

FACT SHEET



Linking the Unplanned Explosions at Munitions Sites Database to the Global Framework on Ammunition

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Unplanned explosions at munitions sites (UEMS) pose challenges on a global scale as they can occur anywhere. Since 2009, the Small Arms Survey has developed and maintained a database on UEMS, totalling 674 incidents over the period 1979–2024 that resulted in more than 31,000 casualties. These incidents happened in 108 countries across every continent but Antarctica. UEMS generate public health and humanitarian costs, and have long-term socio-economic, financial, and environmental consequences. Proper ammunition management practices, as promoted by the Global Framework for Through-life Conventional Ammunition Management (GFA), can, however, prevent—or at least mitigate—these effects. In the same vein, the UEMS database provides data on lessons learned while raising awareness of the consequences of not implementing those good practices and the impact such events can have on the local population.

The UEMS database: a tool to support good practices and share lessons learned

The Survey collects data on UEMS mainly through open-source platforms (such as media reports and government websites), complemented by information from its network of ammunition management experts, NGOs, and academia. The database includes information on the time, location, site owner, casualties, and cause of the explosion.¹

By sharing data and identifying trends on UEMS, the database helps stakeholders to learn from past incidents and fosters exchanges between states, agencies, and civil society experts, at relevant levels. The data shows, for example, the yearly occurrence of UEMS—pointing to the need for all countries to remain vigilant—and the significant number of UEMS casualties located in populated areas (Small Arms Survey, 2020; 2025). The Bata explosion in Equatorial Guinea in 2021 highlights this, as the deadliest UEMS in the last five years with more than 700 casualties (fatalities and injuries) (OCHA, 2021).

Data on UEMS can also contribute to enhancing relevant international standards, such as the International Ammunition Technical Guidelines (IATGs)—in line with objective 1 of the GFA—while fostering subregional cooperation and assistance—objective 3 (UNGA, 2023, p. 10).

Benefits of recording and exchanging information on UEMS

The effects of UEMS can be far-reaching, ranging from the immediate loss of life and infrastructure to the contamination of adjacent land by unexploded ordnance, and potentially endangering a country's national defence. Applying the GFA provisions, however, can prevent and mitigate UEMS. While incidents may be embarrassing for the states and institutions involved, organizations should focus on identifying systemic issues and fostering a culture of trust and accountability rather than assigning blame. The reporting of risks and investigations of incidents must therefore be treated seriously and followed by concrete action, in line with IATG 06.70 and 11.10 (UNODA, 2021a; 2021b). Many of the good practices in the GFA have been developed and refined based on past mistakes.

In the UEMS database (Small Arms Survey, n.d.), the largest proportion (28.9%) of unplanned explosions occur due to an undetermined or unrecorded origin—either the cause is unknown, or the cause is known by the depot owners but not shared with other stakeholders. Of the cases for which the cause was recorded:

- 21.2% involved handling errors and inappropriate working practices. Many of these can be prevented by applying objectives 1, 2, and 6.
- 17.8% involved failures to consider external, environmental influences and events. The application of objectives 5 and 6 prevents this.
- 14.5% involved inappropriate storage infrastructure and systems. Objectives 1 and 6 address this gap.
- 9.5% involved poor security. Objective 10 serves as a reminder to adopt systematic and sustainable security measures, with regular reviews, to prevent such cases. These incidents are marked not only by casualties, but also by diversion—which can in turn fuel trafficking, as past cases have shown. While most of these cases did not involve staff members, some did. This highlights the need for national organizational capabilities, including oversight mechanisms—addressed by objective 4.
- 8% were caused by lack of surveillance leading to ammunition deterioration. Objectives 5 and 7 address this shortcoming by promoting the development of systematic and sustainable surveillance.

Table 1 The 15 objectives of the GFA and their links to the UEMS database

Cluster	GFA objectives*	Uses of UEMS database
Sustainability	<ol style="list-style-type: none"> 1. International standards, guidelines, and good practices 2. International cooperation and assistance 3. Regional and subregional mechanisms 4. National authorities' capabilities 	<p>Examine trends to identify priorities for updating, expanding, or promoting international standards, as well as needs and good practices for international cooperation and assistance.</p> <p>Identify cases where lessons learned can feed into the development and review of strategies, policies, and plans at the regional, subregional, and national levels.</p>
Safety	<ol style="list-style-type: none"> 5. Surveillance 6. Risk reduction processes 7. Inventory management and record keeping 	<p>Use cases and trends in UEMS database to highlight the importance of surveillance in through-life ammunition management and to identify approaches to inventory management that may need to be reviewed.</p> <p>For cases with high numbers of casualties, consider whether ammunition sites are located in areas with high risks of civilian casualties.</p>
Security	<ol style="list-style-type: none"> 8. Supply-chain transparency 9. Post-transfer diversion 10. Denial of access 11. Marking and tracing 12. Voluntary information sharing on ammunition diversion 13. Data collection and analysis on diverted ammunition 	<p>Use data on the severity of UEMS to indicate where ammunition management processes may present security concerns, such as a high risk of diversion.</p>
Cross-cutting	<ol style="list-style-type: none"> 14. Gender mainstreaming 15. Multi-stakeholder cooperation 	<p>Identify cases that warrant further investigation through collaborations between states, civil society, academia, research institutions, and industry, including into gender-differentiated and longer-term socio-economic impacts.</p>

Note: * The GFA objectives are taken from UNGA (2023).

Involving a wide range of stakeholders and deepening the analysis of UEMS strengthens understanding of not only the root causes, but also the long-term socio-economic and public health impacts on women, men, girls, and boys, which is critical for a holistic approach—as highlighted by objective 14.

UEMS, though infrequent, can be a persistent phenomenon with wide-ranging effects. As with any type of incident, the occurrence of UEMS signals the need to improve practices and collaboration, and reminds stakeholders—directly affected or not—to remain vigilant and systematically consider the safety and security risks. It is therefore essential that stakeholders share information and analysis from past incidents—an effort supported by the UEMS database. Such collaboration is critical to strengthening national capacities to prevent and mitigate UEMS by drawing on experiences and good practices domestically, regionally, and internationally, as highlighted by the objectives of the GFA (see Table 1; UNGA, 2023).

Notes

- 1 Either the sources of information directly mentioned the cause, as categorized by the UEMS database, or the cause is inferred based on the circumstances in the source and validated by ammunition technical experts.

References

- OCHA (United Nations Office for the Coordination of Humanitarian Affairs). 2021. *Equatorial Guinea: Bata Explosions*. Flash Update No.1. 8 March.
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For more information and resources on UEMS, please visit:

<https://www.smallarmssurvey.org/database/unplanned-explosions-munitions-sites-uems>.

● UEMS infographic ● UEMS map

About the Small Arms Survey

The Small Arms Survey is a centre for applied knowledge dedicated to preventing and reducing illicit small arms proliferation and armed violence. The Survey informs policy and practice through a combination of data, evidence-based knowledge, authoritative resources and tools, and tailored expert advice and training, and by bringing together practitioners and policymakers. The Survey is an associated programme of the Geneva Graduate Institute, located in Switzerland.

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