESAC	South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons
SOP	standing/standard operating procedure
SSR	security sector reform
TLV	threshold limit value
TNT	trinitrotoluene
UDMH	unsymmetrical dimethyl hydrazine
UKMoD	United Kingdom Ministry of Defence
ULC	unit load container (pallets)
UNDP	United Nations Development Programme
UNDPKO	United Nations Department of Peacekeeping Operations
USD	United States dollar
USDOD	United States Department of Defense
USGAO	United States Government Accountability Office
UXO	unexploded ordnance
VBIED	vehicle-borne IED
VOC	volatile organic compound
VOIED	victim-operated IED

# Glossary of Conventional Ammunition Terminology<sup>1</sup>

James Bevan and Adrian Wilkinson

## **Abandoned explosive ordnance (AXO)**

Explosive ordnance that has not been used during an armed conflict, has been left behind or dumped by a party to an armed conflict, and is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fused, armed, or otherwise prepared for use.<sup>†2</sup>

## **(ammunition) Accounting**

Information management systems and associated operating procedures that are designed to record, numerically monitor, verify, issue, and receive ammunition in organizations and stockpiles.

## **Ammunition**

A complete device (e.g. missile, shell, mine, demolition store, etc.) charged with explosives; propellants; pyrotechnics; initiating composition; or nuclear, biological, or chemical material for use in connection with offence, or defence, or training, or non-operational purposes, including those parts of weapons systems containing explosives<sup>3</sup> (cf. **Munition**).

## **Artillery ammunition**

Medium and large calibre ammunition for weapons, such as mortars, howitzers, missile, and rocket launchers, that are primarily designed to fire indirectly at targets (cf. **Ammunition**).

## **Blank cartridge**

Used to simulate a live round, primarily used for training, containing propellant and a wad, but no bullet or other projectile. Not designed for offensive military use (cf. **Cartridge**).

## **Bomb**

Explosive munition, not subject to centrifugal forces and with a nearly vertical angle of descent, usually delivered from an aircraft or mortar (cf. **Munition**).

## **Burning ground**

An area authorized for the destruction of ammunition, mines, and explosives by burning.

## **Charge**

A fixed quantity of explosives designed for a specific purpose (cf. **Explosives; Charge (bursting); Charge (demolition); Charge (expelling); Charge (propelling)**).

### **Charge (bursting)**

A small charge, frequently of black powder, used to break the case of a carrier projectile to enable the release of its payload, classically used in shrapnel shells.

### **Charge (demolition)**

A charge made up from bulk explosive for the express purpose of destruction by blast or brisance.

### **Charge (expelling)**

A charge of generally low or deflagrating explosive designed to eject the payload from a parent munitions dispenser by gas pressure without damage to the sub-munitions (cf. **Sub-munitions; Deflagration**).

### **Charge (propelling)**

Articles consisting of a propellant charge in any physical form, with or without a casing, for use in artillery, mortars, and rockets, or as a component of rocket motors.

## **Cluster munitions**

Containers designed to disperse or release multiple sub-munitions (cf. **Munition; Sub-munitions**).

**‘Cooking off’** (within a weapon)

Unintended firing of a weapon caused by the propellant exceeding its flashpoint and initiating. This happens when a weapon has become very hot due to repeated firing and is left loaded. The heat contained in the weapon is conducted to the charge, causing it to heat up, eventually to the point at which it initiates.

**‘Cook-off’**

The premature detonation or deflagration of ammunition due to the influence of heat from the surrounding environment.

**Daily ammunition expenditure rate (DAER)**

The amount of ammunition that a single weapon uses in one day of combat of a given intensity.

**Danger area**

(cf. **Explosive danger area**)

**Deflagration**

A chemical reaction proceeding at subsonic velocity along the surface of and/or through an explosive, producing hot gases at high pressures.

**Demilitarization**

The complete range of processes that render weapons, ammunition, mines, and explosives unfit for their originally intended purpose.<sup>4</sup>

Demilitarization not only involves the final destruction process, but also includes all of the other transport, storage, accounting, and pre-processing operations that are equally as critical to achieving the final result.<sup>†</sup>

**Destruction**

The process of final conversion of weapons, ammunition, mines, and explosives into an inert state so that they can no longer function as designed.<sup>†</sup>

**Destruction in situ**

The destruction of any item of ordnance by explosives without moving the item from where it was found—normally by placing an explosive charge alongside it.

**Detonation**

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

**Detonator**

A device containing a sensitive explosive intended to produce a detonation wave in response to some stimulus.<sup>†</sup> It may be constructed to detonate instantaneously, or may contain a delay element.

**Diurnal cycling**

The exposure of ammunition and explosives to the temperature changes induced by day, night, and change of season.<sup>†</sup>

**Disposal (logistic)**

The removal of ammunition and explosives from a stockpile by the utilization of a variety of methods (which may not necessarily involve destruction).<sup>5</sup> Logistic disposal may or may not require the use of render safe procedures.

There are five traditional methods of disposal used by armed forces around the world: 1) sale; 2) gift; 3) use for training; 4) deep sea dumping; and 5) destruction or demilitarization.<sup>†</sup>

**Disposal site**

An area authorized for the destruction of ammunition and explosives by detonation and burning.<sup>†</sup>

**Diversions**

The unauthorized transfer of arms and ammunition from the stocks of legal users to the illicit market.

**Drill**

An inert replica of ammunition specifically manufactured for drill, display, or instructional purposes.

**Explosive**

A substance or mixture of substances that, under external influences, is capable of rapidly releasing energy in the form of gases and heat.<sup>†</sup>

**Explosive danger area**

The area surrounding a demolition ground or ammunition storage area determined by the distances any fragments resulting from the detonation of ammunition may be expected to travel.<sup>†</sup>

**Explosively formed penetrator (EFP)**

(cf. **Shaped charge**)

**Explosive materials**

Components or ancillary items that contain some explosives, or behave in an explosive manner, such as detonators and primers.<sup>†</sup>

**Explosive ordnance**

All munitions containing explosives, nuclear fission or fusion materials, and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket, and small arms ammunition; all mines, torpedoes, and depth charges; pyrotechnics; clusters and dispensers; cartridge- and propellant-actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components that are explosive in nature.<sup>†</sup>

**Explosive ordnance disposal (EOD)**

The detection, identification, evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance.

EOD may also include the rendering safe and/or disposal of such explosive ordnance, which has become hazardous by damage or deterioration, when the disposal of such explosive ordnance is beyond the capabilities of those personnel normally assigned the responsibility for routine disposal. The level of EOD response is dictated by the condition of the ammunition, its level of deterioration, and the way that the local community handles it.<sup>†</sup>

**Explosive remnants of war (ERW)**

Unexploded ordnance (UXO) and abandoned explosive ordnance (AXO) that remain after the end of an armed conflict.<sup>6</sup> (Cf. **Unexploded ordnance; Abandoned explosive ordnance**)

### **Fragmentation hazard zone**

For a given explosive item, explosive storage, or mine- or UXO-contaminated area, the area that could be reached by fragmentation in the case of detonation.

Several factors should be considered when determining this zone: the amount of explosive, body construction, type of material, ground conditions, etc.<sup>†</sup>

### **Fuse**

A device that initiates an explosive train.<sup>†</sup>

### **Grenade**

Munitions that are designed to be thrown by hand or to be launched from a rifle. Excludes rocket-propelled grenades (cf. **Rocket**).

### **Guided missiles**

Guided missiles consist of propellant-type motors fitted with warheads containing high explosives or some other active agent and equipped with electronic guidance devices.

### **Hazard divisions (HDs)**

The UN classification system that identifies hazardous substances.<sup>†</sup> For example, Class 1 (explosives) is sub-divided into six hazard divisions.

### **Hypergolic reaction**

The spontaneous ignition of two components—particularly relevant in the case of liquid bipropellants (cf. **Rocket motor**).

### **Illuminating munition**

Ammunition designed to produce a single source of intense light for lighting up an area. The term includes illuminating cartridges, grenades, and projectiles; and illuminating and target identification bombs.

### **Improvised explosive device (IED)**

A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to kill, destroy, incapacitate, harass, or distract. It may incorporate military stores, but is normally devised from non-military components.<sup>7</sup>

Alternatively: An explosive device, constructed using non-commercial methods, usually in a domestic setting; or a device using ammunition that

has been modified to allow it to be initiated in a non-standard way and for a purpose not envisaged by the original equipment manufacturer (OEM).<sup>8</sup>

### **Incendiary munition**

Ammunition containing an incendiary substance that may be a solid, liquid, or gel, including white phosphorus.

### **Inert**

An item of ammunition that contains no explosive, pyrotechnic, lachrymatory, radioactive, chemical, biological, or other toxic components or substances.

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

### **Lachrymatory ammunition**

Ammunition containing chemical compounds that are designed to incapacitate by causing short-term tears or inflammation of the eyes.<sup>†</sup>

### **Logistic disposal**

The removal of ammunition and explosives from a stockpile, utilizing a variety of methods (which may not necessarily involve destruction).

Logistic disposal may or may not require the use of RSPs (cf. **Render safe procedure (RSP)**).<sup>†</sup>

### **Magazine**

Any building, structure, or container approved for the storage of explosive materials.<sup>†</sup> Includes detachable magazines fitted to small arms and light weapons.

### **Making safe**

(cf. **Render safe procedure (RSP)**)

### **Marking**

The application of marks—including colours, descriptive text, and symbols—to munitions, parts, and their components, and associated packaging,

for the purposes of identifying, among other things, their role, operational features, and age; and the potential hazards posed by those munitions.

### **Mine**

An explosive munition designed to be placed under, on, or near the ground or other surface area and to be actuated by the presence, proximity, or contact of a person, land vehicle, aircraft, or boat, including landing craft.<sup>9</sup>

### **Munition**

Used in this volume—and in common usage—to refer to military weapons, ammunition, and equipment. A number of armed forces and ammunition specialists, however, use the term munitions to refer solely to complete rounds of ammunition (cf. **Ammunition**).

### **National stockpile**

The full range of ammunition stockpiles in a country under the control of separate organizations such as the police, military forces (both active and reserve), border guards, ammunition-producing companies, etc.

It includes all ammunition types, irrespective of classification (i.e. operational, training, or awaiting disposal). (cf. **Stockpile**)

### **(ammunition) Nature**

Denotes specific types of ammunition. A means of categorizing ammunition or munitions by their function; e.g. anti-tank ammunition or riot control ammunition.

### **Neutralize**

The act of replacing safety devices such as pins or rods into an explosive item to prevent the fuse or igniter from functioning.<sup>10</sup>

Neutralization does not make an item completely safe, as removal of the safety devices will immediately make the item active again.<sup>†</sup>

### **Open burning and open detonation (OBOD)**

Ammunition destruction methods using burning, deflagration, and detonation techniques (cf. **Deflagration**; **Destruction**).<sup>†</sup>

### **(white) Phosphorous**

A flare or smoke-producing incendiary weapon, or smoke-screening agent, made from a common allotrope of the chemical element phosphorous.

**Primer**

A self-contained munition that is fitted into a cartridge case or firing mechanism and provides the means of igniting the propellant charge.<sup>†</sup>

**Proof**

The functional testing or firing of ammunition and explosives to ensure safety and stability in storage and intended use.

**Propellant**

A material that is used to move an object by applying a motive force. This may or may not involve some form of chemical reaction. It may be a gas, a liquid, or, before the chemical reaction, a solid. Chemical propellants are most usually used to propel a projectile from its position in the breach, down the barrel, and through its ballistic trajectory to the target. Propellant operates by deflagrating in the breach, producing large volumes of gas at high pressure. Traditionally, propellants were classified as low explosives and, depending on the number of ingredients, were single-, double-, or triple-based. In the pursuit of higher muzzle velocities, however, some propellants now incorporate significant quantities of high explosives, such as RDX. These propellants are constrained from detonating by carefully controlling the means of initiation and the conditions under which the deflagration takes place.

**Pyrophoric**

A substance capable of spontaneous ignition when exposed to air, such as white phosphorous (cf. **(white) Phosphorous**).

**Pyrotechnic**

A device or material that can be ignited to produce light, smoke, or noise.

**Render safe procedure (RSP)**

The application of special explosive ordnance disposal methods and tools to provide for the interruption of functions or separation of essential components to prevent an unacceptable detonation.<sup>11</sup>

**Risk**

Combination of the probability of occurrence of harm and the severity of that harm.<sup>12</sup>

## **Risk analysis**

Systematic use of available information to identify hazards and estimate risk.<sup>13</sup>

## **Risk assessment**

The overall process comprising a risk analysis and a risk evaluation.<sup>14</sup>

## **Risk evaluation**

The process based on risk analysis to determine whether the tolerable risk has been achieved.<sup>15</sup>

## **Rocket**

Munitions consisting of a rocket motor and a payload, which may be an explosive warhead or other device.<sup>16</sup> The term often includes both guided and unguided missiles, although has traditionally referred to unguided missiles.

## **Rocket motor**

Article consisting of a solid, liquid, or hypergolic fuel contained in a cylinder fitted with one or more nozzles. It is designed to propel a rocket or a guided missile<sup>17</sup> (cf. **Hypergolic reaction**).<sup>18</sup>

## **Safe to move**

A technical assessment by an appropriately qualified technician or technical officer of the physical condition and stability of ammunition and explosives prior to any proposed move.

If ammunition and explosives fail a 'safe to move' inspection, then they must be destroyed in situ, or as close as is practically possible, by a qualified EOD team acting under the advice or control of the qualified technician or technical officer who conducted the initial safe to move inspection.<sup>†</sup>

## **Safety**

(cf. **Stockpile safety**)

## **Security**

(cf. **Stockpile security**)

## **Shaped charge**

A type of ammunition designed to focus the energy of a quantity of high explosive, usually to pierce or cut armour. Shaped charges typically consist of a

cone-shaped metal liner backed by high explosive, contained within a steel or aluminium casing. Once initiated, a detonation wave collapses the liner, which forms a high velocity metallic jet (or broader diameter projectile), which is intended to penetrate armour.

### **Shelf life**

The length of time an item of ammunition may be stored before the performance of that ammunition degrades.

### **Small arms ammunition**

Small arms ammunition (less than 20 mm, and usually less than 14.5 mm, in calibre) consists of cartridges used in rifles, carbines, revolvers, pistols, sub-machine guns, and machine guns, and shells used in shotguns (cf. **Small arms and light weapons (SALW)**).<sup>†</sup>

### **Small arms and light weapons (SALW)**

All lethal conventional arms that can be carried by an individual combatant, a team of people, or a light vehicle that also do not require a substantial logistic and maintenance capability.

There is a variety of definitions for small arms and light weapons circulating, and international consensus on a 'correct' definition has yet to be achieved. For the purposes of this document, the above definition will be used.<sup>†</sup>

### **Smoke munition**

Ammunition containing a smoke-producing substance.

### **Stability**

The physical and chemical characteristics of ammunition that impact on its safety in storage, transport, and use.

### **Standard/Standing operating procedures (SOPs)**

Instructions that define the preferred or currently established method of conducting an operational task or activity.

The purpose of SOPs is to promote recognizable and measurable degrees of discipline, uniformity, consistency, and commonality within an organization, with the aim of improving operational effectiveness and safety. SOPs should reflect local requirements and circumstances.<sup>†</sup>

## **Stock**

A given quantity of weapons and explosive ordnance (cf. **Stockpile**).

## **Stockpile**

A large, accumulated stock of weapons and explosive ordnance. Often used interchangeably with stock, or to denote the weapons retained in a specific ammunition storage facility or depot (cf. **Stock**; **National stockpile**).

## **Stockpile destruction**

The physical activities and destructive procedures leading to a reduction of the national stockpile (cf. **Destruction**; **Demilitarization**; **Disposal (logistic)**; **Stockpile**).<sup>†</sup>

## **Stockpile management**

Procedures and activities regarding safe and secure accounting, storage, transportation, and handling of munitions (cf. **Stockpile**).<sup>†</sup>

## **Stockpile safety**

The result of measures taken to ensure minimal risk of accidents and hazards deriving from weapons and explosive ordnance to personnel working with arms and ammunition, as well as to adjacent populations.

## **Stockpile security**

The result of measures taken to prevent the theft of weapons and explosive ordnance; entry by unauthorized persons into munitions storage areas; and acts of malfeasance, such as sabotage.

## **Sub-munitions**

Any munition that, to perform its tasks, separates from a parent munition (cf. **Cluster munitions**).

## **Surplus weapons**

Weapons that are labelled unnecessary within the framework of a state's national defence and internal security systems.<sup>19</sup>

## **Surveillance**

A systematic method of evaluating the properties, characteristics, and performance capabilities of ammunition throughout its life cycle in order to assess the reliability, safety, and operational effectiveness of stocks and to provide data in support of life reassessment.

**Tracer ammunition**

Ammunition containing pyrotechnic substances designed to reveal the trajectory of a projectile.

**(ammunition) Tracing**

Methods used to identify ammunition, its origins, and patterns of transfer. Shares some similarities with accounting, but usually used to refer to efforts made to identify diversion and the sources of illicit trade in ammunition.

**Transfer**

The import, export, trans-shipment, re-export, intangible transfer, licensed movement during production, brokering, and transport of small arms and light weapons.<sup>†</sup>

**Unexploded ordnance (UXO)**

Explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and which has been dropped, fired, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material, and remains unexploded either by malfunction or design or for any other cause.<sup>†</sup>

**Warhead**

Munition containing detonating explosives. Designed to be fitted to a rocket, missile, or torpedo.

## Notes

- 1 The definitions were compiled from a number of sources. Those based on or derived from SEESAC (2006) are marked †. Ian Biddle also contributed definitions and revisions.
- 2 UN (2003).
- 3 UKMoD (2006, sec. 4.3, p. 2).
- 4 IMAS (2003).
- 5 This is an obvious area where confusion can be caused by the use of incorrect terminology or translation. One party may assume that when the other mentions disposal, they are really talking about destruction. This may not be the case.
- 6 UN (2003).
- 7 NATO (2007).
- 8 British Army Ammunition Technical Officers Course, provided by Ian Biddle. See Chapter 14 of this volume.
- 9 NATO (2007).
- 10 NATO (2007).
- 11 NATO (2007).
- 12 ISO (1999).
- 13 ISO (1999).
- 14 ISO (1999).
- 15 ISO (1999).
- 16 FAS (1998).
- 17 FAS (1998).
- 18 FAS (1998).
- 19 BICC (1997).

## Further reading

- NATO (North Atlantic Treaty Organization). 2007. *AAP-6 (2007): NATO Glossary of Terms and Definitions: Listing Terms of Military Significance and Their Definitions for Use in NATO*. Brussels: NATO Standardization Agency.
- SEESAC (South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons). 2006. *RMD5/G 02.10 (Guideline): Glossary of SALW Terms and Abbreviations*, 4th edn. Belgrade: SEESAC. 20 August.
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- UN (United Nations). 2003. *Protocol on Explosive Remnants of War*. CCW/MSP/2003/2. Meeting of the States Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects. Geneva. 27 November. <[http://www.gichd.org/fileadmin/pdf/CCW/CCW\\_MSP\\_2003\\_2\\_Protocol\\_on\\_ERW\\_E.pdf](http://www.gichd.org/fileadmin/pdf/CCW/CCW_MSP_2003_2_Protocol_on_ERW_E.pdf)>