

Journal of Conventional Weapons Destruction

Volume 16
Issue 2 *The Journal of ERW and Mine Action*

Article 2

July 2012

Unplanned Explosions at Munitions Sites: Concerns and Consequences

Eric Berman
Small Arms Survey

Pilar Reina
Small Arms Survey

Follow this and additional works at: <https://commons.lib.jmu.edu/cisr-journal>



Part of the [Other Public Affairs, Public Policy and Public Administration Commons](#), and the [Peace and Conflict Studies Commons](#)

Recommended Citation

Berman, Eric and Reina, Pilar (2012) "Unplanned Explosions at Munitions Sites: Concerns and Consequences," *The Journal of ERW and Mine Action* : Vol. 16 : Iss. 2 , Article 2.
Available at: <https://commons.lib.jmu.edu/cisr-journal/vol16/iss2/2>

This Article is brought to you for free and open access by the Center for International Stabilization and Recovery at JMU Scholarly Commons. It has been accepted for inclusion in Journal of Conventional Weapons Destruction by an authorized editor of JMU Scholarly Commons. For more information, please contact dc_admin@jmu.edu.

Unplanned Explosions at Munitions Sites: Concerns and Consequences

Over the past 25 years there have been reports of more than 400 unplanned explosions at munitions sites in almost half the world's countries. The UEMS rate is quickly increasing. Whereas the Small Arms Survey's UEMS Database shows 70 such incidents for the 10-year period between 1987 and 1996, more than this number was registered in the past two years alone. These events occur in large part because states store their munitions improperly. This article reviews the direct and indirect consequences of these explosions on peace and security. It also notes steps states are taking—or should take—to improve practice in stockpile management.

by Eric G. Berman and Pilar Reina [Small Arms Survey]

The Small Arms Survey defines unplanned explosions at munitions sites as accidents resulting in the explosions of abandoned, damaged, improperly stored or improperly stored stockpiles of munitions and explosives. Munitions sites comprise storage areas such as those temporarily maintained during demilitarization or explosive-ordnance disposal. Processing sites, whether temporary or permanent, are also considered munitions sites. Ammunition-manufacturing facilities (ordnance factories) are not included in this definition, but accidents during ammunition-processing operations within munitions sites were included where known.¹

The SAS has recorded unplanned explosions in 94 countries since 1987 (see Figure 1 on page 6). Explosions have reportedly occurred on every continent except Antarctica and Australia. The UEMS Database reveals more than a twofold increase in the number of incidents from 1997–2006 compared to the previous 10-year period. Furthermore, the average number of incidents from 2007–2011 is almost 50 percent greater than that of the preceding five years. An average of seven incidents were recorded per year during 1987–1996. Yet in 2011, more than seven incidents occurred every two months.

Several factors contribute to the explanation of the increase. Multilateral political and legal processes at the global and regional levels may have compelled governments to submit more comprehensive reports on UEMS. Perhaps states have become more willing to acknowledge the occurrence of such explosions to garner financial resources and technical expertise that previously was unavailable. (Since 2000, for example, the NATO Maintenance and Supply Agency has

funded projects to destroy surplus ordnance and improve physical security and stockpile management practices.)² Another reason may be that increased public access to information via social media could simply make it more difficult to keep UEMS secret.³

In assisting countries with their PSSM needs, ammunition-storage specialists focus on technical causes for UEMS. Such experts note that the propellants, fuzes, primers and explosive components comprising ammunition become unstable over time. Poor storage conditions, inadequate surveillance and insufficient testing can exacerbate an inherently hazardous situation. Although the causes for many reported UEMS remain unknown and official explanations may be erroneous or misleading, a dearth of local expertise on ammunition and explosives safety is clearly a contributing factor.

The direct effects of unplanned explosions are numerous. A single incident can result in significant casualties. In January 2002, one particularly deadly explosion in Lagos, Nigeria reportedly claimed the lives of more than 1,000 people and injured 5,000 more.⁴ Another direct consequence of UEMS is the dispersion of fragmented ordnance. Unexploded ordnance can be propelled over long distances, thus representing immediate and long-term dangers to neighboring civilians as well as military personnel assigned to clean up the affected area. For example, in June 2011, in the Udmurtian village of Pugachevo in the Russian Federation, a fire expanded across 18 storage facilities, triggering a blast that was felt across a 10-kilometer radius (6.2 miles) and that spread explosive fragments over the surrounding 16 hectares (39.5 acres).⁵



A government depot in the Democratic Republic of the Congo. Photo courtesy of Gwenn Dubourthoumieu/MAG.

A single event can also result in the displacement of thousands of people. In Uzbekistan, 60,000 Kagan residents were displaced in 2008 after more than 150 million rounds of ammunition exploded.⁶ Later that year an explosion in eastern Ukraine's Karhkv Oblast resulted in a 14,000-person evacuation from the city of Lozovaya because of the ensuing fire and blast effects.⁷ In 2011, a Venezuelan army depot exploded in Maracay, forcing the evacuation of 10,000 people.⁸ Later in the same year, after an explosion in Dar es Salaam, Tanzania, some 4,000 people fled their homes near the army base for shelter in a stadium.⁹

In addition to such widespread and long-lasting effects, UEMS can cause extensive damage to infrastructure. In mid-2011, an explosion in Cyprus crippled the island's primary power plant. Daily power cuts across the island ensued, adversely affecting the economy and exacerbating an escalating political crisis.¹⁰ Accounts of unplanned explosions tend to focus on the value of the material destroyed and the costs of

the subsequent clean-up, especially when an external donor is engaged. More attention should focus on the longer-term economic impacts and consequences for affected communities.¹¹

Another indirect effect of poorly managed stockpiles is the diversion of state-owned weapons and ammunition to unintended recipients. The absence of accurate record-keeping inhibits accountability and facilitates corruption, e.g., security forces renting or selling their weapons and ammunition. Poor storage practices can enable such misconduct, making it difficult to keep track of inventories, as is the case when recovered items—such as weapons, ammunition or explosives used in training or confiscated from the public—are haphazardly tossed onto piles or into open or loose crates.

Preventing UEMS sometimes calls for expensive strategies to implement and may require external assistance. The international community is addressing this challenge. Some sites may need to be closed and have their ordnance moved to other locations at significant cost. New sites, incorporating

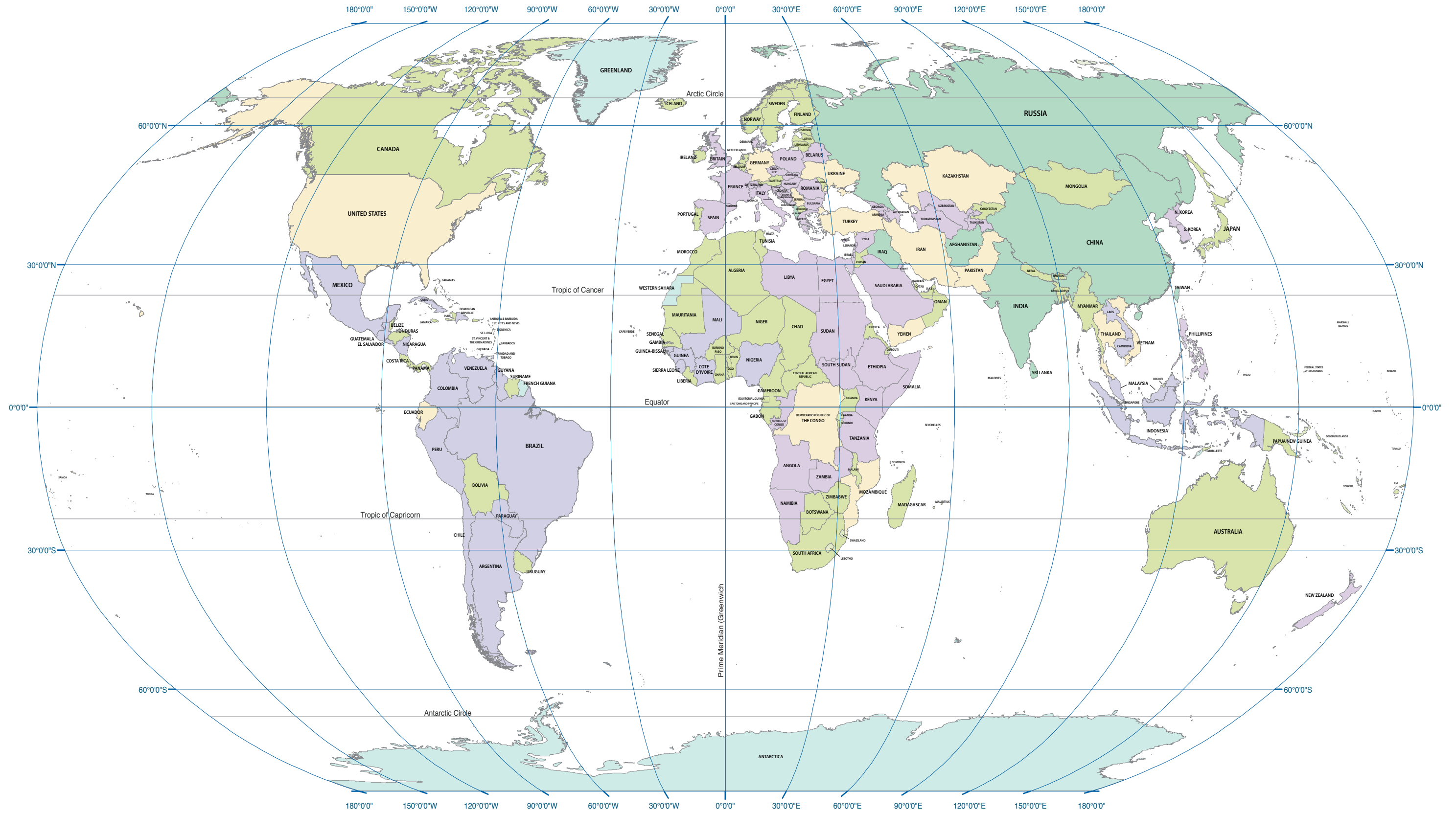


Figure 1. Unplanned explosion locations as recorded by SAS. Graphic courtesy of CISR

See footnotes page 8.

0 1,500 3,000 6,000 Miles 0 1,500 3,000 6,000 Kilometers



Figure 2. The Physical Security and Stockpile Management Best Practice Cards, produced by the Small Arms Survey for the Regional Approach to Stockpile Reduction Initiative, provide guidance on best practice for stockpile management.

MAP FOOTNOTES:

ALBANIA: In 1997 more than a dozen explosions at ammunition depots were reported during social unrest in several towns throughout Albania.

ARMENIA: The explosion in Armenia occurred in a depot owned by Russia's 7th Army.

AZERBAIJAN: One of the explosions occurred in Azerbaijan in 1991 (no date reported) when the country was probably still a republic of the Soviet Union. Azerbaijan regained its independence *de facto* in 25 December 1991, when the dissolution of the Union Soviet occurred.

CHINA: This includes 10 incidents recorded in Taiwan, a province of China.

CZECH REPUBLIC: The two reported incidents took place before 31 December 1992, when Czechoslovakia ceased to exist as a single state, but in the region that became the Czech Republic.

ISRAEL: The two incidents took place in the Palestinian Territories.

SOUTH SUDAN: The two incidents were recorded in Juba (2005 and 2007) after Sudan signed the Comprehensive Peace Agreement (9 January 2005) and before South Sudan became independent (14 July 2011) from Sudan.

LUXEMBOURG: The depot where the incident took place has been the Belgian Army's main munitions store since 1993.

RUSSIA: Three explosions in the Russian Federation happened while it was still the USSR.

Sources: Wilkinson (2011); Zahacewsky 2011); Small Arms Survey (forthcoming).

quantity-distance¹² principles and security features, may need construction from scratch. These concerns are addressed by groups such as the Regional Approach to Stockpile Reduction Initiative, an *ad hoc* coalition of nine countries from Southeast Europe that agreed to share information on their surplus stockpiles and demilitarization capacities to achieve economies of scale and to generate international support.¹³

Many measures, however, can be undertaken unilaterally and with modest investment. As depicted in the RASR PSSM Best Practice cards,¹⁴ states can achieve positive results without major infrastructure projects. They can do so by installing proper doors and locks, using adequate fences and barriers, posting signs to warn and inform, and organizing the stockpile into stacks and aisles free of obstruction. Given the high human and economic costs of unplanned explosions, policy-makers should appreciate the value of such modest investments.

Numerous challenges remain. The U.N. and several regional organizations have developed PSSM best practice and technical guidelines. However, such guidance does not necessarily cover all obstacles encountered in practice.¹⁵ Solutions themselves can generate new challenges. For example, a number of explosions at demilitarization plants raise questions about the efficacy of existing national controls, oversight and coordination with commercial contractors.¹⁶ The upcoming Second Review Conference of the U.N. Programme of Action on Small Arms (August/September 2012) will provide the international community with an important opportunity to track progress and consider improvements to practices in the field.¹⁷

See endnotes page 81



Eric G. Berman is Managing Director of the Small Arms Survey. Previously, he was a Visiting Fellow at the Thomas J. Watson Jr. Institute for International Studies at Brown University and worked for the United Nations in a variety of positions in Geneva, Nairobi, New York and Phnom Penh. He has published widely on U.N. and African security issues.

Eric Berman
 Managing Director
 Small Arms Survey
 Avenue Blanc 47
 1202 Geneva / Switzerland
 Tel: +41 22 908 5777, ext. 5770
 Fax: +41 22 732 2738
 Email:
 eric.berman@smallarmssurvey.org
 Website: smallarmssurvey.org



Pilar Reina is a Research Assistant at the Small Arms Survey with a particular interest in small-arms and light-weapons proliferation and misuse, as well as physical security and stockpile management. She holds a master's degree in public management and is completing a master's degree in political science. She formerly served as an officer cadet in the Colombian Air Force.

Pilar Reina
 Research Assistant
 Small Arms Survey
 Tel: +41 79 548 9974
 Fax: +41 22 732 2738
 Email:
 pilar.reina@smallarmssurvey.org