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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.

The Small Arms Survey defines unplanned explosions at munitions sites as accidents resulting in the explosions of abandoned, damaged, improperly stored or properly 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.

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.) Another reason may be that increased public access to information via social media could simply make it more difficult to keep UEMS secret.

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 1,800 people and injured 5,000 more. 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). 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. Later that year an explosion in eastern Ukraine’s Kharkiv Oblast resulted in a 14,000-person evacuation from the city of Lutskivya because of the ensuing fire and blast effects. In 2011, a Venezuelan army depot exploded in Maracay, forcing the evacuation of 10,000 people. 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.

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. 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.

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.
quantity-distance6 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, policymakers 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