

AMMUNITION STOCKS. **AMMUNITION STOCKS: PROMOTING SAFE AND SECURE STORAGE AND DISPOSAL** PROMOTING SAFE AND SECURE STORAGE AND DISPOSAL



BRIEFING 18

BITING THE BULLET

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AMMUNITION STOCKS: PROMOTING SAFE AND SECURE STORAGE AND DISPOSAL

FEBRUARY 2005

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Executive Summary

The 2001 United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects (PoA) and other associated Small Arms and Light Weapons (SALW) international commitments and measures are widely understood to encompass not only the weapons but also their ammunition. Unfortunately, progress in implementing the PoA in relation to ammunition remains particularly patchy and inadequate. This is partly because it has too often been considered as a residual category. But control and reduction of ammunition raise their own distinct and challenging issues. This relative neglect is resulting in large numbers of avoidable deaths and injuries.

The Problems

Risk of loss and diversion: Many of the problems relating to ammunition stocks are essentially the same as for weapons stockpiles. Vast quantities of ammunition are legally held by armed forces, police and other state bodies, and also by authorised private organisations and individuals. But legal stocks are vulnerable to loss through capture, theft, corruption or neglect. They are by far the main source of ammunition obtained by criminals, bandits, armed opposition forces and terrorists. Many official storage facilities are inadequately managed or secured. These problems are particularly acute for 'surplus' arms and ammunition, since there is a tendency to devote inadequate resources for secure storage of 'redundant' goods.

Safety hazards: The presence of stores of conventional ammunition and explosives is a hazard to communities that live and work in or near to them. Major explosions can and do occur due to factors such as fire, human error, lightning strikes, instability of propellants or explosives, or sabotage.

Problems of safe disposal and destruction of ammunition: Destruction and other safe disposal of excessive, surplus, insecure or unsafe ammunition stocks is a priority. Safe and effective disposal and destruction of ammunition is a much more challenging technical task than it is for most weapons, due to the presence of explosives, toxic materials or propellants. Thus disposal of SALW ammunition is a distinctive task area, closer to that of other conventional ammunition and explosives than to disposal of small arms and light weapons themselves.

The Scale of Insecure or Surplus Ammunition Stocks

Global stocks of SALW ammunition are several orders of magnitude more numerous than those of small arms and light weapons, which themselves number 600 million worldwide. There is little reliable information about the size of SALW or other conventional ammunition. But many countries have accumulated enormous stocks of ammunition over the years. Over the past decade stocks of surplus ammunition in many countries have increased dramatically as a result of a reduction in the size of the armed forces. Stocks of thousands of tonnes of ammunition that are well beyond their shelf life are quite common. The sheer scale of ammunition stocks means that in many countries the resources and institutions required for safe management, secure storage and responsible disposal are not available.

Safety Challenges

While the potential harm from ammunition stores is readily acknowledged, the scale of the risks they pose does not appear to be widely understood. In fact, the probability that explosions will take place is significant – they occur frequently around the world – and the injuries and damage caused can be very severe. Initial studies show that in almost all post-conflict environments, and in many transitional or developing countries, a substantial physical risk exists to communities from the presence of abandoned, damaged or inappropriately stored and managed stockpiles of ammunition and explosives.

Standards for Safe and Secure Management and Disposal of Ammunition

The principles and practices for high standards of management, security and disposal of ammunition stocks are widely agreed amongst the relatively small community of technical experts around the world. Some regional standards are widely acknowledged to represent best international practice (such as NATO standards) and the regional guidelines such as those established in the OSCE, SADC and by SEESAC are probably technically uncontroversial amongst expert practitioners in all regions.

However, in many regions the scale of the problems of insecure or unsafe ammunition stores are so large that it is unrealistic to expect achievement of best international practices in the foreseeable future. The priority is to develop and universally implement at least minimum ‘emergency’ standards. In relation to disposal of SALW and other conventional ammunition, there are several well-established methods: sale or gift; increased use in training; deep sea dumping, or stockpile destruction. Destruction is generally greatly to be preferred over other options, in terms of cost-effectiveness, security and public confidence. Several well-established methods for destruction exist: in many countries national industrial-scale destruction facilities are probably cost-effective.

International Co-operation Programmes for Secure Storage and Destruction

National state authorities have primary responsibility for ensuring safe and secure management and disposal of the ammunition stocks that they hold or authorise. But many lack the capacity to discharge this responsibility, and international assistance is urgently required. In line with obligations in the PoA, a number of useful international assistance projects and programmes in this area have recently been conducted. But the scale of international assistance is far below the levels required to achieve urgently needed results.

Developing International Action: Priorities and Recommendations

The international community needs urgently to prioritise action to promote safe and secure management and destruction of SALW and other conventional ammunition stocks. The following measures are needed:

Develop specific global norms: In contrast to some other aspects of the global agenda for SALW, there is wide informal agreement amongst technically-expert practitioners across the world on

international best practices and guidelines relating to safe and secure management and disposal of SALW and other conventional ammunition. Specific international norms and standards on these issues need to be officially developed, and adopted at global level. In the context of the PoA on SALW, this should be a major focus for international discussion and negotiation in the lead-up to the 2006 Review Conference. But, the links between SALW and other categories of ammunition need to be properly recognised.

Identifying Priorities: While best international standards and practices need to be encouraged and adopted where possible, the scale and urgency of the problem means that priorities need to be set. Programmes are needed to tackle the most vulnerable stocks: either by urgently enhancing the safety and security of stocks to avoid completely intolerable risks or (preferably) by destroying such stocks. Thus international professional understandings of 'emergency' minimum standards and of prioritisation criteria are also needed.

Developing an adequate international assistance programme: Measures are needed to develop a much larger and more co-ordinated international action programme in this area. In contrast to the present efforts, this needs to be widely supported, well-resourced, more institutionalised, and have mechanisms for information exchange, co-ordination, and emergency action. The UN 2006 Review Conference would be an important opportunity to launch or promote such a programme,

International Information Exchange: Lack of official information relating to ammunition stocks has hampered efforts to tackle the problems. Specific national, regional and international mechanisms for information exchange are required to address this problem. Further research is also required.

Introduction

International commitments and measures to prevent, reduce and combat uncontrolled or illicit small arms and light weapons (SALW) holdings and flows are widely understood to encompass not only the weapons but also their ammunition. This is obviously necessary. Thus the UN Programme of Action to Prevent Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects (PoA) includes many commitments that apply to ammunition as well as to small and light weapons. Progress in implementing the PoA includes many measures concerning ammunition, including: controls on transfers; preventing diversion to illicit trade; marking, record-keeping and tracing; weapons collection; secure storage; and destruction.¹

Unfortunately, progress in implementing the PoA in relation to ammunition remains particularly patchy and inadequate. This is partly because it has too often been considered as a residual category. Negotiations and programmes to control SALW have tended in the first instance to focus on the weapons systems, and have then been deemed to apply, 'as appropriate', also to ammunition. But control and reduction of ammunition raise their own distinct and challenging issues. Without focused attention, and clarification of what is meant by 'appropriate', controls and measures on ammunition have often been neglected or mishandled.

This relative neglect is resulting in large numbers of avoidable deaths and injuries. This is not only because ammunition stocks and flows are important in SALW proliferation and illicit trafficking, and its associated death and insecurity, but also because ammunition includes explosive materials. Thus neglecting or mishandling ammunition stocks causes direct hazards. In January 2002, for example, accidental explosions at an ammunition storage site near Lagos, Nigeria, resulted in the deaths of over 1000 people. Similar casualty levels were reported when ammunition and explosives being transported on a train in North Korea apparently exploded accidentally at Seonggang in February 2004. Smaller scale incidents occur all the time.

This report is thus part of a wider effort by the Biting the Bullet project organisations and their partners to raise awareness and promote effective responses to the risks associated with SALW ammunition. It focuses particularly on the issues of safe and secure storage and disposal of ammunition. The following sections aim to:

- Highlight the character and scale of the problems of storage and disposal of ammunition;
- Clarify the associated hazards and risks;
- Outline key guidelines relating to safe, secure management of ammunition stocks;
- Review options for destruction and disposal of surplus ammunition;
- Identify some priorities and proposals for further international action.

The report addresses ammunition that is an integral part of SALW, including: cartridges (rounds) for small arms; shells and missiles for light weapons; anti-personnel and anti-tank hand grenades; landmines; portable containers for single-action anti-aircraft and anti-tank systems; and associated

explosives. In doing so, it is following UN practice and referring to the understanding of what is included in the category of SALW specified in the Reports of the UN Groups of Governmental Experts on Small Arms of 1997 and 1999.²

However, the key issues and challenges associated with safe secure management and disposal of ammunition are much the same for a much wider range of types of conventional ammunition, including ammunition for heavier conventional arms such as tanks, heavy mortars, heavy artillery and other systems with more than 100 mm calibre. Even if international policy-makers find it necessary to distinguish carefully between SALW ammunition and other ammunition, in practice they are generally under the same national authorities and are often stored together. Practitioners need to deal with safe and secure management and disposal of the full range of conventional ammunition. Thus much of the discussion, particularly the technical discussion, in this report covers this wider range of conventional ammunition types.

Ammunition Stocks: Problems and Risks

Loss and Insecurity of Stocks

Many of the problems relating to ammunition stocks are essentially the same as for stockpiles of small arms and light weapons, as discussed for example in *Biting the Bullet Briefing No 3*.³ Vast quantities of ammunition are legally held by armed forces, police and other state bodies, as well as by authorised private organisations and individuals. In countries emerging from conflict, regional or international peace-support missions also maintain or collect substantial quantities of ammunition alongside collected or confiscated weapons. Arms and ammunition confiscated or captured by the police or armed forces are also stored, pending criminal trial or destruction. But legal stocks are vulnerable to loss through capture, theft, corruption or neglect. They are by far the main source of ammunition obtained by criminals, bandits, armed opposition forces and terrorists.

Many governments like to pretend, even to themselves, that rigorous security is maintained over the stocks of arms and ammunition for which they are responsible. In fact, too often this is not the case. In most countries, theft or loss from official stocks of SALW arms and ammunition appears to be a problem. Many designated official storage facilities are inadequately managed or secured. Inadequate or infrequent stocktaking means that losses sometimes go undetected for years. Moreover, regulations requiring private holders of ammunition to ensure safe storage are often poorly specified or enforced.

These problems are particularly acute for 'surplus' arms and ammunition, which constitute a large proportion of stocks in some regions. In this context, the term 'surplus' refers to all arms and ammunition that are surplus to the requirements of their authorised owner or possessor. Ammunition may be rendered 'surplus' through many developments, such as security force restructuring or re-equipment programmes; or peace agreements and improved security. Ammunition that is collected through Disarmament Demobilisation and Reintegration (DDR) programmes, weapons collection processes and amnesties is also generally 'surplus', as are stocks confiscated from armed groups, bandits or criminals. Surplus stocks are particularly prone to being inadequately safeguarded or irresponsibly dumped or transferred, since there is a tendency to devote inadequate resources to ensure secure storage of goods that are considered redundant.

Unsafe Ammunition Stocks

The presence of stores of conventional ammunition and explosives is a hazard to communities that live and work in or near to them. In this way, stocks of ammunition and explosives present additional risks to stockpiles of SALW themselves. Major explosions can and do occur due to factors such as fire, human error, lightning strikes, instability of propellants or explosives, or sabotage. Risks of such explosions arise at: established storage facilities; ad hoc facilities established during weapons collection, hand-in or confiscation operations; or during transit as ammunition is transported.



Poor ammunition storage © International Alert

Explosions within an ammunition storage area can cause devastating damage and casualties in neighbouring communities. In addition to the direct human, social and economic costs of the explosion, the economic costs of the subsequent explosive ordnance disposal (EOD) clearance process can be very substantial.

Problems of safe disposal and destruction of ammunition

In view of the risks presented by ammunition stocks outlined above, it is important to promote destruction and safe disposal of excessive, surplus, insecure or unsafe ammunition stocks. By permanently disposing of such ammunition, destruction programmes can make important contributions to:

- Preventing and reducing proliferation and illicit trafficking of SALW;
- Public safety and confidence;
- Security and development at all levels – human, community, state, regional and international.

At present there is a tendency amongst diplomats and donors to regard the management and disposal of weapons and ammunition stockpiles as a single task area. However, safe and effective disposal and destruction of ammunition is a much more challenging technical task than it is for pistols, rifles, grenade launchers, mortars or other weapons systems. The presence of explosives, toxic materials or propellants means that disposal or destruction of ammunition are relatively hazardous, and require much more detailed technical and expert response.

Thus disposal of SALW ammunition is a distinctive task area, closer to that of other conventional ammunition and explosives than to disposal of small arms and light weapons themselves.

National Responsibilities and International Norms

Principles and Norms

In a world of legally sovereign states, it is the responsibility of national governments to ensure that the ammunition and weapons stocks held or authorised by State bodies are safely and securely managed, and that the disposal of surplus stocks is safely and responsibly carried out. There are nevertheless some exceptional cases, such as with peace-support missions in post-conflict contexts, where the UN or other authorities become responsible for these issues.

The PoA contains a number of important commitments that are directly relevant here. For example, it requires all states to 'ensure, subject to respective constitutional and legal systems of states, that the armed forces, police or any other body authorised to hold small arms and light weapons establish adequate and detailed standards and procedures relating to the management and security of their stocks of these weapons' (PoA, Paragraph 17). In fact, paragraphs 16 – 19 combine to establish strong obligations not only to ensure adequate and detailed standards for stockpile management and security, but also to responsibly dispose of, and preferably destroy, confiscated or surplus SALW. At a regional level, measures should be taken to encourage implementation of such standards and implement, where appropriate, regional and sub-regional mechanisms in this regard (PoA, Paragraph 29).

The above global norms do not specifically refer to ammunition, but were established on the wide understanding that the term 'small arms and light weapons' referred to the category described in the 1997 and 1999 Reports of the UN Groups of Governmental Experts, and thus included the ammunition used by small arms and light weapons.⁴ Furthermore, in practice numerous states have included information on ammunition in their reporting under the PoA (although so far only rarely specifically in relation to stockpiling issues). Similarly, the scope of the UN Firearms Protocol, under which states have obligations to seize or destroy illicitly manufactured and trafficked firearms, extends explicitly beyond SALW to include other firearms and their ammunition.⁵

Nevertheless, although the PoA (reinforced by the UN Firearms Protocol) thus lays an important global normative basis for safe secure storage and responsible disposal of ammunition, the obligations are quite general and inadequately specified. The general lack of specific reference to ammunition (and associated explosives) is a weakness, rendering the existing global commitments potentially contestable. As noted in the introduction to this report, this reflects the fact that ammunition has in practice often been treated as a secondary concern in global policy-making and norm development.⁶

At the regional level, more substantial or specific norms and guidelines have been developed through some regional organisations. For example, the Economic Community of West African States (ECOWAS) Moratorium (1999) and Organisation of African Unity (OAU) Bamako Declaration (2000) both explicitly cover ammunition as well as other elements of SALW. The 2001 Protocol on

the Control of Firearms, Ammunition and Other Related Materials in the Southern African Development Community (SADC) Region (SADC Protocol) stresses the need to maintain effective control over ammunition (not just that related to SALW), especially during peace processes and in post-conflict situations, and to establish and implement procedures for ensuring that fire arms ammunition is securely stored, destroyed or disposed of in a way that prevents it from entering into illicit circulation. The 1997 Inter-American Convention against the Illicit Manufacture and Trafficking in Firearms, Ammunition, Explosives and Other Related Materials (Organisation of American States Convention) also explicitly incorporates ammunition and explosives within its scope. The Council of the European Union Joint Action of 12 July 2002 explicitly identifies SALW ammunition as a cause for concern and recognises the importance of the safe storage as well as quick and effective destruction of SALW ammunition.⁷

The Organisation for Security and Cooperation in Europe (OSCE) has probably gone the furthest amongst regional organisations in directly addressing ammunition issues, and particularly the safe storage and destruction of ammunition. While the OSCE Document on Small Arms and Light Weapons (2000) does not specifically refer to ammunition, the OSCE Handbook of Best Practice Guides (2004) includes detailed guidelines relating to ammunition in the context of overall SALW management and control.⁸ Moreover, recognition at the 2002 OSCE Ministerial Meeting in Porto of the need to deal with the risks arising from stockpiles of surplus ammunition and explosives was followed up in November 2003 with the adoption of the OSCE Document on Stockpiles of Conventional Ammunition.⁹ The latter document outlines, in detail, commitments relating to surplus assessment, stockpile management and security, transparency about needs and assistance, and procedures for assistance from other OSCE participating states in the storage and destruction of ammunition.

The potential role of those states in a position to do so to assist others in their efforts to destroy surplus weapons (and ammunition) generally is similarly incorporated into the UN framework,¹⁰ and the European Union (EU), under the Joint Action, is also committed to provide financial and technical assistance 'as appropriate' to programmes and projects for countries requesting support for controlling or eliminating surplus small arms and their ammunition.¹¹

International Technical Guidance

The physical destruction of ammunition and explosives is a highly specialist task that can only be efficiently and effectively undertaken by appropriately trained and qualified personnel and detailed guidance on the practicalities involved is to be found in a number of documents and guides. The UN Mine Action Service has developed International Mine Action Standards (IMAS) that cover the destruction of stockpiles of anti-personnel mines, but these standards are generic in outlook and can be effectively applied to cover the stockpile destruction of most ammunition natures.¹² The aim is not to provide 'template solutions', but to inform national authorities of the technical and logistics issues involved in stockpile destruction and to outline advantages and disadvantages of the various available options.

The 2000 Report of the UN Secretary General on Methods of Destruction of Small Arms, Light Weapons, Ammunition and Explosives, in addition to discussing methods of destruction, also

addresses the safe handling, transport and storage of ammunition and explosives.¹³ Subsequently, the UN Department for Disarmament Affairs (DDA) Destruction Handbook: Small Arms, Light Weapons, Ammunition and Explosives is designed to assist planners in the field to choose methods of destruction that are most appropriate to the theatre of operations that they find themselves in. In addition, the OSCE Best Practice Guide on National Procedures for Stockpile Management and Security provides detailed strategic guidance on the physical security of ammunition stocks.¹⁴ Similarly the South Eastern Clearing House for the Control of Small Arms and Light Weapons (SEESAC) has developed Regional Micro-Disarmament Standards and Guidelines (RMDS/G) for South East Europe, which are in fact applicable in every region. These documents mean that national governments and international organisations now have both strategic guidelines and operational procedures available to assist them in the development of safe, efficient and effective secure management and destruction programmes.

The Scale of Ammunition Stocks

The vast overall size of global stocks of ammunition is not widely appreciated. Not surprisingly, since a single automatic rifle used in combat or training might fire thousands of rounds of ammunition over a few hours or days, global stocks of SALW ammunition are several orders of magnitude more numerous than those of small arms and light weapons (of which there are probably over 600 million). For example, some 1.2 billion rounds of small calibre ammunition are reportedly produced annually for the US Army at the Lake City Army Ammunition Plant (Missouri) alone.¹⁵ Losses from individual official storage depots can amount to 100,000 rounds or more, and police seizures of illicit arms regularly amount to thousands or tens of thousands of rounds.

There are many industrial-scale ammunition production facilities in over 75 countries around the world, and craft production of rifle cartridges and such like is also widespread. The shelf life of ammunition depends on types and storage conditions, but on average is around 20 years. After that, the ammunition becomes increasingly unreliable, and in some cases unstable. Virtually all countries have accumulated large stocks of ammunition over the years, and in many countries the scale is enormous. Stocks of hundreds or thousands of tonnes of ammunition that is well beyond its shelf life are not uncommon.

There is little reliable information about the size of SALW or other conventional ammunition stockpiles. In fact, in this respect, the situation is even worse than for SALW weapons. Both SALW and ammunition production and stocks are generally classified as secret for national security or commercial reasons. But information about ammunition stocks can raise greater sensitivity in armed forces, since it may relate to sustainability of military operations.

These arguments for secrecy can be greatly overstated: it should be possible for states to provide aggregate totals without any risk to national security, and indeed to provide substantial detail on all stocks that are not directly held for military operations. In any case, there can be little justification for secrecy about the scale or character of surplus or other stocks requiring disposal (even if details about locations and security arrangements relating to storage facilities may be restricted for good reason). Even so, the lack of systematic information means that the following paragraphs aim only to illustrate the scale of the problems to be tackled.

Over the past decade stocks of surplus ammunition in many countries have increased dramatically as a result of a reduction in the size of the armed forces. For example, the USA and its North Atlantic Treaty Organisation (NATO) allies maintain enormous stocks of ammunition, and have had to manage and dispose of millions of tonnes of surplus stocks since the end of the Cold War. However, in general these North American and European countries maintain relatively high standards of stockpile management and security, and have established industrial scale capacity for the safe destruction of their surplus stocks of ammunition. This is not the case in many other regions. Such ammunition stockpiling is of particular concern across much of other regions, including Africa, Latin America, South Asia, Central Asia, and East and South-East Europe.

There are, for example, huge quantities of excess munitions remaining from the end of the Cold War, mainly in the countries of the former Soviet Union. In Russia 140 million rounds of small arms ammunition are reportedly designated for disposal in 2002-2005, with stocks in excess of 100,000 tonnes of ammunition in Kaliningrad Oblast alone.¹⁶ The Central Asian states, where the Soviet Union located a number of ammunition production and other strategic industries, inherited large quantities of arms and ammunition. Similarly, in Ukraine estimates suggest that up to 2.5 million tonnes of ammunition may be stored in Ukrainian depots that were designed to store far less than that amount,¹⁷ leaving a significant proportion in exposed and unstable conditions in inappropriately equipped storage facilities. The government of Belarus has declared to the OSCE that some 97,000 tonnes of conventional ammunition needs to be disposed of, while Ukraine, Kazakhstan and Uzbekistan have approached NATO for assistance in disposing of some 130,000, 36,000 and 54,000 tonnes respectively. Similarly Albania, Bosnia and Herzegovina and Bulgaria are estimated to have ammunition stockpiles of 180,000, 67,000 and 153,000 tonnes respectively, of which over half is identified as surplus.

In Afghanistan, large stocks of ammunition were more important than guns in sustaining fighting over its prolonged period of war, resulting in what appears to be one of the world's largest stockpiles of ammunition.¹⁸ Further to an initial survey, efforts are now underway under the auspices of the recently-launched UN-backed Afghanistan New Beginnings Programme (ANBP) to collect more than 100,000 tonnes of ammunition at identified sites, which will initially be separated out into good material which can be used by the Afghan army from the reportedly large fraction that is dangerous and unstable.¹⁹ Iraq likewise harbours massive stockpiles, which have been estimated at 650,000 tonnes prior to the US-led coalition occupation.²⁰ 400,000 tonnes have been secured by the US military, leaving some 250,000 tonnes unaccounted for after the widespread looting after the toppling of Saddam Hussein's regime.

Similar illustrations could be found from most other regions. The sheer scale of ammunition stocks, and particularly of surplus ammunition, means not only that in many countries the resources and institutions required for safe management, secure storage and responsible disposal are not available, but also that inadequacies in these areas can result in major problems for international and human security.

Safety Challenges

As noted in an earlier section, ammunition storage facilities pose an additional hazard to the people and communities in and around them: they may explode. While the potential harm from ammunition stores is readily acknowledged, the scale of the risks they pose does not appear to be widely understood. This is partly due to limited media coverage of the hazards of inappropriate stockpile management and also the secrecy that often surrounds the issue. In fact, the probability that explosions will take place is significant – they occur frequently around the world – and the injuries and damage caused can be very severe. This section briefly reviews the risks involved.

It is an unfortunate fact that storage of ammunition and explosives can never be 100% safe in terms of the ‘absence of risk’, and the best that can be achieved is ‘tolerable risk’. The risk is primarily dependent on:

- The physical and chemical condition of the ammunition and explosives;
- The training and education of the personnel responsible for the storage and surveillance of the stockpiles;
- The handling, repair, maintenance and disposal systems in place; and
- The storage infrastructure and environment.



Effects of ammunition storage area explosion,
Lagos, Nigeria, 27 January 2002
© Major A Welch RLC, British Army

Risks can only be kept at tolerable levels if the ammunition management systems and storage infrastructure are to appropriate standards or in accordance with ‘best practices’. A recent desk study by the Geneva International Centre for Humanitarian Demining (GICHD),²¹ supplemented by some further research at SEESAC, has identified a significant number of recent explosive events that have occurred due to inappropriate storage or explosive safety procedures. Table 1 lists some recent explosive events at ammunition storage areas. The research data was obtained from Internet searches and a very limited response to a formal request for information.²² It is no doubt incomplete: there are probably very many more incidents that have yet to be identified. Moreover, appearance on this list should not allocate or imply blame for the explosive event. Due to the patchiness of public information, appearance on this list may be testimony to the transparency and willingness of the State authorities involved to identify and learn lessons: many authorities take a less responsible approach.

This study clearly indicates that in almost all post-conflict environments, and in many transitional or developing countries, a substantial physical risk exists to communities from the presence of abandoned, damaged or inappropriately stored and managed stockpiles of ammunition and explosives.

There are many possible causes of undesirable explosions in ammunition storage areas, but these can usually be grouped as follows:

- Deterioration of the physical or chemical condition of the ammunition and explosives;
- Unsafe storage practices and infrastructure;
- Unsafe handling and transport practices; or
- Deliberate sabotage.

Regrettably, the violent consequences of an ammunition explosion normally make the key witnesses to the event its first victims. Therefore any subsequent investigation tends to concentrate on the practices and regulations in force at the time. Due to the fact that a degree of technical knowledge is required for an effective investigation, the investigating authority is also usually the authority responsible for the ammunition management and storage in the first place. This complicates impartiality, independence of investigation and leads to a reluctance to allocate responsibility. The limited information available to the GICHD study suggests that the causes of the known explosions are as shown in Table 2.²³

Table 1 - Recent Explosive Events in Ammunition Storage Areas



This table contains details of some known or suspected explosive events within ammunition storage areas over the last five years. Appearance on this list should not allocate or imply blame for any of the explosive events referred to in this paper; indeed it may reflect relative transparency and responsible determination by the governments to recognise risks and to learn lessons from these unfortunate events.

DATE	COUNTRY	LOCATION	CASUALTIES		REMARKS / POSSIBLE CAUSE
			FATAL	INJURED	
Mar 97	Albania	15 Locations	56	59	Human Error and Security
21 Feb 98	Russia	Volgograd	0	0	Not Known
19 Jun 98	Russia	Urals	14	17	Lightning
01 Dec 98	Philippines	Tarlac City	0	0	Fire
29 Aug 99	Cambodia	Ream	0	0	Fire
09 Oct 99	Afghanistan	Mazar-e-Sharif	7	12	Handling
15 Apr 00	Congo	Kinshaha	40	216	Handling
28 Apr 00	India	Bharatpur	5	7	Fire
03 Mar 01	Guinea	Conakry	10	NK	Not Known
29 Apr 01	India	Panthankot	0	0	Not Known
20 May 01	Yemen	Al-Bayda	14	50	Not Known

DATE	COUNTRY	LOCATION	CASUALTIES		REMARKS / POSSIBLE CAUSE
			FATAL	INJURED	
24 May 01	India	Mirdhwal	1	5	Fire
11 Jul 01	Thailand	Pakchong	2	70	Handling
21 Jul 01	Russia	Buryatia	3	17	Fire?
08 Aug 01	Kazakstan	Almaty	NK	NK	Not Known
25 Oct 01	Thailand	Korat	17	60	Handling
05 Jan 02	Sierra Leone	Tongo	5	13	Handling
27 Jan 02	Nigeria	Lagos	1000+	NK	Fire
08 Mar 02	Sri Lanka	Kankesanturai	0	0	Ammunition Stability
27 Jun 02	Afghanistan	Spin Boldak	32	70	Sabotage?
08 Jul 02	Afghanistan	Spin Boldak	0	2	Not Known
16 Oct 02	Russia	Vladivostok	0	26	Demolitions
21 Nov 02	Ecuador	Riobamba	6	200	Handling
24 Jan 03	Peru	North Peru	7	95	Not Known
26 Apr 03	Iraq	Zafrania	10	51	Sabotage
06 May 03	Vietnam	TBC	1	31	Not Known
30 Jun 03	Iraq	Fallujah	5	4	Handling
11 Oct 03	Ukraine	Artyomovsky	NK	NK	Fire
Feb 04	North Korea	Seonggang	1000?	NK	Not Known
Feb 04	Paraguay	Asuncion	0	0	Fire
06 May 04	Ukraine	Novobogdanovka	5	10	Fire

Table 2: Possible Causes of Recent Ammunition Storage Area Explosions



CAUSE	POST-CONFLICT	NON-CONFLICT	TOTAL	%
Auto-ignition of Propellant*		12	12	18.2
Cause Not Known or Not Confirmed	11	4	15	22.7
Fire [†]	1	5	6	9.1
High Ambient Temperature	1	1	2	3.0
Human Error / Security	16	1	17	25.8
Lightning Strike		3	3	4.5
Movement / Handling	4	2	6	7.6
Shelf Life	1	2	3	4.5
Ammunition Instability		1	1	1.5
Sabotage	2		2	3.0

* The high incidence of auto-ignition of propellant is because a major source document for the GICHD study was an evaluation of the risks of auto-ignition. It is a major risk where ammunition surveillance is limited or non-existent, but a minor risk where appropriate ammunition surveillance practices take place. There is technical disagreement among various organisations as to how accurate this particular component may be, but until there is evidence to the contrary it is not possible to resolve this issue.

[†]The cause of fire is not identified in the data available. A percentage of this figure will relate to external fires resulting in explosions, such as Nigeria 2002, but a more significant element may be due to fires accidentally started during inappropriate activities within ammunition storage areas.

The causes are as allocated in official reports or confirmed press reports. They may not necessarily be 100% accurate, as the study team could not verify the efficiency of the incident investigations.

It seems plausible that the four major causes identified in the GICHD Study apply for most ammunition storage area explosions. Thus it is clear that the risk of undesirable explosions can be significantly reduced by training, the development of appropriate ammunition management systems and the short-term prioritisation of stocks for destruction and their subsequent destruction on a priority basis. Unfortunately, for example, during conflict, in post-conflict environments or during force restructuring as part of security sector reform, the specialist technical personnel that should be responsible for ammunition management may well have become casualties or left the armed forces; they are very difficult to replace without a comprehensive and effective training programme.

The damage, casualties and impact on communities of an explosion within an ammunition storage area can be devastating, and the economic costs of the subsequent explosive ordnance disposal (EOD) clearance can be far greater than the prior implementation of safer procedures, limited infrastructure development and stockpile disposal would have been.

There are also economic costs in terms of the capital value of the stockpile itself; although this is really a factor for national consideration, the international donor community should be interested, as national finance for replacement stocks could potentially have been committed to social and economic development. The ammunition explosion in Bharatpur, India on 28 April 2000 resulted in an estimated ammunition stock loss of US\$90 million. The explosion was the result of a fire at the ammunition depot, which was exacerbated by excessive vegetation. The grass had not been cut for two years as a cost-saving measure.

Security Concerns and Destruction Priorities

While it is important to promote and support best practices in ammunition storage and disposal of all ammunition holdings, in the context of large quantities of insecure stocks it is important to establish priorities. These priorities need to be guided by a combination of safety and security concerns. Factors affecting the safety of stocks were outlined above. In relation to security, one key issue is the risks posed if ammunition is obtained by dangerous groups including terrorists, rebel groups, warlords, or criminals.

Arguably, every type of ammunition or explosive could be misused by such groups, but from a practical perspective certain types must be considered to be much more 'desirable' and 'useful' to them than others. The destruction of surplus stocks of these particular ammunition types should therefore be a priority. In this context, it is a particular priority to secure or destroy surplus stocks of: MAPADS, detonators; bulk explosives; anti-tank mines; anti-personnel mines; small arms ammunition; high explosive hand/rifle grenades; anti-tank missiles; and anti-tank rockets. Ammunition for artillery, mortars and tanks also poses major risks, though perhaps typically less sought after by rebels and terrorists. Pyrotechnics; carrier/smoke ammunition for artillery and mortars, and such like generally present lesser security risks in this context. We return to issues of prioritisation later.

Promoting Safe and Secure Ammunition Stockpile Management

Detailed global guidelines on secure management of ammunition stocks (or SALW more generally) have yet to be developed. Nevertheless, good national standards have been established in several countries. In this area, NATO 'AASPT-2' standards are generally regarded by technical specialists to provide comprehensive principles and guidelines for safe storage and transport of ammunition, and to reflect 'best international practice'.²⁴ Similarly, detailed strategic guidance on the physical security of ammunition stockpiles is, for example, well documented in the OSCE Best Practice Guide on National Procedures for Stockpile Management and Security. These could usefully be taken as a basis for good practice everywhere, and need to be applied to ensure adequate safety and security from loss through theft, corrupt sale, neglect or capture.

In view of the particular risks of explosive events at ammunition stores, it is useful to highlight some key points relating to risks of explosive events at ammunition stores.

Ammunition and explosives may deteriorate or become damaged unless they are correctly stored, handled and transported, with the resultant effect that they may not only fail to function as designed but also become dangerous in storage, handling, transport and use. Stockpile management in accordance with best practices is an important component in ensuring that a national authority fulfills its 'Duty of Care' for ensuring that an ammunition stockpile is correctly looked after.

The fact that 'shelf-life' has expired is often used by States to justify use of donor resources for stockpile destruction. This is technically inaccurate. The concept of shelf-life' (i.e. the length of time an item of ammunition may be stored before the performance of that ammunition degrades) is not a reliable indicator of the safety and stability of ammunition in storage. The safety and stability of ammunition and explosives can only be established by a comprehensive 'ammunition surveillance' system involving both physical inspection by trained personnel and chemical analysis. Through effective ammunition surveillance the environment can, if appropriate, be managed to extend shelf life.

Experience has shown that it is very unlikely that many states can ever achieve the 'NATO standards' of ammunition storage infrastructure without substantial capital investment. According to Ukrainian estimates, for example, ensuring the reliable security and protection of just one ammunition storage facility would require between 500,000 and two million Euros. Donors have to date shown a reluctance to fund such projects as, although they improve safety, they can also improve the operational capacity of the armed forces. Similarly, the capacity development of individuals to the level of an Ammunition Technician is also expensive, and when trained these individuals are highly marketable within the international community. Yet a balance must be struck if standards of explosive safety are to be improved in many states. Relatively limited donor investment in tailored infrastructure and procedural

development and staff training can make a significant impact on risk reduction and this should be the initial aim, rather than trying to achieve 'NATO standards' of storage or ammunition management.

There is a need to develop international guidelines to facilitate and target such investment, although in each case such investment should only be advised by competent and qualified personnel. Otherwise investments risk being inefficient or worse. Thus, international understandings of appropriate 'competency standards' are needed to assess an individual's suitability for a particular expert technical task. These should assess an individual's competency according to a balanced combination of their training, education and operational experience (and not years of experience alone, which do not always imply competence).

A range of factors need to be taken into account when assessing risks posed by ammunition stockpiles in relation to possible explosion and pollution as well as to losses through theft, corruption or neglect. These are well summarised, for example, in the OSCE Document on Stockpiles of Convention Ammunition.²⁵ They include:

- Characteristics for stockpile locations and the infrastructure of storage sites;
- Robustness and capacity of stockpile buildings;
- Condition of the ammunition, explosive material and detonating devices;
- Access control measures, lock-and-key, and other physical security measures;
- Inventory management and accounting control procedures;
- Procedures for immediate reporting, investigation and recovery of any loss;
- Vetting and training of staff in effective stockpile management and security procedures;
- Sanctions to be applied in the event of loss or theft;
- Systems for application of supervisory and auditing responsibilities;
- Preparedness to provide adequate protection in emergency situations;
- Procedures to maximise the security of conventional ammunition, explosive material and detonating devices in transport.

Risks can only be kept at tolerable levels if inadequacies relating to any of these factors are rapidly and effectively addressed. Such remedial measures require resources. Where these are not available, the responsible authorities should seriously consider disposing of the relevant stocks. Where these stocks are, on review, surplus to requirements, the PoA as well as straightforward principles of responsibility imply a strong obligation to dispose of the stocks, preferably by destruction.

Disposal Options

There were traditionally five methods of disposal of surplus ammunition and explosives, which are outlined below. However, as emphasised by the PoA and in other international and regional agreements, the preferred and most effective option is the physical destruction of ammunition and explosives.

Sale or Gift

The sale or gifting of ammunition is the most cost-effective means of disposal, but there are factors that need to be considered. Any sale or gift should comply with international export control and transfer best practices. Any end user wishing to acquire second-hand ammunition that is perhaps degraded or coming to end of its shelf life should be subject to the deepest scrutiny as to why they wish to purchase such ammunition and what safeguards they have to prevent diversion or misuse. Moreover, in order to comply with international transport regulations and guidelines the ammunition should be physically inspected to ensure that it is safe to export or transfer beyond national borders. This will mean additional costs. In general, this option is undesirable and should be discouraged. In effect, it just transfers the problem to somewhere else, where the risks may be at least as great.

Increased Use at Training

This can be a desirable option, but the following factors should be considered. Care needs to be taken to ensure that any significant increase in training does not undermine security and confidence amongst neighbouring states. Moreover, only limited stocks can be disposed of in this manner, in view of the costs of training, and time taken. When the ammunition is used it will create additional wear on equipment (such as gun barrels, vehicle automotive systems etc). This will inevitably reduce the life of the parent equipment and will result in additional maintenance costs. Therefore these additional costs should be balanced against the value of the training obtained from firing surplus ammunition stocks. It is thus unrealistic as a means of destroying a substantial proportion of a large surplus stockpile.

Deep Sea Dumping

The dumping of ammunition and explosives at sea is subject to international agreements as it is considered to be either hazardous or industrial waste.²⁶ Even where these do not apply, it remains important to ensure that environmental risks are low. In some countries or regions, public concern, and environmental pressure groups, make this potentially a politically costly option even where technical studies indicate low environmental impact. Moreover, these factors reduce the prospects of receiving international donor assistance to dispose of surplus ammunition and explosives in this manner.

Stockpile Destruction

The preferred and often most realistic and cost-effective, disposal method is that of destruction. Stockpile destruction can be defined as ‘the process of final conversion of ammunition and

explosives into an inert state that can no longer function as designed'.²⁷ Effective management of stockpile destruction planning and operational activities aims to physically destroy ammunition and explosives in a safe, cost-effective and efficient manner.

The physical destruction techniques available range from the relatively simple open burning and open detonation techniques to highly sophisticated industrial processes. The detailed arguments for and against each process are outside the scope of this paper. The most appropriate destruction technique will depend primarily on: the resources available; the physical condition of the stockpile; the quantity of ammunition and explosives in terms of economies of scale; national capacities; and national explosive safety and environmental legislation.²⁸ Of these, the most influential factors have usually proven to be donor resources available and the economies of scale. In general, the greater the amounts of ammunition to be destroyed, the larger are the economies of scale and therefore the wider range of affordable and efficient technologies.

Moreover, for large scale or on-going destruction programmes, it becomes more efficient to develop an industrial demilitarisation facility for the purpose. This requires time and substantial resources, including donor resources for many developing countries. But this should not prevent the initial steps been taken to support the development of such facilities. In many regions this sort of capacity has to be developed from the semi-dormant and under-resourced State ammunition production facilities, which require infrastructure investment, staff training and demilitarisation equipment procurement. Meanwhile destruction can proceed on a smaller scale, to destroy particularly insecure or potentially unstable stocks as quickly as possible.

Regional Demilitarisation Facilities

A measure to enable large-scale ammunition (or SALW) destruction that is often proposed at international conferences is to develop a regional demilitarisation facility. Whilst this can appear to be an attractive concept for many important stakeholders, the political and technical challenges can in practice be very great. While governments may agree in principle to the notion of a regional facility, in practice several states typically insist that the facility is located in their own country, leading to long delays. Moreover, since donors are unlikely to pay full costs, complex burden-sharing issues are raised amongst recipient countries.



The risks and costs of transportation need to be thoroughly taken into account, which may become complex for regional facilities. For example, the most efficient means of transporting ammunition and explosives is usually by rail. Therefore the effectiveness of the rail infrastructure and distance to travel will have a significant impact as to any regional demilitarisation facility location. For example, in South Eastern Europe, Romania or Serbia would be preferred choices according to transportation requirements, while Russia or Ukraine would similarly be prioritised for location of a Central or Eastern European regional facility. Their neighbours may not rapidly agree this.

Overall, in these and other regions, the scale of stocks of ammunition and explosive materials in each country probably mean that there are sufficient national economies of scale to justify establishing and maintaining a national demilitarisation capacity.

International Co-operation Programmes

Mobilising International Support

As noted above, safe and secure storage of ammunition stocks, and responsible disposal or destruction of surplus, is a national responsibility. Nevertheless, the PoA states that 'Upon request, states and appropriate international or regional organisations in a position do to so should provide assistance in the destruction or other responsible disposal of surplus stocks.' (PoA, Section III, paragraph 14). In practice the scale and characteristics of the problem, and the vulnerability or lack of technical expertise and resources in many countries, imply that major international assistance programmes are required to address the problems discussed in this briefing.

NATO PfP Trust Fund 	UNDP Thematic Trust Fund 
<p>NATO's PfP Trust Fund was established to support the Ottawa Convention process in September 2000 to assist Partnership for Peace (PfP) countries with the safe destruction of their anti-personnel landmines (APM). While the original focus was to provide financial support and technical assistance purely for the safe destruction of APMs, it was agreed to extend the scope to include the destruction of small arms, light weapons and stockpiled munitions. The Trust Fund is a mechanism to partner potential donors and beneficiary countries for specific projects. It is administered by the Financial Controller at NATO HQ, and donations are made to it for specific projects approved by the NATO Political-Military Steering Committee.</p>	<p>The UNDP Thematic trust Fund for Crisis Prevention and Recovery is administered by the UNDP Bureau for Crisis Prevention and Recovery. It covers seven service lines, of which the two for Mine Action and Small Arms Demobilisation are reliant for anti-personnel mine or ammunition destruction. Financial resources are allocated by donors directly to UNDP, some with thematic or geographical caveats attached, and the resources are then allocated to appropriate projects to support UNDP activities in the relevant area. This enables a flexible and timely response to evolving issues, and provides a degree of stability to ongoing projects, which are not as dependant on annual donor funding cycles.</p>

The UN Secretary General reported in 1999 that the UN, with donor assistance, had supported a number of post-conflict activities, including the safe storage, disposal and destruction of weapons, but that – as experience in Albania, Central America and elsewhere shows – "the number remains small compared with apparent requirements".²⁹ Despite growing political awareness of the issue, to date the international response has been limited in terms of financial support to surplus ammunition and explosive stockpile destruction as a global issue. There has been some progress, as summarised below, but in much of the world a huge disparity continues between needs and response.

To date resources to support the security, demilitarisation and destruction of ammunition in developing, transitional and post-conflict countries have largely been mobilised through the following international contexts:

- Promoting destruction of anti-personnel mines, to support compliance with Article 7 to the Mine Ban Treaty (MBT);
- Responding to national requests as part of Confidence and Security Building Measure (CSBM) initiatives such as NATO Partnership for Peace or the OSCE Document on Conventional Ammunition;
- Destruction activities to support post-conflict stabilisation and security, mostly under the auspices of Demobilization, Disarmament and Reintegration (DDR) activities;
- Destruction activities to support SALW control interventions, focusing on smaller calibre SALW ammunition, in line with the PoA and associated regional agreements;
- Destruction activities to support armed forces restructuring as part of wider Security Sector Reform (SSR);
- Destruction of Man Portable Air Defence Systems (MANPADS), primarily by the USA as part of its counter-proliferation programme.

Few projects or priorities have so far been developed that have primarily been justified in terms of public safety, human security or development, although these are included in the overall aims of the above programmes and agreements. Additionally, in some commercial cases, ammunition has been selected purely for ease of destruction or the potential return on material recovery.³⁰

The issue is still not a priority for many donors, and in fact the numbers of major donors involved remains very limited (to about eleven). Donor awareness and mandate restrictions remain, unfortunately, a major obstacle. The most extensive engagements at the operational level have probably been through the UNDP Small Arms Demobilization Unit (SADU) and the NATO Partnership for Peace (PfP) Trust Fund.³¹ The other two major international programmes have taken place in Europe through the Stability Pact and OSCE, primarily at the political level.³²

Overview of Some Ammunition-Specific Support Programmes

A range of specific assistance programmes have nevertheless been developed and/or implemented. The following examples are intended as illustrative and not comprehensive.

Donors, perhaps not surprisingly, have a tendency to provide assistance to those states located within their own geographic region. States reports under the PoA indicate that, of those countries giving assistance toward weapons collection and destruction generally, European donor countries report giving support primarily in South-Eastern Europe, while Association of Southeast Asian Nations (ASEAN) and Oceania countries are providing assistance in countries geographically closer to them.³³ This trend is generally born out in the activities of various regional organisations and bilateral actors outlined below. However, there are several exceptions to this. For example, The USA reports providing assistance to destroy over 44 million rounds of ammunition in a range of countries including: Albania, Angola, Bulgaria, Serbia and Montenegro, Guinea, Lesotho, Mozambique, the Philippines, Romania and Senegal, with other projects under development.³⁴

In the four years since it was established, a number of assistance programmes aimed at destroying stockpiled landmines and munitions have been carried out under the NATO PfP Trust Fund. Others are in the pipeline. The first of these aimed to assist Albania in the destruction of its stockpile of 1.6 million anti-personnel landmines (APL). The project also aimed to help establish the infrastructure required to undertake industrial-scale demilitarisation of Albania's huge stockpiles of surplus munitions. This was to be achieved through training and the development of procedures, facilities and equipment. In December 2002 Canada helped to launch a further initiative to destroy ammunition in Albania. Building on the successful completion of the Albanian project, on 1 October 2002 Georgia signed a memorandum with NATO opening the way for a joint project under which the safe disposal of missile stockpiles is assisted. The cost of the project is estimated at EUR 0.8 million (the Georgian authorities will contribute in kind) with financial support provided by Luxembourg, the lead nation for the project, and other NATO and partner countries including Canada, Denmark, Netherlands, Norway, Sweden, Turkey and United Kingdom. A project for the elimination of 700 tonnes of surplus munitions and rocket fuel has also been completed in Moldova. In Ukraine, further to a programme for the destruction of a substantial proportion of the country's more than 7 million APL, a second PfP Trust Fund project to destroy 130,000 tonnes of conventional munitions is also under initial development, although not yet funded.

A number of operations involving the destruction of ammunition have taken place in South-Eastern Europe, sponsored by donors including NATO, SEESAC (supported by UNDP under its Thematic Trust Fund for Crisis Prevention and Recovery) and the Stability Pact. In Serbia, for example, significant technical and financial support has been provided for the physical destruction of weapons and ammunition. In 2001, the role of NATO's Task Force Harvest Mission in Macedonia included the collection and destruction of ammunition. Ammunition was destroyed in May 2003 in Serbia and Montenegro and further support, in the form of training and equipment has been provided to both the Serbian and Montenegrin Interior Ministry technical personnel in order to improve the efficiency of future ammunition destruction problems. Bosnia and Herzegovina has also received assistance under the Stabilisation Force in Bosnia and Herzegovina SFOR's operation Armadillo for the destruction of the large quantities of unserviceable and obsolete ammunition. Training of soldiers to dispose of their own ammunition was an element of this operation. A UNDP/SEESAC project in Bulgaria has also seen the destruction of surplus ammunition – deemed important given the clear market value of the associated weapons concerned.

While the OSCE involvement in addressing the risks of ammunition management stockpiles has to date been mainly of a standard-setting nature, under the Document on Stockpiles of Conventional Ammunition it has also received and is responding to requests for assistance from Ukraine (December 2003), Belarus (March 2004) and the Russian Federation concerning Kaliningrad Oblast (May 2004). At the request of the Government of Tajikistan, a group of OSCE experts have also conducted a study focusing on SALW and ammunition no longer in use that constitute a great risk for security with a view to ensuring their safe and secure storage and (eventual) destruction. The OSCE Mission in Georgia has been carrying out a project to recycle and destroy ammunition and bombs on former military bases. Since 1999, the Moldova Mission has also been managing a project for the coordination of assistance in the withdrawal or destruction of Russian arms and ammunition from the Transdniestria region, involving the removal so far of 21,000 tonnes of ammunition.

The EU has also addressed stockpile management and destruction largely in terms of commonly coordinated assistance to third countries. While several SALW projects have been co-financed by the EU in various parts of the world, including for example the EU small arms programme in Cambodia (which included a range of programmes relating to stockpile management and destruction), the EU has to date declared only one ammunition destruction project. In 2001, combined EU and Canadian co-operation with the Government of Albania led to an initiative to destroy excess stocks of ammunition. NATO Maintenance and Supply Agency (NAMSA) implements this ongoing project.

Several ammunition destruction projects have been conducted in sub-Saharan Africa through: UNDP Country Office projects; Operation Rachel cache destruction programmes lead by South Africa; and also in Mali, Sierra Leone, Liberia and other post-conflict DDR and SALW weapons collection programmes. In Latin America and the Caribbean, some co-operation between organisations in the region, as well as with other regional and international organisations, has taken place. For example, in late 2003, the Government of the Republic of Paraguay carried out the destruction of 15 tonnes of ammunition and explosives that had been stockpiled in the government's War Material Directorate. The destruction was carried out with the support of numerous organisations,³⁵ and with the co-operation of a number of government departments – including the Ministries of Foreign Affairs, Defence and Education.³⁶ UNDP has also been active elsewhere in the region, where tens of thousands of rounds of ammunition have been destroyed in Argentina, Brazil, Haiti, and Honduras.

In the Asia-Pacific region, Australia and New Zealand have both contributed to improving the storage and management of armouries, to help address the problem of leakage of weapons and ammunition from stockpiles. The Australian Defence Force, for example, has provided assistance to Pacific Island Countries in strengthening armoury security, including training in stockpile management practices and advice how to improve the physical security of a number of armouries. For example, in the Solomon Islands where there were no proper measures in place for the storage and management of ammunition and explosives, the Australia-funded Law and Justice programme has reportedly resulted in significant progress in terms of accounting procedures, physical security and destruction of munitions.³⁷

Conclusions: Priorities and Recommendations for Developing International Action

Prioritising Safe and Secure Ammunition Storage and Disposal

International norms and programmes are presently too weak to adequately address the complex risks presented by ammunition stocks. As outlined in this briefing, there are vast stocks of ammunition across the world which are unsafely or insecurely managed and stored, implying an urgent need to promote and support safe and secure storage and major programmes for destruction or other safe disposal. Although the PoA and other regional and international agreements and arrangements do provide important basic norms and frameworks for international assistance, as mentioned above, the issue has received too little international attention.

This is true for SALW ammunition, but also for the wider category of conventional munitions ammunition, which generally present similar risks and challenges. Amongst the global SALW policy community, ammunition issues have long been recognised to be important, but in practice have too often been treated as subsidiary to the SALW systems.

In this context, the recent decision of the UN General Assembly to include "Problems arising from the accumulation of conventional ammunition stockpiles in surplus" in the provisional agenda of its sixtieth session is a welcome indication of the increasing importance of this issue on the UN agenda.³⁸ Similarly, the development of regional programmes and initiatives, such as in the OSCE, has been welcome.

Developing Specific Global Norms

Nevertheless, it is a priority that specific norms and programmes to promote safe and secure storage and disposal of conventional ammunition are developed, strengthened and implemented, alongside similar measures relating to other aspects of conventional ammunition (such as marking and tracing and transfer controls). In the context of the PoA on SALW, this should be a major focus for international discussion and negotiation in the lead-up to the 2006 Review Conference.

While ammunition concerns should in general continue to be treated as an integral part of the overall programme to prevent reduce and combat SALW proliferation, illicit trafficking and misuse, the distinctive risks and challenges of ensuring safe and secure storage and disposal of ammunition need to be recognised, leading to distinct normative and programmatic measures.

Moreover, the links between SALW and other categories of ammunition and explosive ordnance need to be properly recognised, in relation to stockpile safety, security and disposal. Norms should be consistent in these issues areas across all types of conventional ammunition, and as far as possible programmes should be designed to enable integrated programmes. This will be a

diplomatically complex task, because of the distinctive norms and policy agendas that have developed around SALW compared with other conventional arms. Nevertheless it is necessary, and in practice natural, in implementation programmes.

In contrast to some other aspects of the global agenda for SALW and other categories of conventional arms, there is wide agreement amongst technically expert practitioners across the world on international best practices and guidelines relating to safe and secure management and disposal of ammunition. These are reflected in many national and regional documents, including the UNDP/SEESAC, OSCE and NATO guidelines discussed in earlier sections of this report. However, such best practice guidelines have not yet been specifically formulated or officially endorsed at a global level. It is important to do this, to provide a clear framework of recognised global standards. The 2006 Review Conference is an important target date for establishing such standards in relation to SALW ammunition.

Priorities for Action

The massive scale global stocks of surplus ammunition that currently exist – much of these stored inappropriately and vulnerable to loss or detonation – means that priorities need to be set. It is unrealistic to aim rapidly to achieve best international standards of stockpile management and security in many countries, where risks and problems are extreme. Alongside long-term efforts to promote and establish best practices, programmes are needed to tackle the most vulnerable stocks: either by urgently enhancing the safety and security of stocks to avoid completely intolerable risks or (preferably) by destroying such stocks.

In this context, it is also important to develop and disseminate international professional understandings of ‘emergency’ minimum standards and of criteria for prioritising national and international actions. In relation to SALW, national and international programmes to support safe and secure stockpile management and destruction of SALW need to be reviewed and designed to ensure that priorities are established according to safety and security priorities rather than programme manager or donor convenience. Relevant criteria should include:

- security from loss;
- risks if lost to criminals, armed factions or terrorists;
- risks to safety of communities near stocks;
- the interest and capacity of the national institutions to improve safety, security and implement destruction.

Such prioritisation is likely in many countries to imply a shift in the balance of attention and resources between SALW arms and ammunition stocks. Similarly, stockpile security or destruction programmes should allow for flexibility across all types of conventional ammunition, not simply SALW ammunition.

Strengthening International Co-operation Programmes

Ensuring safe and secure storage or disposal of SALW and other conventional ammunition (as well as weapons) is primarily the responsibility of the State that holds or authorises them. However, it is clear

that many governments lack the technical, financial or institutional resources required to meet these responsibilities. The PoA states that States and appropriate international or regional organisations in a position to do so should provide assistance in the destruction or other responsible disposal of surplus stocks, and also encourages support for secure stockpile management. Moreover, in post-conflict countries, the UN or other international actors may temporarily have direct responsibility for ensuring safe storage and disposal of arms and ammunition stocks. Such international co-operation and assistance is clearly vital if the present risks and problems are to be addressed.

As discussed in this briefing, there have been numerous valuable and important donor assistance programmes relating to safe and secure storage and destruction of conventional ammunition, and also a number of post-conflict storage and destruction programmes associated with DDR and weapons collection activities. However, the scale of this assistance is orders of magnitude too small to make a real impact on the urgent problems that currently exist. Moreover, the donor base of support is absurdly narrow. Only a small number of national or multilateral assistance agencies are even active in this area, and for most of these work in this area remains marginal relative to their other assistance programmes.

Measures are needed to develop a much larger and more co-ordinated international action programme to promote safety and security of conventional arms and ammunition stocks, designed to ensure that ammunition issues have appropriate priority and also to avoid undue restriction to certain categories of conventional ammunition. This requires the development and launch of an international action programme with some of the characteristics of the international demining programmes. Thus the required international action programme should have:

- Wide international support (amongst all stakeholders, including all relevant donor and assistance agencies);
- Substantial resources;
- Measures to develop, accredit and deploy an international resource of appropriately trained technical experts;
- Programmes to establish appropriate facilities for destruction and safe storage;
- Mechanism for maintaining, disseminating and developing relevant good practice guidelines;
- Mechanisms for information exchange, co-ordination and review;
- Mechanisms to enable emergency action, for example in circumstances of high risk of looting or loss of control by national authorities of arms and ammunition stocks.

The UN 2006 Review Conference would be an important opportunity to launch or promote such a programme, particularly as it relates to the SALW dimension of this problem. But it should be designed to have the flexibility and scope to go beyond the strict confines of SALW categories, particularly in relation to ammunition.

International Information Exchange

Lack of official information relating to ammunition stocks has not only limited public and international awareness of the issues addressed in this report, but also hampered efforts to tackle them. While

some secrecy is appropriate, to maintain security of storage facilities and other stocks as well as for reasons of national security and commercial confidentiality, it is certainly excessive at present. Specific national, regional and international mechanisms for information exchange are required to address this problem, since experience shows that vague requests for 'appropriate' information are likely to have very limited effect.

These information exchange mechanisms should be designed to meet specific and legitimate needs. These include information on:

- Existing national standards, practice and resources, to facilitate international professional co-operation and lesson-learning as well as national oversight and control;
- Overall national stocks of ammunition (as well as SALW arms), particularly 'surplus' stocks, to raise awareness of the characteristics and scale of possible issues and problems;
- Plans for destruction and other safe disposal;
- Needs for assistance, to help to raise awareness and understanding of such needs;
- Capacity to provide assistance;
- Existing co-operation and assistance programmes;
- Progress in destruction and other associated programmes.

Basic information on the above issues should be made widely available, and preferably public to enhance wide awareness and understanding. Mechanisms for more detailed confidential information exchange amongst co-operating states and agencies will also be needed. Existing regional arrangements, such as those existing in South East Europe or the OSCE, provide useful if limited experience to facilitate the development of such information exchange on a global level.

Further Research and Understanding

Enough is already known on issues relating to the safe and secure storage and disposal of SALW and other conventional ammunition to enable action. Nevertheless, knowledge of the international characteristics and scale of the problems, risks and possible solutions remains relatively limited, and research on these should be supported and encouraged. Public information and analysis is a priority alongside improved understanding, not least to promote better lesson-learning, advice and public support relating to international action programmes.

In conclusion, there is urgent need for strengthening international awareness and action to promote safe and secure management and destruction of SALW and other conventional ammunition. After several years of experience with implementing the PoA and associated measures, the time is ripe for new initiatives.

Annex: Some Relevant International Guidelines

EU, The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

<http://www.unece.org/trans/danger/publi/adr/intro.htm>

GICHD, Explosive Remnants of War (ERW), Undesired Explosive Events in Ammunition Storage Areas, ISBN 2-88487-006-7, Geneva, November 2002.

Geneva International Centre for Humanitarian Demining, (www.gichd.ch)

GICHD, International Mine Action Standards (IMAS) 11.10 (Edition 2), Stockpile Destruction, Geneva, 2002.

NATO, Allied Ammunition Storage and Transportation Publications 2 (AASTP 2) - Safety Principles for the Storage and Transport of Military Ammunition and Explosives, Brussels.

North Atlantic Treaty Organization, (www.nato.int)

OSCE, OSCE Document on Stockpiles of Conventional Ammunition, FSC.DOC/1/03, Vienna, 19 November 2003.

Organization for Security and Co-operation in Europe, (www.osce.org)

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South Eastern Europe Clearinghouse for the Control of SALW, (www.seesac.org)

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United Nations, Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects, UN Document A/CONF.192/15, New York, July 2001.

United Nations, Recommendations on the Transport of Dangerous Goods Model Regulations (Eleventh Revised Edition).

<http://www.unece.org/trans/danger/publi/unrec/pubdet.htm>

Endnotes

- ¹ Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects, UN Document A/Conf.192/15, New York, July 2001.
- ² Report of the UN Panel of Governmental Experts on Small Arms, UN Document A/52/298, August, 1997; Report of the UN Group of Governmental Experts on Small Arms, UN Document A/54/258, 19 August, 1999.
- ³ O. Greene, *Stockpile Security and Reducing Surplus Weapons*, Biting the Bullet Briefing No 3, BTB Project, London, 2001.
- ⁴ See Introduction and endnote 2 above.
- ⁵ Protocol against the Illicit Manufacturing of and Trafficking in Firearms, Their Parts and Components and Ammunition, Supplementing the UN Convention against Transnational Organised Crime, Annex to UN GA Resolution A/Res/55/255, 8 June 2001. See for example Article 6.
- ⁶ This is not to suggest that it has been entirely neglected. On the contrary, many experts, governments, regional organisations and NGOs have emphasised the significance of ammunition issues, and the UN established a group of experts to study the problem of ammunition and explosives in all its aspects, which reported in 1999 (UN Document A/54/155, June 1999). But after an interregnum of some five years, it is only recently that attention has begun to refocus on this issue in global forums. Researchers are also embarking on studies to collate and assess disparate available information. In this context, in *Small Arms Survey 2005* Stephanie Pezard has a good overview chapter on SALW ammunition (*Small Arms Survey 2005*, Oxford University Press, Oxford, 2005, forthcoming).
- ⁷ Council Joint Action of 12 July 2002 on the European Union's contribution to combating the destabilising accumulation and spread of small arms and light weapons and repealing Joint Action 1999/34/CFSP, Official Journal of the European Communities, 2002/589/CFSP, Preamble 1 and 2, Article 4.
- ⁸ *OSCE Handbook of Best Practice Guides*, OSCE, Vienna, 2004. <http://www.osce.org/fsc/documents/salw/>.
- ⁹ Adopted at the 407th Plenary Meeting of the OSCE Forum for Security Co-operation, FSC.DOC/1/03, Vienna, 19 November 2003.
- ¹⁰ See PoA, Article 14: "Upon request, states and appropriate international or regional organizations in a position to do so should provide assistance in the destruction or other responsible disposal of surplus stocks...". See, also, Report of the Group of Governmental Experts on Small Arms, UN Document. A/54/258, 19 August 1999, paras. 111-112.
- ¹¹ See Articles 4 (a) and 6.
- ¹² UNDP, Stability Pact for South Eastern Europe, South Eastern Clearing House for the Control of Small Arms and Light Weapons, SALW Destruction Activities, RMD/S/G 05.20, 2nd Edition, 1 March 2004.
- ¹³ UN Document. S/2000/1092, 15 November 2000.
- ¹⁴ One of a series of OSCE guidance notes, See *OSCE Handbook of Best Practice Guides*, OSCE, Vienna, 2004.
- ¹⁵ B. Wingfield, 'With two wars, US needs for ammunition is soaring', *New York Times*, 19 May 2004; quoted in S. Pezard, 'SALW Ammunition', chapter in *Small Arms Survey Yearbook 2005*, Oxford University Press (forthcoming).
- ¹⁶ I. Egorov & V. Mikhailov, 'Prodaite patrony', *Gazeta*, 30 May 2002, cited in: Maxim Pyaduchkin & Ruslan Pukhov, Chapter 9, 'Russia', *Disposal of Surplus Small Arms: A Survey of Policies and Practices in OSCE countries, 2004*, *Small Arms Survey*, Co-published with BICC, Saferworld, and BASIC, p.109.
- ¹⁷ NATO Expert Team (NET), Feasibility Study to Destroy Surplus Munitions and Small Arms and Light Weapons in Ukraine (estimates 2 million); Ukraine Defence Minister, Yevgeny Marchuk, quoted in: Ukraine has Trouble with Ammunition Utilization, Rosbalt News Agency, Saint-Petersburg, Russia, 7 June 2004, available at: <http://www.rosbaltnews.com/print/print?cn=66809> puts the figure at 2.5 million.
- ¹⁸ See, for example, *Small Arms Survey, Development Denied*, Oxford University Press, Oxford, 2003, p.75.
- ¹⁹ UN Office for the Coordination of Humanitarian Affairs, 'Afghanistan: UN to deal with ammunition stockpiles', Press Release, Friday 7 January 2005, accessed at: <http://www.irinnews.org/print.asp?ReportID=44901>.
- ²⁰ Anthony Cordesman, Centre for Strategic and International Studies, Washington, quoted in: '377 tons small part of absent Iraq explosives: missing prewar stockpiles may total 250,000 tons', *The Associated Press*, 31 October 2004, available at: <http://msn.com/id/6376212/print/1/displaymode/1098/>.
- ²¹ Explosive Remnants of War (ERW) - Undesirable Explosive Events in Ammunition Storage Areas, ISBN 2-88487-006-7, GICHD, Geneva, November 2002.
- ²² Letter from Ambassador Chris Sanders, CCW Co-ordinator for ERW, Netherlands Delegation to the Conference on Disarmament, 27 September 2002. The letter was sent to all delegations of states Parties to the CCW, (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). Responses were received from the following states Parties to the CCW; Bulgaria, Brazil, Costa Rica, Denmark, Germany, Holy See, Japan, Latvia, Liechtenstein, Netherlands, Norway and Romania.
- ²³ GICHD Study, p.12; updated with SEESAC data from 2003 and 2004.
- ²⁴ NATO Allied Ammunition Storage and Transportation Publications 2 (AASTP 2) - Safety Principles for the Storage and Transport of Military Ammunition and Explosives, Brussels.
- ²⁵ OSCE, Document on Stockpiles of Conventional Ammunition, 19 November 2003, Section IV.
- ²⁶ For example: Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, February, 1972 and subsequent amendments; London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 29 December 1972 and subsequent amendments; OSPAR Convention, 1998.
- ²⁷ Definition from NATO Maintenance and Supply Agency (NAMSA), NATO, May 2000.
- ²⁸ This is covered in detail, for example, in *SALW Ammunition Destruction*, ISBN 86-905231-1-1, SEESAC, Belgrade, 30 May 2004.
- ²⁹ Report of the Group of Governmental Experts on Small Arms, UN Doc. A/54/258, 19 August 1999, paragraph. 66.
- ³⁰ The Alliant Techsystems programme in Ukraine in the early 1990s is one example of this.
- ³¹ Ammunition destruction projects have been conducted in Central and Latin America, Africa and South Eastern Europe through UNDP Country Office projects. In addition to its two major APM destruction projects (Albania and Ukraine), NAMSA has completed one project to date for ammunition destruction in Moldova, and significant projects are ongoing in Albania and Georgia.
- ³² Respectively through the international frameworks established in: Stability Pact SALW Regional Implementation Plan, November 2001; OSCE Document on Stockpiles of Conventional Ammunition.
- ³³ Elli Kytömäki & Valerie Yankey Wayne, *Implementing the UN Programme of Action on Small Arms and Light Weapons: Analysis of the Reports Submitted by states in 2003*, UNIDIR, Geneva, 2004, p.111.
- ³⁴ U.S. Support For The UN Program of Action on SALW, Report under the PoA, revised and updated 30 June 2004, p.6.
- ³⁵ Including UNDP, UN-LIREC, the Inter-American Drug Abuse Control Commission (CICAD) of the OAS, the Small Arms and Demobilization Unit of UNDP, the Royal Canadian Mounted Police (RCMP).
- ³⁶ The Geneva Forum (QUINO, UNIDIR, PSIS), *The Role of Regional Organisations in Stemming the Illicit Trade in Small Arms and Light Weapons: Findings of a specialist seminar 29-30 January 2004*, Annex 1, p.2.
- ³⁷ Elli Kytömäki & Valerie Yankey Wayne, op cit, 2004, p.130.
- ³⁸ First Committee of the UN General Assembly, UN Doc. A/C.1/59/L.48, 14 October 2004, adopted without a vote.



BITING THE BULLET PROJECT

Biting the Bullet is a joint project between Saferworld, International Alert and the University of Bradford. It helped facilitate a wide-ranging and well-informed debate between governments and civil society in the run-up to the UN Conference on the Illicit Trade in Small Arms and Light Weapons in All Its Aspects in July 2001. In particular, it produced a series of policy briefings on key issues for discussion at the conference.

Following the agreement of the Programme of Action, Biting the Bullet is now working to promote international understanding of key issues relating to the implementation of the Programme of Action while creating opportunities to discuss the critical issues that proved controversial at the 2001 UN Small Arms Conference. In order to facilitate discussion on these issues, Biting the Bullet has published further research papers for the Biennial Review focusing on civilian possession, and the implementation of embargoes. This briefing continues this series of papers.

The Biting the Bullet Follow-up Project also prepared a substantial report on States' implementation of the commitments set out in the Programme of Action. This monitoring report analyses progress at the national, regional and international level. It was researched by partners from all world regions and produced by Biting the Bullet for IANSA. Another implementation report is being prepared for the 2005 Biennial Meeting.

In addition, an informal Consultative Group Process involving government officials, international experts and non-governmental organisations was created and has met five times already to discuss in particular, export controls and the issue of nonstate actors.

For more information on the Biting the Bullet Follow-up Project please contact the following organisations:



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