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FEATURE

PROMOTING SECURE STOCKPILES AND COUNTERING DIVERSION

by Eric G. Berman and Benjamin King [Small Arms Survey]

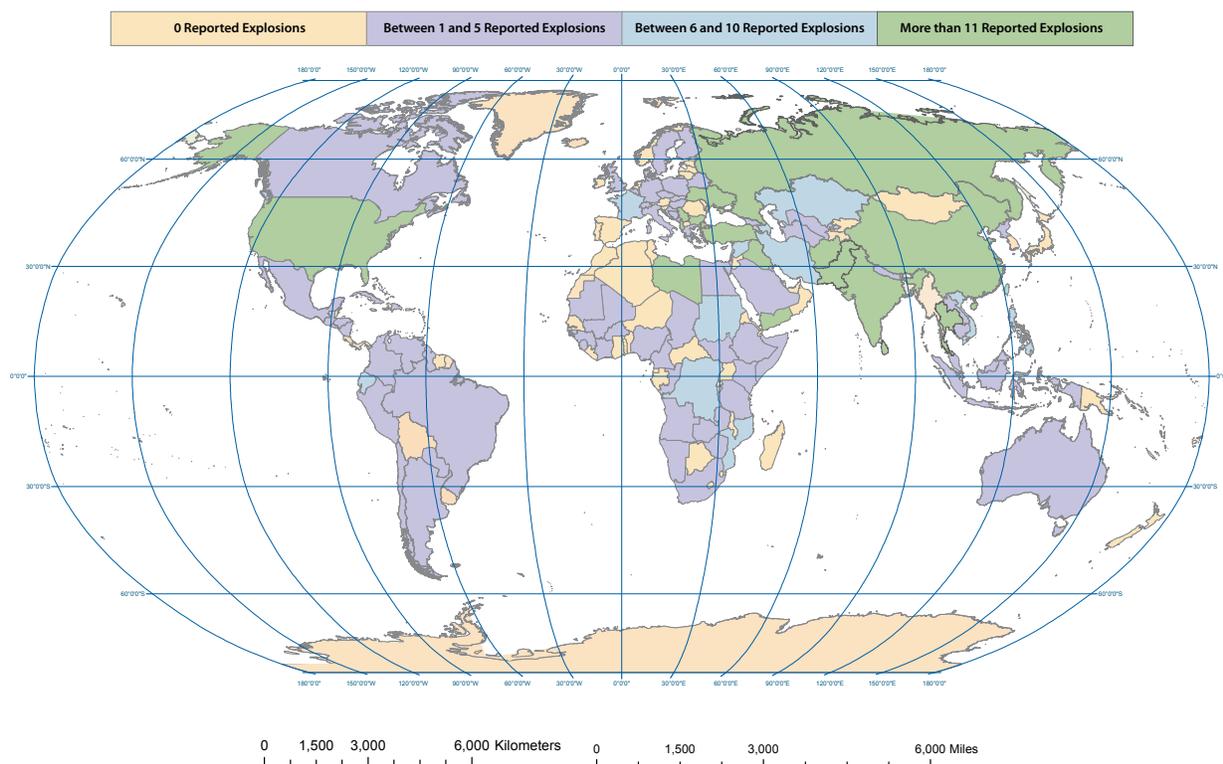


Figure 1. Countries with UEMS: January 1979 to August 2017.
Courtesy of Small Arms Survey.

Poor management of government stockpiles of small arms and ammunition poses significant safety and security concerns—both for the country in question and often for its neighbors. Challenges to safety are readily apparent by the frequent occurrence and consequences of unplanned explosions at munitions sites (UEMS). Security shortcomings include oversight limitations that facilitate corrupt practices and seizures of state materiel by armed groups that undercut a state's legitimate use of force, and undermine good governance and the rule of law.

The Small Arms Survey (hereafter referred to as the Survey) actively contributes to efforts to promote physical security and stockpile management (PSSM) and life-cycle management of ammunition (LCMA), and works with—and benefits from—practitioners and policy makers focusing on these agendas.¹ The development of the Survey's UEMS-related research, for example, was made possible in large part by the active engagement of the Multinational Small Arms and Ammunition Group (MSAG) and the financial support of the Office of Weapons Removal and Abatement in the U.S. Department of State's Bureau of Political-Military Affairs (PM/WRA).² The Survey also works closely with the Geneva International Centre for Humanitarian Demining (GICHD) in support of the Swiss Safe and Secure Management

of Ammunition (SSMA) Initiative and other joint efforts, such as the United Nations Office for Disarmament Affairs's (UNODA's) SaferGuard program to promote the International Ammunition Technical Guidelines (IATG). Survey databases and tools are frequently used to develop national capacities and to raise awareness among decision makers on the importance of adequately funding and meaningfully improving PSSM and LCMA practices.

Update on Existing Tools and Reference Materials

Long-term readers of *The Journal of Conventional Weapons Destruction* will remember the Survey's efforts to develop its **UEMS Database**.³ Early data collection efforts resulted in the identification of over 400 UEMS incidents in more than 90 countries between 1979 and 2011. The UEMS Database has since evolved, both in terms of the number of incidents entered and the additional data recorded for specific events. As of August 2017, the number of UEMS incidents since 1979 totaled 567. UEMS have occurred in (at least) 101 countries on every continent except Antarctica (see Figure 1). The database includes fields on causation, casualties suffered, type of site, ownership, tonnage lost, and some 50 other criteria. This data provides a basis for analysis to allow for greater insight into the human, financial, and political costs associated with improper

ammunition management as well as an evidence base to support good practice.

The UEMS Database has led to the development of two concrete tools aimed at understanding and mitigating the safety and security risks that improperly managed ammunition stockpiles pose: the **UEMS Handbook** and the **UEMS Incident Reporting Template (IRT)**. The Survey's 2014 UEMS Handbook, which covers the period 1979–2013, provides a comprehensive overview of UEMS. Each incident recorded in the UEMS Database at the time is listed by country within regions, as well as chronologically for ease of reference. The publication also includes the Survey's popular **PSSM Best Practice Cards** (see Figure 2), which also exist as playing cards.⁴ Other features of the handbook include an analysis of these incidents' scale and scope (e.g., their causes, numbers, and effects), an annotated bibliography and review of various guidelines, studies, and tools, and short overviews of some three dozen actors (e.g., the U.N. bodies and agencies, regional organizations, non-governmental organizations, and private companies) working to reduce the threat poorly-managed munitions sites and surplus ammunition pose to people's safety and security. The handbook also includes the UEMS IRT.

Despite important progress made in developing and strengthening the database, data-collection challenges remain. To a large extent, the UEMS database depends on open-source information, such as media reports or other public documents. Although a useful source of information, such documents may be limited in terms of the amount of detail provided regarding the circumstances of the UEMS incident. Official investigative reports are often confidential due to potential legal liability concerns or to save face in light of improper ammunition management practices. Consequently, there is a dearth of information in open source reports, resulting in a paucity of detail surrounding certain UEMS incidents.

In an effort to address the data gaps related to UEMS, and to provide states with a framework for investigating and reporting on incidents, the Survey created the UEMS IRT (see Figure 3). This

- **When** did the UEMS incident occur?
- **Where** did the UEMS incident occur?
- **Who** owns the site and the contents on it?
- **Why** did the UEMS incident occur?
- **What** happened as a result of the explosion?
- **How** did the state and the international community respond?

The Survey continuously updates the UEMS Database and developed the UEMS IRT to assist in this process.⁵ The Survey knows that this tool is in considerable demand from the more than 10,000 times it has been downloaded from the Survey's website.⁶



Figure 2. The Survey's PSSM Best Practice Cards.

A challenge facing the Survey is how to ensure that this tool is fully exploited to develop national capacities and good practice. It would also be useful to more fully generate, collate, and verify crucial information about UEMS, which can then better inform on the risks associated with ammunition management.

Even with existing challenges and limitations, the UEMS Database allows for important policy-relevant and agenda-setting analyses. For instance, almost one in six incidents involve munitions stockpiles owned or managed by private companies or non-state armed groups. This raises important questions about the adequacy of government oversight regarding the former, and about the utility of donor support to perhaps enhance some sites of the latter. Casualties suffered from explosions vary considerably, suggesting that while it is not possible to completely stop incidents from happening, the implementation of good safety practices (like those found in the IATG) can significantly reduce such incidents' ramifications.⁷

One clear trend that defies easy analysis is the steep downturn in the number of UEMS recorded over the past five years (see Figure 4). The rise of social media and global interconnectivity since the late 1990s might partly explain the relatively small number of recorded UEMS in the 1980s. If media and donor interest in this phenomenon has not diminished (and if the technology to report them has been constant), then the fall in the recorded number of incidents seems genuine. What explains this? More resources?

1. When? (When did the UEMS incident occur?) Date (yyyy/mm/dd) _____ / _____ / _____ Hour (24-hour) (using 24-hour clock) _____ : _____ Weather condition (e.g. temperature °C, light, wind, rain, lightning) _____		2. Where? (Where did the UEMS incident occur?) Country _____ City or town _____ Site/location name _____	
3. Who? (Who owns or manages the site and the contents on it?)			
3.1. Who owns or manages the site? Owner: <input type="checkbox"/> state <input type="checkbox"/> non-state manager (if different) Details (e.g. type): <input type="checkbox"/> police <input type="checkbox"/> military <input type="checkbox"/> private company <input type="checkbox"/> foreign (e.g. peacekeeping force) <input type="checkbox"/> armed group <input type="checkbox"/> other (e.g. state company), specify _____ <input type="checkbox"/> other (e.g. criminal gang), specify _____		3.2. What type of facility housed the munitions? 3.2.1. Status of storage site? <input type="checkbox"/> permanent <input type="checkbox"/> temporary 3.2.2. What types of activity took place there? <input type="checkbox"/> storage <input type="checkbox"/> processing <input type="checkbox"/> loading/unloading 3.2.3. What was the design of the storage facility? <input type="checkbox"/> purpose-built storage <input type="checkbox"/> non-purpose-built storage <input type="checkbox"/> dump <input type="checkbox"/> unknown	
3.3. What munitions were stored there? Comments (e.g. age, origin, type, and condition of munitions): _____		Type of material or munitions: <input type="checkbox"/> aircraft <input type="checkbox"/> armour and artillery <input type="checkbox"/> explosives and pyrotechnics <input type="checkbox"/> mines <input type="checkbox"/> naval <input type="checkbox"/> SAUV* <input type="checkbox"/> unknown	
Quantity/measurement (total estimate, providing any data available): <input type="checkbox"/> quantity (in number) _____ <input type="checkbox"/> weight (in tonnes) _____ <input type="checkbox"/> value (indicate currency) _____			
4. Why? (Why did the UEMS incident occur?) (e.g. degradation of ammunition; poor storage or poor infrastructure; material being mishandled or dropped; external, environmental events such as floods or fires; poor security; poor working conditions)			

Figure 3. (part of) the Survey's UEMS IRT.

Greater expertise? Better decision making? A reduction in problematic stockpiles due to the spate of explosions in the first decade or so of the 2000s? Transfers and consumption of large quantities of surplus ammunition to meet increased demand due to the growing number of armed conflicts? The Survey plans to address these policy-relevant questions by developing and implementing a number of related projects in the coming years. Two illustrative examples include the LCMA Handbook and the Making Peace Operations More Effective (MPOME) Project.

The nine Southeast European countries participating in the **Regional Approach to Stockpile Reduction (RASR) Initiative**, which the Survey has been privileged to help support, have acknowledged that they possess surpluses and can improve on their current practices.⁸ Indeed, nearly 10 percent of the UEMS recorded since 1979 in the Survey's database have occurred in six of the nine RASR-participating states. The governments have sought to mitigate the risk of incidents by (among other things) destroying hundreds of thousands of tons of excess munitions. Some munitions destined for destruction have crossed state lines for destruction in neighboring states' facilities, safely and in an environmentally acceptable manner. Experience shows, however, that progress toward reducing surplus is not a foregone conclusion and often occurs in fits and starts.⁹ Sales remain the favored mode of disposal for most governments, and recent unplanned explosions in that region suggest that existing practices can still be improved and that the need to reduce surplus remains a pressing challenge.

Governments in Southeast Europe and elsewhere often lack the financial resources to address the challenges posed by their ammunition and weapon stockpiles, and are often daunted by the legislative, logistical, and technical requirements. They often request international cooperation to address these challenges. However, the rationale for and full extent of the sought-after assistance is often not well described, leaving donors unwilling to support programs and initiatives that are not clearly explained and that do not lead to concrete outputs. To assist states to manage their stocks and reduce their surpluses safely, securely, and economically, the Survey in 2016 created a **PSSM Priorities Matrix** (see Figure 5). This tool helps states prioritize their stockpile management needs and articulate those needs to the donor community. Importantly, it moves states away from a wish list approach of asking donors for anything that might stick to a more constructive discourse. Similarly, the objective is to have donors reduce the likelihood for duplicating efforts.¹⁰

Overview of Ongoing and Upcoming Projects

All of the previously-mentioned projects undertaken during the past five years remain important elements of the Survey's ongoing

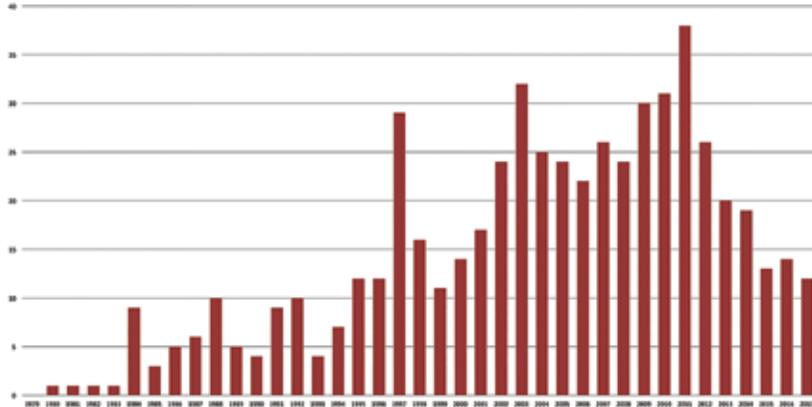


Figure 4. UEMS by Year, January 1979 to August 2017 (data for 2017 only covers eight months).

PSSM element	Problem	Solution	Solution criteria scores			Priority score (highest priority #1 points) (urgency plus feasibility scores)	
			Urgency 1: Low 2: Low/medium 3: Medium 4: Medium/high 5: High	Difficulty 1: Difficult 2: Easy	Affordability 1: Expensive 2: Affordable		Speed 1: Slow 2: Quick
Procedures and regulations							
Stockpile locations	Civilian dwellings have expanded over time around an ammunition storage facility posing a threat to the inhabitants, who may suffer injury or loss of life in the event of an unplanned explosion.	The storage facility should be relocated to a location that is at a safe distance from the civilian population.	The problem is of high urgency (5) as the site is in a densely populated urban area and contains large amounts of ageing and unstable ammunition, raising the risk of an unplanned explosion.	Relocating the large amounts of unstable ammunition to another site would be difficult (1) due to the possibility that it may explode during transport.	Moving the ammunition is likely to be expensive (1) as it will require specialized equipment and qualified personnel in view of the large quantity of unstable ammunition to be moved.	Implementation of the solution is likely to be slow (1) since it will take time to source the required equipment and personnel.	8
Physical security measures							
Control of access							
Inventory management (including record-keeping and marking)							
Staff training							
Security during transport							
Procedures and sanctions for theft or loss							
Surplus, including identification and disposal							

Figure 5. The Survey's PSSM Priorities Matrix.

work. The Survey is committed to developing its UEMS Database and utilizing its UEMS IRT more effectively. Resources permitting, the intention is to provide a 2nd Edition of the UEMS Handbook in 2019. An edition of the popular PSSM Best Practice Cards with a LCMA focus is being developed, and the RASR effort will continue with new guidance from the latest RASR Workshop (held 3–4 October in Podgorica, Montenegro).

In light of the recent international shift in focus from immediate risk reduction toward a more comprehensive approach to weapons and ammunition management, the Survey has embarked on two initiatives that merit special mention: the LCMA Handbook and the MPOME Project.

The forthcoming **LCMA Handbook** is part of the Survey's sustained efforts toward highlighting the importance and challenges of addressing ammunition fully across its life cycle, meaning cradle-to-grave. Geared to non-technical audiences (especially decision makers and donors), the LCMA Handbook elaborates on the



Figure 6. The Survey's LCMA Model.

aspects required for the effective incorporation of the IATG at the national level. Indeed, one of the components of the handbook—a summary of the IATG's more than 40 modules—will be made available as a stand-alone output and featured on the United Nation Office for Disarmament Affairs (UNODA) website. As anticipated, the full study will be published in both English and French. As a first step, the Survey will work with MSAG, UNODA, and other partners, to make the IATG summary available in the four other official U.N. languages (Arabic, Chinese, Russian, and Spanish). The centerpiece of the Handbook consists of an **LCMA Model** that comprises four main elements: planning, procurement, management, and disposal (see Figure 6). The Handbook takes advantage of a case study on the experience of establishing an LCMA system in post-conflict Bosnia and Herzegovina, and will incorporate examples of challenges and good practice from across the globe.

The **MPOME Project** focuses on improving management practices of small arms and ammunition within peace operations. Between 2013 and 2015, the Survey developed its Peace Operations Data Set (PODS) that recorded attacks on peacekeepers in numerous missions in Sudan and South Sudan, and documented the loss of lethal material. In October 2017, we released a study on attacks on peacekeepers not limited to missions in those two countries, "Making a Tough Job more Difficult: Loss of Arms and Ammunition in Peace Operations"

(see Figure 7).¹¹ The report shows that the scale and scope of losses of contingent-owned equipment (COE) in peace operations is greater than appreciated, and that improved practices could reduce the amount of materiel lost, and enhance a mission's force protection posture and its ability to implement its mandate. The MPOME Project, which commenced in December 2016, builds on this work; it has four components. One concerns a series of regional workshops that will allow practitioners in peace operations to share their experiences and, in so doing, chip away at the perceived taboo that such matters are too sensitive to discuss. A second element involves working with actors undertaking peace operations to develop countermeasures to better manage COE as well as recovered materiel in peace operations. For example, the Survey will work with the African Union to develop guidelines or standard operating

procedures (SOPs) for the latter. A third component calls for the Survey to work bilaterally with states to learn how their peace operations training and oversight procedures have changed over the years to better manage COE and recovered materiel, and work with them to further improve on current practice. Lastly, the MPOME Project provides for outreach efforts to explore additional partnerships and share the results of the various initiatives mentioned above. The initial phase of this project runs through March 2019.

Despite the significant progress that has been made in reducing the risk to safety and security posed by unsafe surplus materiel and in securing stockpiles, much more can be done. The potential policy and programming utilities of the UEMS Database and IRT remain underutilized. Other existing tools, such as the more recent PSSM Priorities Matrix and forthcoming resources, including the LCMA Handbook, will be more valuable with examples of challenges states and implementing bodies have encountered as well as of good practice. Many countries still view excess stockpiles as assets rather than liabilities, regardless of the conditions of their facilities and their ammunition or the questionable market for their wares. Moreover, many countries that would be willing to part with their excess and often aged materiel possess neither the know-how nor the resources to act appropriately (e.g., proper testing or improved storage). The Survey looks forward to continuing to work with states, practitioners, and donors at national, regional, and international levels to develop and promote tools and analyses to promote safe and secure storage and handling of ammunition, thereby reducing illicit proliferation of lethal material and incidents of armed violence. ©

See endnotes pag 66

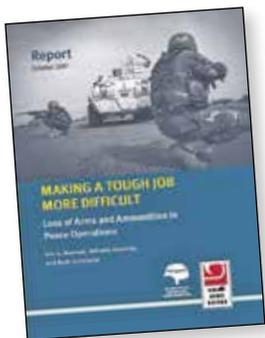


Figure 7. A Survey publication supporting the MPOME Project.

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Promoting Secure Stockpiles and Countering Diversion by Berman and King [from page 18]

Berman and King: Promoting Secure Stockpiles and Countering Diversion

1. Any list of partners supporting Small Arms Survey projects would include the Danish Demining Group, The HALO Trust, Handicap International, Mines Advisory Group, and the United Nations Mines Action Service. Additional partners appear elsewhere in this short article. This list is indicative and not exhaustive.
2. MSAG is an apolitical, informal, and multinational platform of a dozen or so like-minded governments that, to the extent possible, since 2005 have worked together to support each other's efforts to improve stockpile management practices across the globe. See www.msag.es.
3. Berman, Eric G., and Pilar Reina. "Unplanned Explosions at Munitions Sites: Concerns and Consequences." *The Journal of ERW and Mine Action*. 16.2 (2012): 4–9.
4. The PSSM Best Practice Cards are available in Albanian, Arabic, Bosnian-Croatian-Montenegrin-Serbian (BCMS—in the Latin alphabet), French, Portuguese, Russian, Spanish, and Swahili.
5. For example, over the past three years, the Survey has added eight incidents and deleted five during the period 1979–2013.
6. See <http://bit.ly/2lITGH8>.
7. The UEMS Database records 19 events as having occurred in the United States, which have resulted in four dead and two injured. By way of comparison, while casualty data for many incidents is incomplete (including for those in the United States), the average number of casualties recorded for the other 548 UEMS in the 100 other countries in the database comes to more than 50.
8. The RASR Initiative Steering Committee comprises the International Trust Fund (ITF) Enhancing Human Security, the North Atlantic Treaty Organization (NATO) Support and Procurement Agency (NSPA), the RACVIAC Centre for Security Cooperation, the South Eastern and Eastern Europe Clearing House for the Control of Small Arms and Light Weapons (SEESAC), and the Small Arms Survey. The nine participating states since 2009, when the Initiative was launched, include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, Serbia, and Slovenia. WRA provided funding from 2009 through 2015. The European Union is funding RASR for the 2017–2019 period. Moldova has been invited to contribute to the Initiative. For more information. See www.rasrinitiative.org.
9. Gobinet, Pierre, and Jovana Carapic. "Less Bang for the Buck: Stockpile Management in South-east Europe." *Small Arms Survey 2015: Weapons and the World* (2015): 125–155.
10. Parker, Sarah. *Facilitating PSSM Assistance in the Sahel and Beyond: Introducing the PSSM Priorities Matrix*. Geneva: Small Arms Survey, 2016.
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