

Sixth



RASR

The Regional Approach
to Stockpile Reduction

Workshop

Bled • 3–5 April 2013



4 APRIL 2013

PSSM and demilitarization: Survey outputs and research in 2012 and 2013

Pierre Gobinet Small Arms Survey



Today's presentation

- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs
- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work



■ Ammunition life-cycle management

- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs

- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work



Buy and Burn Factoring Demilitarization into Ammunition Procurement

Introduction

In South-east Europe, states are increasingly aware of the need for the safe and effective demilitarization of their existing surplus small arms and light weapons ammunition stockpiles. Some states participating in the Regional Approach to Stockpile Reduction (RASR) Initiative already have a clear view of their surplus ammunition and its corresponding status, and have made the decision to dispose of parts of it using various demilitarization methods (Goldmet, 2011, pp. 24–31).

Yet states that demilitarize also procure defence reform implies the destruction of surplus ammunition stockpiles, but standardization or modernization requirements simultaneously call for the procurement of modern ordnance. Ammunition, being an expensive commodity that requires

lengthy production runs, is often procured in large quantities to anticipate the eventual demands of a state's security apparatus.

In essence, procuring ammunition is similar to subscribing to a national defence insurance policy (Bevan, 2008, p. 56): a large part of what is procured will never be used before its shelf life expires. Newly purchased ammunition is therefore likely to comprise tomorrow's problematic surpluses unless states address their future demilitarization challenges proactively and invest in life cycle stockpile management planning.

This *Issue Brief*, compiled by the Small Arms Survey in support of the RASR Initiative, aims to increase participating states' awareness of the future costs they will incur in disposing of the weapons and ammunition that they acquire today.

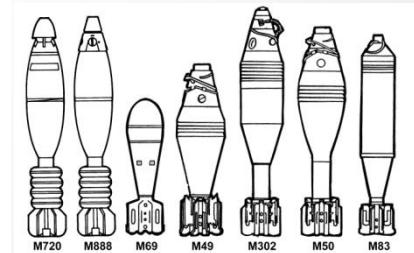
It also profiles the options for reducing demilitarization costs in the future—including offsetting disposal costs in the purchase price and 'design for demil' (DfD) technologies—and the impact this is likely to have on states' retention of surpluses in the future.

The *Issue Brief's* main points are as follows:

- Ammunition generates costs throughout its entire life cycle: from design to purchase, storage, surveillance and proof, handling, and use, and potentially all the way through to the ammunition's disposal. This implies adopting a 'whole-life management' approach to ammunition.
- Policies such as DfD in the United States aim to reduce demilitarization costs 'upstream' by influencing ammunition designers and pro-



High-speed presses being processed using an industrial band saw (left), and the resulting opened shells being transported for the removal of explosive (right). © NMSA





- Ammunition life-cycle management
- **Mobile demilitarization equipment**
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs

- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work



Dynamic Disposal

An Introduction to Mobile and Transportable Industrial Ammunition Demilitarization Equipment

Introduction

When governments are considering how to address their existing and future demilitarization requirements, they generally have two options.

Where no demilitarization facilities exist, states can build new, fixed ones near to stockpiles. Alternatively, they can move their stockpiles to existing demilitarization facilities. In other scenarios, surplus ammunition is typically transported from storage depots to purpose-designed, industrial demilitarization facilities.

Such internal or cross-border movement of ammunition is logistically challenging and logistically costly. Consequently, commercial contractors have modified existing demilitarization technologies to be mobile—not fixed to a permanent installation, i.e. movable from stockpile to stockpile—and have developed modular, transportable technologies (set up on a temporary foundation) which can operate over a relatively long period in a place, before being moved to another. The strategy of bringing a self-contained plant to the munitions for the period required for a specific disposal reduces the cost of transporting munitions and circumvents the costs of creating permanent infrastructure.

Yet the user community is often unaware of the capabilities, assets, and limitations of mobile and trans-

portable demilitarization equipment. In order to allow potential users and commercial providers to consolidate their respective requirements and create a viable business case for the use of mobile technology, the NATO Support Agency (NSA, formerly NAMSAs) organised a conference on Mobile Equipments for Ammunition Demilitarization (MEAD) which was held in Capellen, Luxembourg, on 31 May 2012. That event convened more than 150 participants from 32 countries indicating the interest of clients and providers in this type of equipment. NSA has published a catalogue of mobile equipment and makes it available on request to authorized Ammunition Support Partnership (ASP) representatives. The catalogue provides details from the manufacturers of different types of equipment associated with MEAD from individual tools and machines to complete systems.

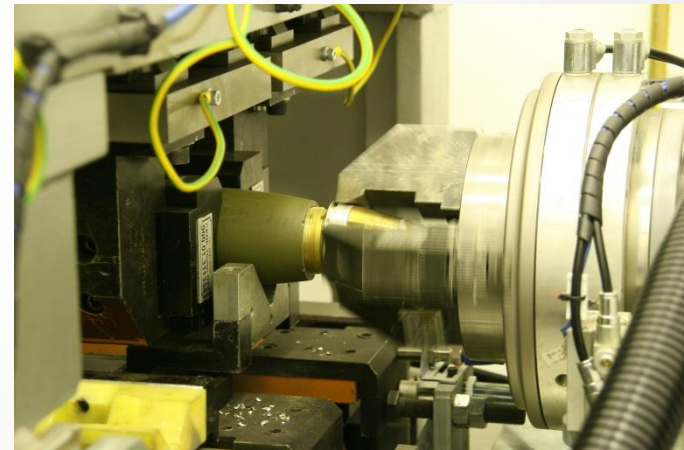
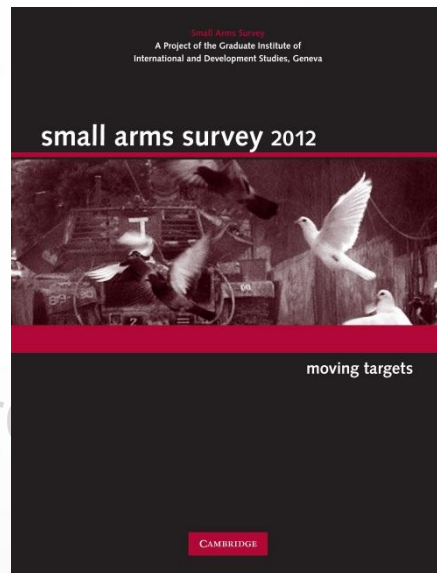
This Regional Approach to Stockpile Reduction (RASR) *Issue Brief* compiles unclassified information gathered by the Small Arms Survey at the MEAD conference and aims to raise awareness about the technologies, capabilities, and limitations of mobile and transportable ammunition demilitarization equipment within the RASR community. Instead of reporting on the full catalogue of equipment and technologies, it mentions select examples of systems that are being currently marketed, undergoing prototype

development, or are at the concept and design phase. These examples are listed not to foster commercial competition, but simply because certain data was available or provided by contractors at the time of writing. Readers should consult NSA for further details of capability and capacity. The *Issue Brief's* main findings are as follows:

- The main justification for mobile and transportable demilitarization equipment is to circumvent the logistics and costs associated with ammunition transportation.
- The majority of the mobile plants advertised on the demilitarization market are still prototypes under development, awaiting contractual funding. Few systems have a proven track record in the field.
- The demilitarization industry does not make a formal distinction between 'mobile' and 'transportable' equipment. Manufacturers use the terms interchangeably.
- Compared to fixed industrial processing lines, mobile or modular demilitarization processes tend to be slow, low-capacity, and better suited to small-calibre or low-net explosive quantity (INQ) items, which require simpler technologies to handle.
- Despite the logistical savings that system mobility provides, clients should anticipate a range of



- Ammunition life-cycle management
- Mobile demilitarization equipment
- **The demilitarization industry**
- Website
- Cards
- Non-RASR outputs
- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work





- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry

■ Website

- Cards
- Non-RASR outputs

- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work

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RASR The Regional Approach to Stockpile Reduction

Home
Contact
Print

RASR WORKSHOPS RESOURCES REGIONAL CONTACTS NEWS AND EVENTS PARTNERS

Regional Approach to Stockpile Reduction

The Regional Approach to Stockpile Reduction (RASR) is a long-term, coordinated, regional approach to address the threats posed by excess, unstable, loosely secured or otherwise at-risk stockpiles of conventional weapons and munitions in South East Europe.

RASR's ultimate goal is to contribute to regional security by working to prevent disastrous explosions and destabilizing diversions of stockpiled conventional weapons and ammunition.

» [Read more about the Regional Approach to Stockpile Reduction.](#)

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Highlights

23-25 April 2012:
[5th RASR Workshop](#),
Durrës, Albania

Fact Sheet
[Demilitarization in Albania](#)

Special Report
[Capabilities and Capacities: A Survey of South-east Europe's Demilitarization Infrastructure](#) now available

Issue Brief [Buy and Burn: Factoring Demilitarization into](#)



■ Website

- 2012: 4,826 visitors – 8,420 visits – 31,013 pages viewed
- Most downloaded publications in 2012: PSSM cards in ENG, BCMS, and ALB ; Special Report No. 13, Special Report No. 15
- Most viewed pages in 2012: RASR 5th Workshop (1,076), Resources from RASR 5th Workshop (750), and Publications (740)
- Pages viewed by language for 2012: ALB: 1,600 ; BCMS: 1,750; BUL: 1,500; MAC: 1,250; ROM: 1,300; SLO: 1,500



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- **Cards**
- Non-RASR outputs
- UEMS in South-east Europe
- Database update
- Handbook



A The Regional Approach to Stockpile Reduction (RASR) Initiative **A**

The Regional Approach to Stockpile Reduction (RASR) Initiative is a long-term, coordinated, regional approach to address the threats posed by excess, unstable, loosely secured or otherwise at-risk stockpiles of conventional weapons and munitions.

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J STANDARD OPERATING PROCEDURES **J**

5 MAINTENANCE **5**

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- Establish and enforce a maintenance program
- Clean debris
- Cut vegetation (15 m)
- Prevent vermin from entering



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards

■ Non-RASR outputs

- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work



Starter Guide

towards strong Arms and Ammunition Management Practices

Lead Author: Marius Kahl, BICC



Bonn International Center for Conversion
B · I · C · C



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- **Non-RASR outputs**

- UEMS in South-east Europe
- Database update
- Handbook
- Non-RASR work



PSSM practices of NSAs





4 APRIL 2013

Unplanned Explosions at Munitions Sites: Survey Update

Pierre Gobinet Small Arms Survey



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs

■ UEMS in South-east Europe

- Database update
- Handbook
- Non-RASR work



Special Report
November 2012

Costs and Consequences

Unplanned Explosions and Demilitarization
in South-east Europe

Jasna Lazarević



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs

- UEMS in South-east Europe
- **Database update**
- Handbook
- Non-RASR work

- **Web-based search tool: Detailed information on UEMS Incidents by Year (1987—2012)**

- **Research Note 6: 'Unplanned Explosions at Munitions Sites' (also available in Albanian, BCMS, Bulgarian, Macedonian, Romanian, and Slovenian)**

- **Interim reports**



- Ammunition life-cycle management
- Mobile demilitarization equipment
- The demilitarization industry
- Website
- Cards
- Non-RASR outputs

- UEMS in South-east Europe
- **Database update**
- Handbook
- Non-RASR work



Research Notes

small arms
survey

NUMBER • MAY 2011

WEAPONS
& MARKETS

Unplanned Explosions at Munitions Sites

Considerable attention has been paid to the threats of small arms and light weapons proliferation and misuse, but the danger that these weapons' munitions^a pose when poorly stored or mishandled are less well known. A single unplanned explosion at a munitions site can result in dozens of dead, hundreds of injured, and thousands of people displaced.^b The damage to infrastructure can be extensive, covering many square kilometers. And the loss of economic activity can top tens of millions of dollars and have long-term ramifications on livelihoods and the environment.^c

Unplanned explosions at munitions sites (UEMS) are a global problem. Since 1998, incidents of this nature have been reported in almost a third of UN Member States and on every continent except Australia and Antarctica (see Table 1). They have occurred

Table 1 Number of reported UEMS by region, sub-region, and UN Member State, January 1998-March 2011*

Region	Sub-region (number of UN Member States)	Incidence of UEMS		Distribution of events
		Number of UN Member States	Number of events	
Africa	Eastern Africa (17)	3	13	Mozambique (9), Tanzania (2), Kenya (2)
	Middle Africa (9)	3	7	Democratic Republic of the Congo (3); Republic of the Congo (2); Angola (2)
	Northern Africa (4)	3	6	Sudan (4); Egypt (1); Libya (1)
	Southern Africa (5)	0	0	No events recorded
	Western Africa (16)	5	9	Nigeria (3); Côte d'Ivoire (2); Guinea (2); Guinea-Bissau (1); Sierra Leone (1)
Americas	Caribbean (3)	1	1	Cuba (1)
	Central America (8)	4	6	Mexico (3); El Salvador (1); Guatemala (1); Nicaragua (1)
	South America (12)	7	14	Ecuador (3); Colombia (2); Brazil (2); Chile (1); Paraguay (1); Peru (1); Venezuela (1)
	Northern America (2)	1	8	United States (8)
Asia	Central Asia (5)	2	7	Kazakhstan (3); Uzbekistan (1)
	Eastern Asia (5)	2	12	China ^d (9); North Korea (3)
	Southern Asia (9)	5	53	Afghanistan (17); India (17); Iran (8); Sri Lanka (8); Pakistan (3); Indonesia (2); Laos (1)
	South-Eastern Asia (11)	6	21	Thailand (6); Cambodia (4); Philippines (4); Vietnam (3); Indonesia (2); Laos (1)
	Western Asia (17)	8	33	Iraq (5); Yemen (5); Lebanon (4); Turkey (2); Georgia (2); Israel ^e (2); Kuwait (1); Syria (1)
Europe	Eastern Europe (10)	5	39	Russian Federation (25); Ukraine (8); Bulgaria (3); Romania (2); Slovakia (1)
	Northern Europe (10)	0	0	No events recorded
	Southern Europe (14)	5	12	Serbia (5); Albania (1); Montenegro (2); Italy (1); Slovenia (1)
	Western Europe (9)	2	4	France (2); Germany (2)
Grand Total (192)^f		62	245	

Sources: Wikileaks (2010); Zdravomirsky (2011); Small Arms Survey (forthcoming).
*According to United Nations Statistics Division (revised to April 2011).
^a Including conventional explosives (as opposed to nuclear, biological and chemical weapons) that are a product of OTCs.
^b The New York Times. Incidents took place in the Palestinian Territories.
^c There are no reported explosions in any of the 16 UN Member States of Oceania.

Small Arms Survey Research Notes • Number 4 • May 2011 1

Definition: Unplanned Explosions at Munitions Sites (UEMS) include accidents¹ resulting in the explosion² of abandoned,³ damaged,⁴ improperly stored,⁵ or properly stored stockpiles of munitions⁶ and explosives. For our purposes, munitions sites comprise storage areas⁷ (including those temporarily maintained during demilitarization or explosive ordnance disposal) and processing sites,⁸ whether temporary or permanent. Ammunition manufacturing facilities (ordnance factories) are not included, but accidents during ammunition processing operations within munitions sites have been included where known.

1. An **accident** is defined as: 'an undesired event, which results in harm' (UNODA, 2011, paragraph. 3.5, p.2). 'Harm' is defined as: 'physical injury or damage to the health of people, or damage to property or the environment' (UNODA, 2011, paragraph. 3.120, p. 14).
2. An **explosion** is defined as: 'a sudden release of energy producing a blast effect with the possible projection of fragments. The term explosion encompasses fast combustion, deflagration and detonation' (UNODA, 2011, paragraph. 3.95, p.11).
3. **Abandoned Explosive Ordnance (AXO)** is defined as: 'explosive ordnance that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fuzed, armed or otherwise prepared for use' (UNODA, 2011, paragraph. 3.1, p.1).
4. **Damaged munitions** refer to the physical or chemical deterioration of ammunition and explosives.
5. Munitions are considered **improperly stored** when storage does not generally follow accepted multilateral norms or guidelines, or existing national legislation and controls.
6. **Munitions** are used in this definition—and in common usage—to refer to weapons, ammunition, explosives and components. A number of armed forces and ammunition specialists, however, use the term munitions to refer solely to complete rounds of ammunition (cf. Ammunition) (Bevan and Wilkinson, 2008, p. xxvi). 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 (cf. Munitions) (Bevan and Wilkinson, 2008, p. xix).
7. An **Explosive Storage Area (ESA)** is defined as: 'an area used for the storage of explosives and within which authorised ammunition or missile preparation, inspection and rectification operations may also be carried out' (UNODA, 2011, paragraph. 3.108, p.12).
8. An **ammunition process [site]** is defined as: 'a building or area that contains or is intended to contain one or more of the following activities: maintenance, preparation, inspection, breakdown, renovation, test or repair of ammunition and explosives' (UNODA, 2011, paragraph. 3.12, p.2).

Table 1 Reported causes of UEMS (x. Immediate Cause; x.x. Primary cause; x.x.x. Sub-cause)

1. Sub-standard storage	2. Defects in storage area or processing site	3. Handling errors and poor working practices	4. Poor security conditions/External events	5. Cause currently undetermined
1.1. Auto catalysation 1.2. Mechanical deterioration 1.2.1. Sensitization typically due to corrosion 1.2.2. Exudation (e.g. white phosphorus and nitro-based chemicals) 1.3. Chemical deterioration 1.3.1. Formation of sensitive compounds (e.g. copper azide) 1.3.2. Depletion of propellant stabilizer 1.x. Suspected	2.1. Falling objects 2.2. Internal fires 2.2.1. Electrical fault 2.2.2. Incompatible structural material 2.2.3. Hot surfaces 2.x. Suspected	3.1. Handling/Negligence 3.1.1. Rough handling (including transport within depot) 3.1.2. Dropped munitions 3.1.3. Contraband/smoking 3.1.4. Hot work (e.g. welding) 3.1.5. Storage of incompatible materials 3.1.6. Horseplay 3.1.7. Tampering 3.2. During Demilitarization/ Explosive Ordnance Disposal. 3.2.1. Inadvertent initiation of UXO 3.2.2. Inappropriate disposal 3 x. Suspected	4.1. Extreme weather 4.1.1. Lightning 4.1.2. High temperature 4.1.3. Cold temperature (and subsequent thaws) 4.1.4. Humidity 4.2. External fire 4.2.1. Vegetation fire 4.2.2. Vehicle fire 4.2.3. Building fire 4.2.4. External body 4.3. Criminal/Deliberate 4.4. Other 4.x. Suspected	

■ Database update

- 26-year review: From January 1987 to December 2012, 453 events identified in 92 countries
- 8 events were invalidated during the re-examination of events in Sept./Oct last year : 3 events from Serbia, 2 from Romania, 1 for Slovenia, BiH and Bulgaria
- Recording: depot content, casualties, ownership, blast effect, displacement, classification of reported causes, etc.
- UEMS Incident Reporting Template



1. Time details			
Date (yy/mm/dd):		Hour (hh/mm):	
2. Location details			
Country:		Location (grid Coordinates):	
3. Casualties			
Fatalities: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		No. of Civilian: or/and military:	
Injured: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		No. of Civilian: or/and military:	
4. Depot ownership			
State security forces: <input type="checkbox"/> Police <input type="checkbox"/> Armed Forces		<input type="checkbox"/> Other (specify):	
Private: <input type="checkbox"/> Civilian <input type="checkbox"/> Security companies (PSCs)		<input type="checkbox"/> Other (specify):	
Semi-private (specify):			
Armed groups (specify):			
Other :			
5. Type of storage		6. Depot contents	
Permanent: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Volume (tonnes):	
Temporary: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Type of material (no. of items):	
More details:			
7. Causes (See reverse Table 1 on Reported causes of UEMS)			
Immediate Cause:		Primary Cause:	Sub-Cause:
Context:			
8. Socio-economic impact			
Displaced people: <input type="checkbox"/> Yes (number): <input type="checkbox"/> No <input type="checkbox"/> Unknown			
Infrastructure damage: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			
More details:			
9. Additional information			
Blast effect (Radius):			
Immediate response (Govt. and IO/NGOs):			
Follow up measures (Govt.):			
Political impact:			

■ Database update: information sought

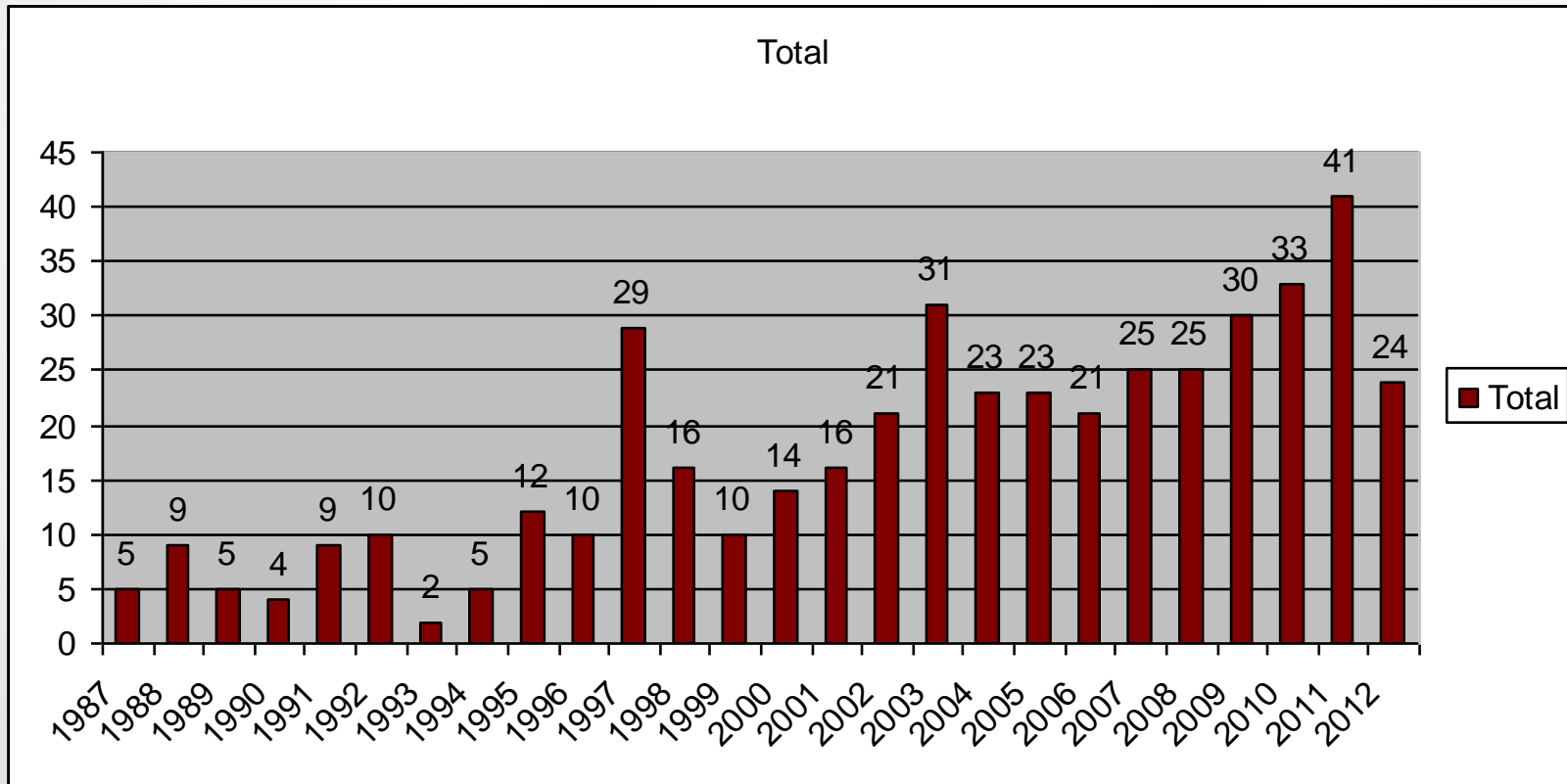
- the incident: date, location, casualties
- contents of depots/sites (volume, types, values)
- ownership and type (govt/private; military/police)
- distinction between types of casualties (military/civilian)
- displacement and economic impact
- political impact
- frag dispersion, blast effect, emergency response, clearing and reconstruction operations costs, international assistance.





■ Database update

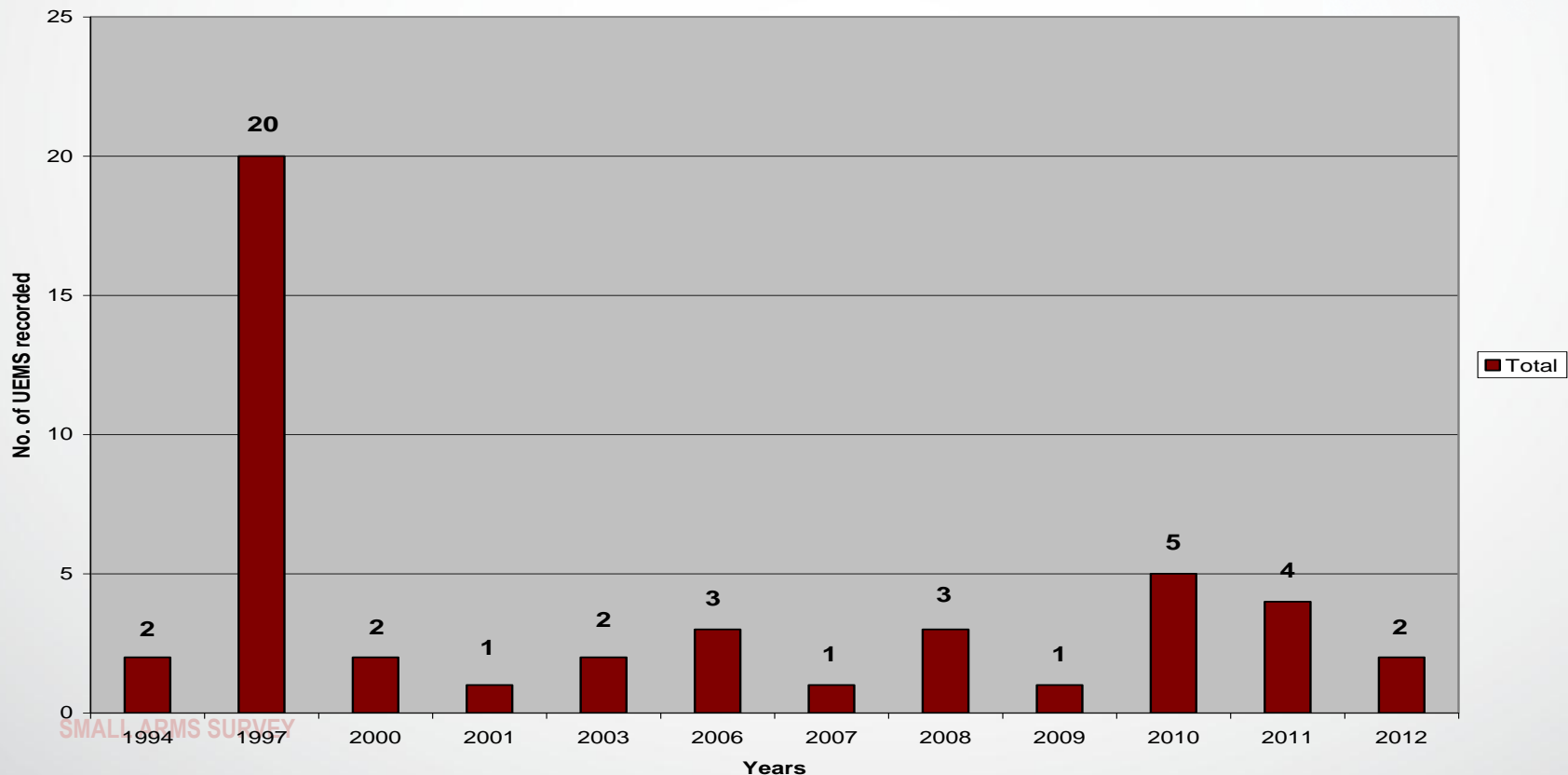
Number of Recorded UEMS by Year, January 1987–December 2012





■ Database update

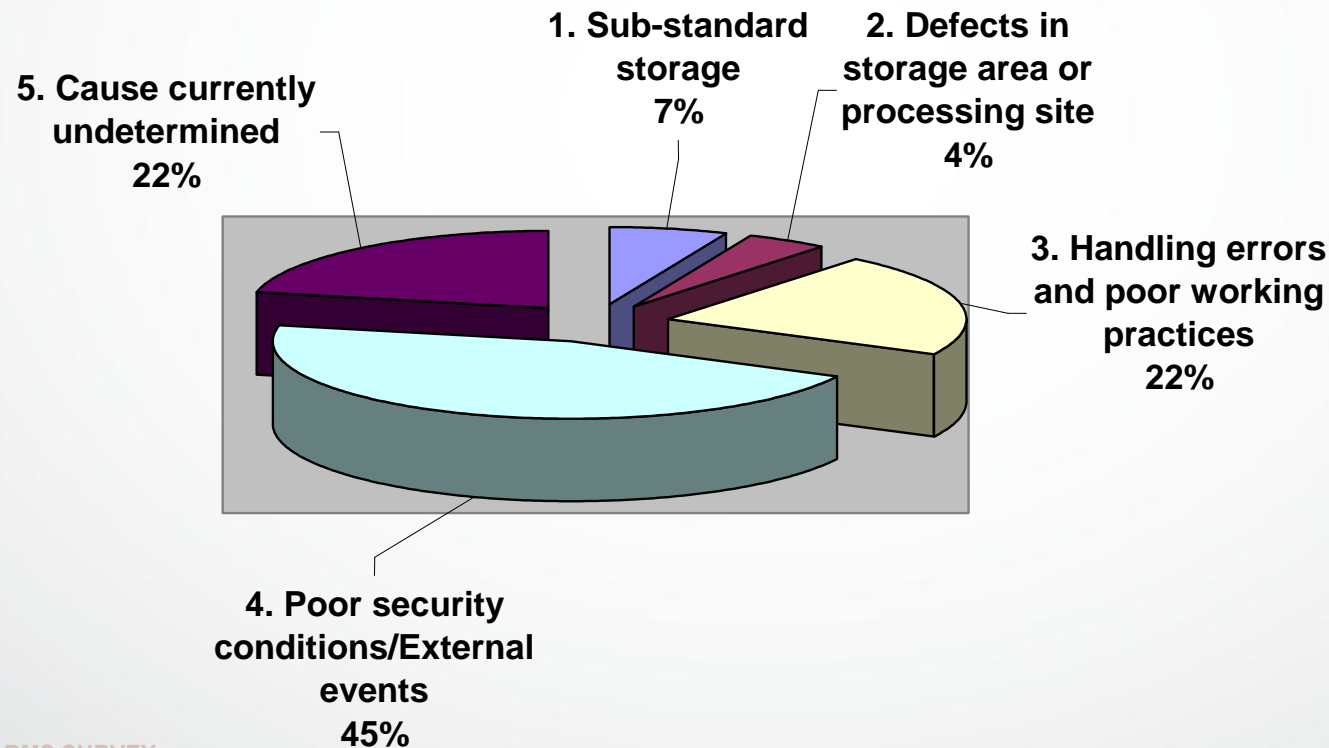
Number of Recorded UEMS by year in Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro and Serbia, Jan. 1987 - Dec. 2012





■ Database update

Classification of reported causes of UEMS by country, in Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro and Serbia, Jan. 1987 - Dec. 2012



- Ammunition life-cycle management
 - Mobile demilitarization equipment
 - The demilitarization industry
 - Website
 - Cards
 - Non-RASR outputs
-
- UEMS in South-east Europe
 - Database update
 - **Handbook**
 - Non-RASR work



6th RASR Workshop

- Ammunition life-cycle management
 - Mobile demilitarization equipment
 - The demilitarization industry
 - Website
 - Cards
 - Non-RASR outputs
-
- UEMS in South-east Europe
 - Database update
 - Handbook
- **Non-RASR work**

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English | BCMS | Български | Македонски | Română | Shqip | Slovenščina

RASR The Regional Approach to Stockpile Reduction

Home Contact Print

RASR **WORKSHOPS** **RESOURCES** **REGIONAL CONTACTS** **NEWS AND EVENTS** **PARTNERS**

Regional Approach to Stockpile Reduction

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RASR's ultimate goal is to contribute to regional security by working to prevent disastrous explosions and destabilizing diversions of stockpiled conventional weapons and ammunition.

➤ Read more about the Regional Approach to Stockpile Reduction.

Regional Contacts

Partners

Highlights

23-25 April 2012:
5th RASR Workshop,
Durrës, Albania

Fact Sheet
Demilitarization in
Albania

Special Report
Capabilities and
Capacities: A Survey of
South-east Europe's
Demilitarization
Infrastructure now
available

Issue Brief Buy and
Burn: Factoring
Demilitarization into

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Home | Contact | Legal | Sitemap

Search

About Us | Publications | Focus Projects

Weapons and Markets | Armed Violence | Armed Actors | Regulations and Controls | Security Programmes

Small Arms Survey Focus Areas

Weapons

- Definitions of SALW
- Production
- Products
- Transfers
- Stockpiles
- Tools

Highlights

Publication: *The Small Arms Survey 2010: Gangs, Groups, and Guns* reviews a range of issues related to gangs and armed groups.

Focus Projects: The Sudan Human Security Baseline Assessment has launched a new Facts & Figures section on its website.

Focus Projects

- Sudan Human Security Baseline Assessment
- Timor-Leste Armed Violence Assessment
- Geneva Declaration on Armed Violence and Development

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